It's the other way around.

In my native language, which is Italian, "beautiful" is "Bello".

"Beauty" in Spanish is "belleza".

The Greek word for "beautiful" is "kalos".

Adding ``agathos'' means ``beautiful and good''.

In any of these languages, "beautiful" does not simply mean "beautiful."

It can also mean "good".

True beauty is when the invisible merges with the visible and comes to the surface.

And this applies not only to art and nature.

This also applies to science, human curiosity, and unity. That is why people say, "This person is beautiful" and "He has a beautiful heart."

This is the beauty that can transform a person into a better person by switching a special light in their eyes.

And by creating buildings to realize this beauty, the city becomes a better place to live.

And better cities produce better citizens.

Well, this beauty, this universal beauty, is one of the few things that can change the world.

Believe me, this beauty will save the world.

One person at a time, but we will do it.

thank you.

(applause)

My grandfather was a shoemaker.

A long time ago, he made custom-made shoes.

I never got to meet him.

He died in the Holocaust.

But I inherited his love of making things, which doesn't exist much anymore.

The Industrial Revolution did a great deal for the betterment of mankind, but it also exterminated the very technology that our grandfathers loved and decimated craftsmanship as we know it.

But 3D printing is about to change all that. It all started with the first part ever printed.

A little older than TED.

Printed by Chuck Hull, inventor of 3D printing in 1983.

But what I want to talk about today, the big idea I want to talk about, is not that 3D printing will take us leaps into the future, but rather that it will actually connect us to our traditions and actually usher in a new era of localized and distributed manufacturing based on digital fabrication.

So let's see what we can do to help.

Everyone knows their shoe size, right?

How many of us know the size of the bridge of our nose and the distance between our temples?

who?

Wouldn't it be great if, for the first time ever, you could have eyewear that actually fits you perfectly, requires no hinge assembly, and probably won't break?

But the impact of 3D printing is far beyond our noses.

When I first met Amanda, she complained to me that although she was paralyzed from the waist down, she could stand up and walk a short distance, but the suit was uncomfortable.

It was a beautiful robot suit made by Ekso Bionics, but it wasn't inspired by her body.

Not made to size.

So she asked me to make something a little more feminine, a little more elegant and lighter. We decided to digitally measure her size like a good seamstress would.

And we did. We made her a great suit.

What's amazing about what I learned from Amanda is that many of us are looking to 3D printing and telling ourselves it will replace traditional methods.

Amanda saw it and said this was an opportunity for me to regain symmetry and embrace my authenticity.

And what do you know? She's not standing still.

She now wants to walk in high heels.

That's not all.

3D printing is changing the personalized medical device as we know it, from new, beautiful, conformal, breathable scoliosis braces to millions of tooth restorations to beautiful braces for amputees. This is another opportunity to reconnect emotionally with symmetry.

And as we sit here today, braces and dental restorations with clear aligners can go wireless.

Today, millions of in-the-ear hearing aids are already 3D printed.

Millions of people are now served by these devices.

What about a full knee replacement where all the tools and guides are 3D printed and made to order from data?

GE is using 3D printing to manufacture the next generation LEAP engine. This saves about 15% on fuel and saves airlines about $14 million in costs.

Good for GE, right?

and customers and the environment.

But, as we all know, the even better news is that this technology is no longer just for the well-funded companies.

Space exploration startup Planetary Resources plans to launch its first spacecraft later this year.

It's a fraction of NASA's spacecraft, a fraction of the cost, has fewer than a dozen moving parts, and is scheduled to launch into space later this year.

Google is working on this very bold project to develop a block phone, Ara.

Only with the development of high-speed 3D printing will the functional and usable modules incorporated into it become possible for the first time.

A real moonshot using 3D printing.

how's the food?

What if, for the first time, you could create something incredibly delicious that you could eat, like this beautiful TED teddy?

What if you could completely transform your experience, like a fully 3D printed serving of absinthe?

And what if you could add ingredients, colors and flavors to suit every taste? This means that the promise of not just delicious food, but personalized nutrition is right there.

And that got me one of the biggest deals in 3D printing.

With 3D printing the complexity is gone.

The printer doesn't care if it creates the most basic or the most complex shapes. This completely reverses design and manufacturing as we know it.

Many believe that 3D printing is the end of manufacturing as we know it.

I believe that putting tomorrow's technology in the hands of young people is an opportunity to create endlessly plentiful employment opportunities so that everyone can become a professional manufacturer, a professional manufacturer.

It will require new tools.

Not everyone knows how to use CAD. Therefore, we are developing a haptic device that allows you to touch and feel your designs as if you were playing with digital clay.

Doing something like that would also create ready-to-print physical photography that would make content creation easier, but it would also lead to unintended things like democratized counterfeiting and ubiquitous illegal possession, as everything you can't imagine will happen.

A lot of people ask me, "Does every home have a 3D printer?"

I think that's the wrong question.

The right question to ask is how 3D printing will change my life.

In other words, which room in the house will the 3D print fit in?

So everything here is 3D printed, including the shoes shown at the Amsterdam fashion show.

Now, these are not my grandfather's shoes.

These shoes represent the continuation of his passion for hyperlocal craftsmanship.

My grandfather couldn't see the Nike-printed cleats at the recent Super Bowl, and my dad couldn't see me standing in my hybrid 3D-printed shoes.

He died three years ago.

But Chuck Hull, who invented it all, is in this house today. Thanks to him, thanks to his inventions, I can say that I am also a shoemaker. By standing in these shoes, you can say you're paying tribute to the past while creating the future.

thank you.

(applause)

puzzles and magic.

I work in fields that most people consider to be two different fields, but I believe they are the same.

I'm a magician and New York Times crossword puzzle creator. So it's two of the world's most geeky hobbies combined into one career.

And I believe that magic and puzzles are one and the same. Because both are key to one of the most important human impulses: the urge to solve.

Humans are instinctively equipped to resolve chaos and create order.

That's certainly true for me.

I have worked out all my life.

In high school, I used to play epic Scrabble games in the cafeteria and didn't talk much to the girls, but it was around that time that I started learning magic tricks, but I didn't talk to the girls at all.

There's nothing better than starting a conversation with, "Hey, did you know that Fame is worth 20 points in Scrabble?"

But then I realized that puzzles and illusions intersect.

When you play a crossword puzzle or watch a magic show, you become a solver. And your goal is to try to find order in the chaos—the chaos of a black-and-white puzzle grid, a scrambled bag of Scrabble tiles, or a shuffled pack of playing cards.

And today, as a Crucibalist (23 points) and as an Illusion Designer, I'm creating that chaos.

Test your solving skills.

Well, research shows that solving problems is as fundamental as eating and sleeping.

From the moment we are born, we are wired to solve.

In one study from the University of California, Los Angeles, neonates still in the hospital displayed a circle-cross-circle-cross pattern.

And the patterns have changed: triangles, squares.

And by tracking an infant's gaze, we know that even day-old newborns can notice and respond to disorder.

It's amazing.

So from infancy to old age, the urge to solve has united us all, and I also found this photo on Instagram of pop star Katy Perry solving a crossword puzzle over her morning coffee.

like.

(Laughter) Well, solutions exist in every culture.

America's invention is the crossword puzzle, and this year marks the 100th anniversary of the first crossword puzzle published in New York World.

But many other cultures also have their own unique puzzles.

China offers a tangram to test a solver's ability to form shapes out of jumbled pieces.

chaos. order.

order.

and place an order.

I like that one the most, so let's hear it again.

have understood.

What about jigsaw puzzles, which were invented in England in the 18th century?

Isn't this creating order out of chaos?

As you can see, we are always resolving.

We are always trying to decipher the world.

It's an eternal quest.

This is exactly what Cervantes wrote in "Don Quixote". By the way, this is the etymology of the word "quixotery", the highest score ever for a Scrabble word, 365 points.

Anyway, "Don Quixote" is an important book.

Have you ever read "Don Quixote"?

I can see some heads nodding.

Come on guys, really?

Have you read "Don Quixote"? Let's do this. Raise your hand if you've read Don Quixote.

Let's go. smart viewers.

Ever read "Don Quixote"? Wake them up.

All right, all right, I need a smart person here, and I'm going to go into the audience and find someone to help me, because I'm going to prove with the help of one of you how deep your urge to solve it is and how much you're all trying to solve it.

let's see.

Everyone suddenly averts their eyes.

Can you do it? What's your name? Gwen.

I'm not a mind reader, so I can see your name tag.

Come with me, Gwen. Let everyone applaud her and make her feel welcome.

Gwen, I'm after you.

(Applause.) Are you that excited?

Did you know your name is worth 8 points in Scrabble?

Okay, stand here, Gwen, here.

Now, Gwen, before we begin, I'd like to point out a piece of the puzzle, it's in this envelope, and I'm going to stay away from it. have understood?

And here are some farm animal drawings.

There are owls, horses, donkeys, roosters, cows and sheep. And here, Gwen, are some fancy art store markers. It's like color. Can you see the word there?

Gwen: Cobalt. David Kwon: Cobalt, yes. cobalt.

But we have silver, red, emerald, and amber markers, so Gwen, just like you did when you were five, color this picture one marker at a time.

It's going to be a lot of fun.

But I will go here.

I don't want to see what you're doing

Yes, don't start yet.

Wait for me to come here and close your eyes.

Well, Gwen, are you ready?

Why don't you pick up just one marker, pick up just one marker, and color the horse for me?

Get some color in your horse — big, big, big scribbles, broad strokes, and don't worry about staying in line.

have understood. wonderful.

Then take that marker out, summarize it, and put it on the table for me.

Now take another marker from the cup, remove the cap and color the donkey. Color the donkey.

big graffiti.

Now, calm down, cap the marker and place it on the table.

Then take another marker and remove the cap. Isn't this fun?

And color the owl for me.

Color the owl.

Now, summarize that marker and take another marker out of the cup to color the rooster. Color the rooster.

good, good, good, good, good

Big, big, big strokes. Good, good.

Take another marker out of the cup and color the cow. Color the cow.

Ok, good.

Fill it with lots of color, summarize it, put it on the table and take another marker out of the cup.

Oh did you leave? Now turn around.

Did you forget? Oh, I forgot the purple marker.

However, this still works.

I think this still works in most cases.

So, Gwen, I'm giving you this envelope.

Do not open yet. Do not open yet. But write down your choices so that everyone can see the choices you make.

Ok, great. There's a cobalt horse, an amber owl, a silver cow, yes, okay, there's a red donkey, and what was the emerald color? rooster.

Emerald Rooster. have understood.

Now for the real moment, Gwen, let's take a look inside that envelope.

Why don't you open it up, take a piece of paper out of it and give it to me? We will check to see if it matches your selection.

Yes, I think so.

There is a cobalt horse, a red donkey, an amber owl, an emerald rooster, and a silver cow. I forgot my purple marker so I have a blank sheep. But don't you think this is a rather surprising coincidence?

Gwen, well done. That's beautiful. (Applause.) It takes back.

So, ladies and gentlemen, how is that possible?

How is this possible? Well, is Gwen's brain wired to solve as much as it deciphers hidden messages?

Well, here is the puzzle I present to you.

Is there order in the chaos I have created?

Let's take a closer look.

Remember when I showed you these puzzle pieces?

What kind of image did you end up with? Cobalt horse.

The plot thickens.

Then we played a game of Emerald Rooster and Tangram.

That's my favorite.

Then I did an experiment with a silver cow.

And Katy Perry drinks her morning coffee from Amber Owl.

Katie, thanks for taking the picture.

Oh, one more, one more.

Gwen, I think you painted the red donkey.

If you've read "Don Quixote", would you please raise your hand?

Have you read Don Quixote? (Laughter.) But wait, but wait, wait, wait, wait, there's more.

We have others, too.

Gwen, I was so confident you would make these choices that I made another prediction and put it in an even more indelible place, and it's right here.

Ladies and gentlemen, today's New York Times.

The date is March 18, 2014.

Many people sitting in the first few rows also have it under their seats.

really dig We hid them down there.

Read a newspaper, open the art section, and you'll find crossword puzzles. Today's crossword puzzle is really written by you.

My name appears above the grid.

I'll pass this on to you, Gwen, take a look.

And I will try to show it on the screen.

Now let's look at another piece of the puzzle.

If you look at the first clue 1-across, it starts with the letter C for rot, and just below that is an O for outfielder, and if you continue reading the first letter of the clue, you'll see a cobalt horse, an amber owl, a silver cow, a red donkey, and an emerald chicken.

(Applause.) That's pretty cool, isn't it?

It's the New York Times.

But wait, wait, wait, wait. hang on.

Oh Gwen, remember when I forgot the purple marker and couldn't color the sheep?

Now, if you continue reading from 25-down, it says, "Oh, by the way, the sheep can be left blank."

(Laughter) (Applause) But wait, wait, there's one more, one more, one final piece of the puzzle.

Gwen, I am so grateful for your choice. Because if you look at the first letter of your combination, you get "C-H-A-O-S" for chaos and "O-R-D-E-R" for order.

It's chaos and order.

We have all created order out of chaos.

So, ladies and gentlemen, remember that the next time you encounter a puzzle, whether it's in life, at work, or at Sunday breakfast with the New York Times, you're all set to solve it.

thank you.

(applause)

Today a bewildered woman looked into my soul shell and announced that I was 'clear' So when it comes to pronunciation and phrasing, I don't even think about it 'Cause I'm 'clear', so when professors ask, my answers are tainted with urbanized connotations No wrong intentions, be careful, because I'm 'clear' So when my father asks, 'What do you mean?' No, I say, "Dad, this is a pressing issue," and when I'm on the block, I switch it up just because I can. And sometimes during class, I pause the intelligent sounding flow and ask, "Okay!" Yes, I have decided to treat all three of my languages ​​equally. Because I am "obvious". But who controls clarity?

English is a multi-faceted speech subject to indefinite transformation Now you might think that speaking broken English is ignorant But what I'm trying to say here is that even a 'clear' American sounds stupid to an Englishman So when my professor comes to the block and says 'Hello' I stop him and say You may think it's not cool but I'm here Tell me our language has rules too. So if Mama mocks me and says, 'It's mad to go to the store,' I say, 'Mama, no, that sentence doesn't follow the law. If I had vocal ability, I would sing this from any mountain top, any suburb, any hood, because the only God of language is the God recorded in the Genesis of this world who says, "It is good." One for each of my friends I'm a trilingual orator I'm a trilingual orator sometimes I'm consistent with my language now then I'll switch later so I don't get bored I feel like I'm going crazy when I accidentally mix two languages ​​while I'm using the other one in the classroom...I'm cooking in the bathroom it's mine mines were stolen so I had to take your word but that while mines are broken I tell your history perfectly These words are spoken by someone who is sick of this season's Eurocentric ideals And the reason I speak a composite version of your language is that mines were raped along with my history I'm sick of meaningful racial disparities So unless your hair is known to be donated to charity stop calling it good Can you expect me to treat their imprint on your language as less than equal as much as I was raped by our people Let's not be confused Let's not be hesitant The reason I wrote it helps you diversify your language All I wanted them to know is the consumer market. And when they call me for an interview, I'll be happy to say: "What's good?" "What's good?"

(applause)

23 years ago, when I was 19, I shot a man.

I was a young drug dealer with a hot temper and a semi-automatic pistol.

But this was not the end of my story.

In fact, it is beginning, and the next 23 years are a story of recognition, apology and redemption.

But it didn't happen in the way you imagine or think.

These things have happened in my life, especially to me, in surprising ways.

You see, like many of you, when I was a kid, I was an honor student, a scholarship student, and dreamed of becoming a doctor.

However, things took a dramatic turn for the worse as my parents separated and eventually divorced.

The actual event is very simple.

At 17, I was shot three times while standing on the corner of a Detroit city block.

My friend rushed me to the hospital.

The doctors took out a bullet, patched me up and sent me back to the same area where I was shot.

During this ordeal, no one hugged me, no one advised me, no one said I was okay.

No one told me that I would live in fear, that I would become paranoid, that I would react extremely violently to being shot.

No one told me that one day I would be the one who pulled the trigger.

14 months later at 2am I opened fire and killed a man.

When I went to jail, I was bitter, angry and hurt.

I didn't want to take responsibility.

I blamed everyone, from my parents to the system.

I justified my decision to shoot because in the area where I was born, it's better to be the shooter than the one being shot.

I felt helpless, unloved and abandoned as I sat in my cold cell.

I felt that no one cared and was hostile to confinement.

And I found myself getting deeper and deeper into trouble.

I ran the black market, ran a loan shark, and sold illegally smuggled drugs to prisons.

In fact, I was in what the director of the Michigan State Correctional Service called “the worst of the worst.”

And because of my activism, I ended up in solitary confinement for seven and a half years after my imprisonment.

Now, I think the cell is one of the most inhumane and barbaric places. But so was I.

One day, as I was walking through my cell, a police officer came and delivered my mail.

I looked at some letters and then saw my son's wavy letter.

And every time I received a letter from my son, it was like a ray of light in the darkest place imaginable.

And on this particular day, I opened the letter and he wrote in capital letters, "Mommy told me why you're in prison. It's murder."

He said, "Dad, please don't kill me.

Jesus watches your actions. pray to him ”

Now, I was irreligious then and I am irreligious now, but my son's words had a very deep meaning.

They made me think about things in my life that I never thought possible.

It was the first time in my life that I really thought about the fact that my son would see me as a murderer.

I went back to my bed and thought back to what I had read in [Plato] where Socrates, in his Apology, said that an unexamined life was not worth living.

From that point on, the transformation began.

But it wasn't easy.

One thing I've noticed as part of the transformation is that there are four things that matter.

First of all, I had a great mentor.

Now, some of you are probably wondering how I found a great leader in prison.

But in my case, some of my mentors, who are serving life sentences, were some of the best I've ever met in my life. Because they forced me to look honestly at my life and challenge myself about my decisions.

The second was literature.

I never knew there were so many brilliant black poets, writers and philosophers until I was in prison. Then I had the good fortune to come across Malcolm X's autobiography. And it shattered any stereotypes I had about myself.

The third was my family.

For 19 years, my father has been by my side with unwavering conviction. Because I believed I had what it took to turn my life around.

I also met an amazing woman who is now the mother of my 2 year old son Sekou, who taught me how to love myself in a healthy way.

The last was to write.

When I got that letter from my son, I started journaling about my childhood and my experiences in prison. That opened my mind to the idea of ​​redemption.

Before I was imprisoned, I received a letter from one of the victim's relatives. In that letter, she told me that she understood that I was a young child who had been abused, had gone through some hardships, and had made a series of bad decisions, so she had forgiven me.

It was the first time in my life that I was open to forgiving myself.

One of the things that happened after that experience was thinking about the other men who were incarcerated with me and how much I wanted to share this with them.

So I started talking about some of their experiences and was shocked to find that most of them came from the same abusive environment and most of them wanted help and wanted to turn things around but unfortunately the system that currently holds 2.5 million people in prison is designed as a warehouse as opposed to rehabilitation or transformation.

So I decided that if I was released from prison, I would do everything in my power to change this situation.

In 2010, I was released from prison for the first time in 20 years.

Now imagine Fred Flintstone walking into an episode of The Jetsons.

My life was just like that.

For the first time, I was exposed to the internet, social media, and cars that spoke like KITT from "Knight Rider."

But what most fascinated me was telephony technology.

When I went to jail, the car phone was this big and it took two people to carry it.

So imagine what it would be like when I first picked up my little Blackberry and started learning how to text.

But in fact, people around me didn't realize that I didn't understand the meaning of the abbreviated texts like "LOL", "OMG", "LMAO", etc. One day, I was having a text message conversation with one of my friends, and when I asked him to do something, he replied with a "K."

So I thought, "What is K?"

Then he said, "K is fine."

So in my head I thought, "What the hell happened to K?"

So I emailed him a question mark.

Then he said "K = okay".

So I tap "FU" and go back. (laughter) And he emailed me back and asked me why I was cursing him.

And I said, "Laugh out loud," like, "I finally understand."

(Laughter) And three years later, I'm doing relatively well.

I have a fellowship at the MIT Media Lab, work for an amazing company called BMe, and teach at the University of Michigan, but I'm struggling because I've noticed more and more men and women returning home without being given those opportunities.

I have been fortunate enough to work with some amazing men and women to help people reintegrate. One of them is a friend of mine named Calvin Evans.

He served 24 years in prison for an innocent crime.

he is 45 years old. He is currently in college.

And one of the things we talked about was three things I felt were important in personal change. The first is authorization.

I had to admit that I hurt others.

I had to admit that I was hurt too.

The second was to apologize.

I had to apologize to the people I hurt.

There was no expectation that they would accept it, but it was the right thing to do and it was important to do so.

But I also had to apologize to myself.

The third is redemption.

For me, redemption meant returning to my community, working with at-risk young people on the same path, and at the same time being one with myself.

One of the things I have discovered through my experience of being incarcerated is that the vast majority of men and women incarcerated are reimbursable, in fact 90 percent of the men and women incarcerated will return to the community at some point, and we have a role in determining which men and women return to the community.

My hope today is to adopt a more empathetic approach to how we deal with mass incarceration, and to do away with the idea of ​​locking them in and throwing away the key. Because it has been proven not to work.

My journey is a unique journey, but it doesn't have to be.

Anyone can make a difference if we create the space for it to happen.

So today I would like to ask you to envision a world where men and women are not held hostage by the past, where evil deeds and mistakes do not define the rest of their lives.

I believe that together we can create that reality, and I hope that you can too.

thank you.

(applause)

Today I will talk about the sequel to "An Inconvenient Truth".

It's time to talk again about the "inconvenient truths" that everyone cares about but no one wants to talk about.

Someone has to take the lead, and I decided to do it.

If you fear global warming, wait until we know about local warming.

Today we will talk about local warming.

Important Health Message: Blogging can be dangerous to your health, especially for men.

This message is provided as a public service.

Blogging affects attitude. Let's start with posture.

This is the attitude of a woman who does not write a blog. This is the posture of the woman writing the blog.

(Laughter) This is the natural posture of a man sitting squatting for ventilation.

(Laughter) And this is the natural posture of a standing person, and I think this photo inspired Chris to engage me in a lateral thinking session.

This is the men's blogging posture of sitting, and the result is, "For increased comfort, men naturally sit with their legs spread wider than women when working with laptops."

However, they end up adopting an unnatural position to balance on their knees, resulting in a significant increase in body temperature between their thighs. ” This is the problem of local warming.

(Laughter) This is a very serious newspaper. The Times of England – very serious. This is very -- (laughter) -- ladies and gentlemen, get serious.

This is a very serious study, so please read the underlines.

And be aware that your genes are at risk.

Will otaku become an endangered species?

FACT: Population Growth in Countries with High Laptop Penetration -- (Laughter) Hans Rosling Show me the graph.

(Applause) Global warming is fun.

(Laughter) But let's keep things in balance.

How to care in 5 easy steps: First of all, you can use natural ventilation. You can use body breathing.

You should dress appropriately and stay cool.

You should pay attention to your posture, which is incorrect.

I have a video to show you, so could Chris listen to me for another minute and a half?

(Applause.) You are great. This is the correct posture.

Another benefit of Wi-Fi, we learned yesterday about the benefits of Wi-Fi.

Using Wi-Fi can bypass the processor. We also have some enhanced protections that we would like to share with you. I would like to immediately thank Philips for their assistance.

This is a study done in '86, but it's still valid.

The scrotal temperature mirrors the temperature within the testes and is reduced by shaving.

By the way, to be honest, my English is not very good and I didn't know what a scrotum was. It turned out to be the scrotum.

I think that it is a scrotum like medium and media when it is a plural form.

Digital scrotum, digital media.

And only last year did I find myself a proud scrotal owner.

(Laughter) And since this investigation is being facilitated by the U.S. government, we know tax officials are working for a legitimate cause.

Video: Men: The Philips Body Groom features a sleek, ergonomic design that safely and easily trims underarm hair, bleeps and unruly curls around them, and hard-to-reach tresses on the underside of bleeps and bleeps. Use Bodygroom once and you will see the world differently.

And so does your [beep]. These days, with a hairless back, manicured shoulders, and an extra inch of light on my [beep], well, let's just say life just got a lot more comfortable.

Yossi Vardi: This was one of the most popular viral ads last year, known as Philips' optical inch. Let's applaud Phillips -- (applause) -- for this commitment to humanity.

And this is how they advertise their products. This is -- I haven't touched it, it's the original.

Using laptops to solve overpopulation. Even if all else fails, there are some secondary uses.

And in my next talk, next TED, I'll talk about why you shouldn't carry your phone in your pocket.

And the younger generation says:

(Applause.) And I want to show that I'm not just preaching, I'm also doing.

(Laughs) 4 o'clock in the morning.

(Laughter) This photo is not available.

(Applause) Now, I have a few mini TED awards. This is Philips Body Grooming and is gifted to our leader.

(Applause.) Do any of you feel threatened? Does anyone really need it?

(Laughter) Are there women, are there women? thank you very much.

(applause)

I am a Professor of Computer Science and Engineering here at Carnegie Mellon University and my research focuses on usable privacy and security. That's why my friends like to give me examples of complaints about computing systems, especially about unusable privacy and security.

That's why we hear so much about passwords.

Many people are frustrated with passwords. If you just have to have one really good password that you can remember but no one else can guess, that's all you need.

But what if you have accounts on 100 different systems, each requiring a unique password?

It's tough.

Carnegie Mellon University actually made it very easy for us to remember passwords.

Until 2009, the password requirement was that passwords must be at least one character long.

Very easy. However, things have changed since then and it was announced that a new policy would be introduced at the end of 2009. The new policy required passwords to be at least eight characters long, including uppercase letters, lowercase letters, numbers, and symbols, could not use the same character more than three times, and was not allowed to be registered in a dictionary.

Now, when they introduced this new policy, many people, including my colleagues and friends, came to me and said:

Why do they do this to us and why didn't you stop them? ”

And I said, 'Well, what do you know?

they didn't ask me. ”

But intrigued, I decided to go talk to the person in charge of computer systems to find out what prompted this new policy. Then the university was in a consortium of universities and one of the requirements for membership was that they had to have strong passwords that complied with some new requirements, and that requirement was that passwords should have a lot of entropy.

Entropy is a complex term, but it basically measures the strength of passwords.

But the problem is that no standard measure of entropy really exists.

Currently, the US National Institute of Standards and Technology has a set of guidelines with some rules of thumb for measuring entropy, but the reason it's not very specific, only rules of thumb is that we've found that there really isn't good data on passwords.

In fact, their report states, "Unfortunately, we don't have much data on passwords chosen by users according to specific rules.

NIST would like to know more about the passwords users actually choose, but it's no surprise that system administrators are reluctant to reveal password data to others. ”

This is a problem, but our research group saw it as an opportunity.

We said, "Well, we need good password data.

Perhaps we can collect some good password data and actually advance the state of the art.

So the first thing we did was grab a bag of candy bars, walk around campus, talk to students, faculty, and ask for information about passwords.

Now they didn't say, "Tell me your password."

No, I just asked about passwords.

how long is it? Do you have numbers?

Do you have a symbol?

Were you frustrated with having to create something new last week?

There, we received results from 470 students, faculty and staff. Sure, we found the new policy very intrusive, but we also found that people said they felt these new passwords were more secure.

The survey found that most people know they shouldn't write down their passwords, only 13% knew, but a staggering 80% said they reused passwords.

In fact, this is more dangerous than writing down passwords. Because it makes you more vulnerable to attack.

So write down your password in case you need it. However, do not reuse passwords.

We also found some interesting things about the symbols people use in their passwords.

This means that CMU allows 32 symbols, but as you can see, most people use only a few symbols, so they don't really get much out of password symbols.

This was a very interesting study. Data from 470 individuals were obtained. But the way things work, it's not really that much password data. So I looked to see where the additional password data could be found.

It turns out that there are a lot of people out there stealing passwords and often posting those passwords on the internet.

As such, we were able to access some of these stolen password sets.

However, this is still not ideal for research, as it is not entirely clear where all these passwords came from or what policies were in place when people created these passwords.

So I wanted to find a better data source.

So we figured one thing we could do is run a survey and have people actually create passwords for the survey.

So we used a service called Amazon Mechanical Turk. It allows you to post small jobs online that take a minute, minutes, or hours, and pay the people who take the job a penny, a dime, or a few dollars, and you can pay them through Amazon.com.

So I created a password according to the rules, paid about 50 cents to have them complete the survey, visited again two days later, and used that password to log in and complete another survey.

So we did this, collected 5,000 passwords, and gave people different policies for creating passwords.

So some people were adopting a very easy policy. We call this Basic8. The only rule here was that passwords must be at least 8 characters.

Later, some had even stricter policies, which were very similar to CMU's, requiring you to use 8 characters, including upper and lower case letters, numbers and symbols, and pass a dictionary check.

One of the other policies we tried, among many others, was called Basic16, where the only requirement was that passwords must be at least 16 characters.

got it. Now you have 5,000 passwords and more detailed information.

Again, we can see that users actually use a small number of symbols in their passwords.

I also wanted to know how strong user-generated passwords are, but as you know, there is no good measure of password strength.

So we decided to see how long it would take to crack these passwords using the best cracking tools used by bad guys or information we could find in the research literature.

Explaining how bad guys crack passwords, they steal password files that contain all passwords in a kind of scrambled form called a hash. So what they do is guess what the password is, run it through a hash function, and see if it matches a password on their stolen password list.

So a stupid attacker will try all passwords in order.

They start with AAAAA and go to AAAAB, but it takes a very long time before they have a password that people are likely to actually have.

Smart attackers, on the other hand, do smarter things.

They look at passwords known to be popular from these stolen password sets and guess them first.

So they first guess the "password", then "I love you", "monkey", "12345678". Because these are the passwords people are most likely to have.

In fact, some people may have these passwords.

So when we ran all 5,000 passwords collected in these tests to see how strong they were, we found that long passwords are actually pretty strong, and complex passwords are pretty strong too.

However, research data shows that people are really frustrated with overly complex passwords, and that longer passwords are much easier to use and in some cases actually stronger than complex passwords.

So instead of telling people that their passwords need to contain all these symbols, numbers and weird things, it might be better to just tell people to use longer passwords.

But here comes the problem. Some even used long passwords that weren't really strong.

You can also create long passwords that attackers can easily guess.

Therefore, simply saying a long password is not enough.

Some additional requirements are necessary, and some ongoing research is looking at what additional requirements need to be added to create strong passwords that are easy for users to remember and type.

Another approach to getting people to have strong passwords is to use a password meter.

Here are some examples.

You may have seen these on the internet when creating passwords.

We decided to do some research to find out if these password meters actually work.

Do these actually help people use stronger passwords, and if so, which one is better?

So we tested password meters with different sizes, shapes, colors, different words next to them, and even a dancing rabbit password meter.

The rabbit dances faster and faster as you enter better passwords.

So this was a lot of fun.

What we discovered was that Password Meter works.

(Laughter) Most of the password meters were actually effective, and the dancing bunny was very effective. But the password meter that worked best was the one that pushed you to work harder before giving you the thumbs up and saying well done. In fact, I've found that most of the password meters on the internet today are too soft.

They say you're doing a good job too soon, but if you waited a bit before giving that positive feedback, you could probably come up with a better password.

Another approach to better passwords might be to use passphrases instead of passwords.

This is an xkcd cartoon from a few years ago where the cartoonist suggests we should all use passphrases. If you look at the second line of this cartoon, you'll see that the cartoonist suggests that the passphrase "Correct Horse Battery Staple" is a very strong passphrase and one that's very easy to remember.

In fact, you already remember it, he says.

So we decided to do a research study to find out if this is true.

In fact, everyone who says I do password research points to this cartoon.

"Oh, have you seen it? That xkcd.

The standard of the right horse battery. ”

So we researched what actually happened.

So in our research we again used Mechanical Turk and let the computer choose random words in the passphrase.

Well, the reason we did this is because humans aren't very good at choosing random words.

If you ask a human to do that, they'll pick something that's not very random.

So I tried several different conditions.

Under certain conditions, the computer chose from a dictionary of very common words in English, resulting in a passphrase like "try there three Come".

We looked at it and said, "Hmm, that doesn't seem very memorable."

So, I tried to select words derived from a specific part of speech. What about nouns, verbs, adjectives, and nouns?

Then you can create something like sentences.

So you can get passphrases like "the plan builds sure power" or "the end decides the red potion".

And these are a little more memorable and people might like them a little better.

We wanted to compare them to passwords, so let the computer choose random passwords. These were nice and short, but as you can see, they weren't very memorable.

So I decided to try something called pronounceable passwords.

Here, a computer selects random syllables and combines them to create something pronounceable like "tukhlitvi" or "vadasavi".

It's like rolling your tongue.

So these were computer-generated random passwords.

What we found in this research, surprisingly, is that pass phrases are actually not that good.

People were much worse at remembering pass phrases than these random passwords. Long pass phrases also took longer to type and made more mistakes while typing.

So it's not really a clear win for passphrases.

Sorry to all XKCD fans.

On the other hand, I've found pronounceable passwords to work surprisingly well, so I'm actually doing more research to see if I can make that approach work even better.

One of the problems with some of the research we did is that these weren't people's actual passwords, as they were all done using Mechanical Turk.

These are the passwords they created, or the passwords the computer created for them for our research.

And I wanted to know if people actually do the same for real passwords.

So we contacted the Information Security Office at Carnegie Mellon University and asked if we could get everyone's real passwords.

Naturally, they were a little reluctant to share them with us, but we were actually able to work with them to develop a system that would put the actual passwords of all 25,000 CMU students, faculty and staff into a locked computer in a locked room with no internet connection and run code we wrote to analyze those passwords.

They audited our code.

they ran the code.

So we never actually saw anyone's password.

I got some interesting results. The Tepper students behind you will be very interested in this.

So we found that passwords created by people in computer science schools were actually 1.8 times stronger than those in business schools.

There is a lot of other very interesting demographic information out there.

Another interesting thing we discovered was that there were indeed many similarities between the Carnegie Mellon passwords and those generated by Mechanical Turk. Therefore, this helped validate our research methods and showed that collecting passwords using these Mechanical Turk studies is indeed a valid way to study passwords.

That was good news.

Finally, I would like to share an insight I gained during my last year's sabbatical at Carnegie Mellon School of Art.

One of the things I did was make some quilts and I made this quilt here.

Its name is "Security Blanket".

(laughter) And this quilt contains the 1,000 most frequently stolen passwords from the RockYou website.

And password size is proportional to how often the password appears in the stolen dataset.

What I've done is create this word cloud and go through all 1,000 words and sort them into broad thematic categories.

Sometimes it's a little hard to understand which category they should be in, so I've color coded them.

Here are some examples of the difficulty.

So "Justin".

Is it the name of the user, their boyfriend or son?

Maybe they are Justin Bieber fans.

Or "Princess".

is that a nickname?

Are they fans of Disney princesses?

Or maybe that's their cat's name.

"I love you" appears many times in different languages.

A lot of love goes into these passwords.

If you look closely, you can see that it also contains profanity, but it was very interesting to see that these passwords contained more love than hate.

There are many animals, but "monkey" is the most common animal and the 14th most popular password overall.

And this was very interesting to me and made me wonder, "Why are monkeys so popular?"

So, in our last password survey, we asked why there is a monkey in the password every time we see someone creating a password with the word "monkey" in it.

And what we found - so far, I think 17 people have the word "monkey" - about a third of them say they have a pet named "monkey" or have a friend nicknamed "monkey", and about a third of them just like monkeys and say they're really cute.

And that person is really cute.

After all, when we create passwords, it seems we end up creating something very easy to type, a common pattern, or something that reminds us of the word password or the account that created the password.

Or we think about the things that make us happy and base our passwords on those things that make us happy.

This makes typing and remembering passwords more fun, but it also makes password guessing a lot easier.

So, while I know many of these TED Talks will inspire you and make you think about the nice and happy things, try to think differently when creating passwords.

thank you.

(applause)

I don't know if you've noticed, but there's been a flurry of books lately that reflect and speculate about the cognitive and emotional lives of dogs.

Do they think and feel, and if so, how do they feel?

So this afternoon, given my limited time, I wanted to take the guesswork out of it by introducing you to two dogs. Both dogs took the command to "speak" literally.

The first dog leaves first, and he ponders one aspect of his relationship with his owner. The title is "The owner's dog".

"I look young, but I'm getting older faster than him.

It is often said that 7 to 1 is a ratio.

Whatever the number, I'll pass him in the lead someday, like a walk in the woods, and if it can cross his mind, it'll be the softest shadow I've ever cast on the snow or grass. ”

(Applause.) Thank you.

And the next dog speaks with something called Revenant. Revenant means a spirit that visits you and returns.

"I'm the dog you put to sleep, as you like to call the Needle of Oblivion, come back and tell me this simple thing: I didn't like you."

(laughs) "When I licked your face, I thought I was going to bite off your nose.

When I saw you drying yourself with a towel, I wanted to jump up and snap you down.

I was offended by the way you moved, your lack of animal grace, the way you sat in your chair to eat, your napkin on your lap, your knife in your hand.

I would have run away, but I was too weak. It's a trick you taught me when I was learning how to sit, on my heels, and, the biggest insult, shake hands without using my hands.

I admit I get excited when I see reeds, but that's because you're smelling things you've never touched.

You may not want to believe this, but I have no reason to lie. I hated cars, I hated rubber toys, I hated your friends, and worse, your relatives.

The jingling of the tag pissed me off.

You always hurt me where I was wrong. ”

(laughter) "All I wanted from you was food and water in a bowl.

While you were sleeping, I watched you breathe as the moon rose in the sky.

I did my best to keep my head up and barking.

Now I'm free from collars, yellow raincoats, monogrammed sweaters, lawn absurdities, and that's all there is to know about this place, everyone here can read and write, dogs, poetry, cats, prose, everything, except what you already assumed and wished it hadn't happened sooner. ”

thank you.

(applause)

This is a graph representing the economic history of human civilization.

[Per capita GDP in the world over the past 200,000 years] It's not a big deal, is it?

For most of human history, most people lived on the equivalent of $1 a day, and nothing much changed.

But then something special happened: the scientific and industrial revolutions.

And the basically flat graph you just saw changes to:

What this graph means is that we are living in an unprecedented time in human history when it comes to the power to change the world, and our ethical understanding has not yet caught up with this fact.

The scientific and industrial revolutions changed both our understanding of the world and our ability to change it.

What we need is an ethical revolution to figure out how to harness this vast resource to improve the world.

Over the past decade, my colleagues and I have developed a philosophy and research program called Effective Altruism.

It attempts to respond to these fundamental changes in our world and uses evidence and careful reasoning to answer this question: How can we do the best?

Now, if we want to tackle this problem, there are a lot of issues we have to deal with. Whether good should be done through philanthropy, career or political engagement, what programs to focus on, who to work with, etc.

But what I want to talk about is what I think is the most fundamental problem.

Of the many problems facing the world, which ones should we focus on solving first?

Here is a framework for thinking about this question, and that framework is very simple.

The higher the priority of a problem, the bigger it is, the easier it is to solve and the more likely it is to be ignored.

Bigger is better, because the more you solve the problem, the more you get.

The easier it is to solve, the better, because it takes less time and money to solve the problem.

And most subtle, the more left unattended, the better, because the benefits diminish.

The more resources already invested in solving the problem, the harder it is to move forward.

Now, the important thing I want to leave you with is this framework so that you can think for yourself what the world's top priorities are.

However, I and others in the effective altruism community score unusually high on this framework, concentrating on three moral issues that I believe are unusually important.

The first is global health.

This is super solvable.

We have an impressive track record in global health.

Mortality from measles, malaria and diarrheal diseases has been reduced by more than 70%.

And in 1980, smallpox was eradicated.

As a result, we estimate we have saved more than 60 million lives.

This will save more lives than achieving world peace in the same period.

Our best estimate at the moment is that distributing durable, insecticide-treated mosquito nets for just a few thousand dollars could save lives.

This is a great opportunity.

The next important priority is factory farming.

This is super neglected.

50 billion land animals are used for food each year, most of them farmed in factories, where they live in appalling suffering.

They are probably one of the most underprivileged creatures on the planet, and often just one penny per animal can greatly improve their lives.

But this is very neglected.

Factory farms have 3,000 times more animals than stray pets, yet factory farms receive 1/50th of philanthropic funding.

That said, additional resources in this area could have a truly transformative impact.

Now, the third area is the one I want to focus on the most, and that is the survival risk category. Events such as nuclear war and global pandemics that can permanently derail civilizations or even lead to the extinction of humanity.

Regarding this framework, let me explain why I think it is such a big priority.

First, size.

How bad would it be if a truly existential catastrophe happened?

Yes, it will involve the death of all 7 billion people on Earth, and that means you and everyone you know and love.

It is truly a tragedy on an unimaginable scale.

However, it also narrows the future possibilities of humankind, and I believe that humankind has great potential.

Humans are about 200,000 years old, and if we live as long as typical mammals, we'll last about 2 million years.

If humanity were an individual, she would be exactly 10 years old today.

Furthermore, humans are not a typical mammalian species.

If we're careful, there's no reason for humanity to go extinct in just two million years.

Earth will be habitable for the next 500 million years.

And if one day we go to the stars, civilization could last billions more.

So I think the future is going to be huge, but is it going in the right direction?

Is humanity really worth saving?

We often hear that things are getting worse, but I think in the long run things are getting better fundamentally.

For example, this is long-term life expectancy.

The percentage of people not living in extreme poverty is:

This is the evolution of the number of countries that have decriminalized homosexuality.

This is the number of countries that have become democracies over time.

And as we look to the future, we may have much to gain again.

We will be richer and be able to solve many problems that are unsolvable today.

So if this is like a graph of how humanity has progressed in terms of overall human prosperity over time, then this is a prediction of what future progress will look like.

It's huge.

For example, this is a place where no one is expected to live in extreme poverty.

Here everyone is expected to be richer than the richest person alive today.

Perhaps here we will discover the fundamental natural laws that govern our world.

Perhaps this is where we discover a whole new art form, a musical form that we currently do not have ears to hear.

And this is just a few thousand years later.

Thinking beyond that, I can't even imagine how high humanity's achievements will reach.

So the future could be very big and very good, but could it lose this value?

And sadly, I think there is.

The past two centuries have brought tremendous technological progress, but also the global risk of nuclear war and the potential for extreme climate change.

Looking to the next few centuries, we expect the same pattern to emerge again.

And we see some fundamentally powerful technologies on the horizon.

Synthetic biology could give us the power to create viruses of unprecedented transmissibility and lethality.

Geoengineering may give us the power to dramatically change the Earth's climate.

Artificial intelligence may give us the power to create intelligent agents that are capable of greater than our own.

Now, I'm not saying any of these risks are particularly likely, but when there's so much at stake, even a small chance is very important.

Let's say you're on a plane and you're nervous, and the pilot reassures you, "Your chances of crashing are 1 in 1000. Don't worry."

Can you reassure me?

For these reasons, I believe that protecting the future of humanity is one of the most important issues facing us today.

But let's stick with this framework.

Is this issue being ignored?

I think the answer is "yes". That's because issues that affect future generations are often ignored.

why?

Because future people will not participate in today's market.

they don't have the right to vote.

There is no lobby representing the interests of people born in 2300 AD.

They cannot influence the decisions we make today.

they are silent.

That means we are still spending paltry money on issues like nuclear non-proliferation, geoengineering, bio-risks and artificial intelligence safety.

All of these simply receive tens of millions of dollars in philanthropic funding each year.

This is paltry compared to the total $390 billion spent on US philanthropy.

The final aspect of our framework is: Is this solvable?

I think so.

You can contribute with your money, your career, or your political involvement.

Your money can support organizations focused on these risks, such as the Nuclear Threat Initiative, which campaigns to remove nuclear weapons from emergency alert; the Blue Ribbon Panel, which develops policies to minimize damage from natural and man-made pandemics; and the Center for Human Adaptability, which conducts technical research to ensure the safety and reliability of AI systems.

Political engagement allows us to vote for candidates who take these risks into account, and helps expand international cooperation.

And with a career, there's a lot you can do.

Of course, we need scientists, policy makers, and organizational leaders, but just as importantly, we also need accountants, managers, and assistants who work in organizations that work on these issues.

Currently, effective altruism research programs are still in their infancy, and there is still a great deal that we do not know.

But even with what we've learned so far, we can see that thinking carefully and focusing on big, solvable, and neglected problems can really make a big difference to the world over the next few thousand years.

thank you.

(applause)

His reign marked the beginning of the greatest empire in history and the end of one of the first republics.

Was Rome's first emperor a visionary leader who guaranteed his place in Roman civilization's history, or a tyrant who destroyed its core values?

See history and the Battle of Augustus.

order, order.

Is today's defendant Gaius Octavianus?

Gaius Julius Caesar/Augustus...

Wrong man?

No, sir.

Gaius Octavian was born in 63 BC and was the great-nephew of Julius Caesar.

He was named the adopted son and successor of his great-uncle, becoming Gaius Julius Caesar.

And when the Senate granted him additional honors in 27 BC, he received the title of Augustus.

When he established sole authority and became emperor of Rome.

is that a bad thing?

Aren't there kings and emperors everywhere in those days?

In fact, sir, centuries ago the people of Rome overthrew the king and established a republic, a government whose purpose was not the prerogative of rulers, but the service of the people.

And it was Octavian who destroyed this tradition.

Octavianus was an exemplary civil servant.

At the age of 16, he was elected a member of the Holy See to oversee religious services.

He fought alongside his great-uncle Caesar in Hispania for Rome, and assumed the responsibility of avenging Caesar's death when a corrupt oligarch in the Senate betrayed him and murdered him.

Caesar was a power-hungry tyrant who sought to make himself king in union with Cleopatra, Queen of Egypt.

After his death, Octavian, along with General Mark Antonius, started a civil war that tore Rome apart, then stabbed his allies in the back to increase his own power.

Anthony was a fool.

He made a disastrous expedition in Parthia, planning to turn the Roman realm into a personal kingdom for himself and Cleopatra.

Isn't that what Caesar was accused of?

good...

So, did Octavian destroy Antony, who was trying to become king, and then become king himself?

That is correct.

His adopted title, "The Illustrious One," also shows a delusion of megalomania.

It was a religious honorific.

And Augustus did not seek power for himself.

As the victor of the Civil War and the commander of the most numerous armies, it was his duty to restore law and order to Rome so that other powers would not continue to fight.

He did not restore the law, but subordinated it to himself.

wrong.

Augustus sought to restore the prestige of the Senate, improve food security for the lower classes, and relinquish military control when he resigned from the consulship.

just optics.

He used his military influence and personal wealth to steer the Senate to his advantage, while retaining the power of the tribunal and the right to celebrate military victories.

He continued to rule the states with the most legions.

If that was not enough, he held the office of consul two more times to promote his grandsons.

He was clearly trying to establish a dynasty.

But what did he do with that power?

I'm glad you asked, Your Highness.

Augustus' achievements are too numerous to enumerate.

He established consistent taxation in all states and ended private exploitation by local tax officials.

He personally financed the road network and hired delivery men to facilitate the movement of news and troops through the territory.

And it was during Augustus' reign that many of Rome's famous public buildings were built.

Writers of the time almost unanimously praised his reign.

Did the writers have no other choice?

Augustus banished many people, including Ovid, one of Rome's greatest poets, for vague sins.

And you forgot to mention intrusive laws concerning the private life of the people, such as those punishing adultery, restricting marriage between social classes, and even penalties for remaining unmarried.

He was trying to improve the people and instill discipline.

and he succeeded.

His accomplishments speak for themselves. Forty years of domestic stability, a professional army that extended Rome's borders in all directions, and a government that is still remembered as an example of civic virtue.

His legacy was a tradition of imperial and military dictatorships of endless conquests until they collapsed.

Every time a dictator in the uniform of a general commits atrocities while claiming to act for the "people," we have to thank Augustus Caesar.

So you're saying that Augustus was a good emperor, but you're saying he wasn't?

We are accustomed to celebrating the achievements and victories of historical leaders.

But to ask whether individuals should have such power at all is to put history itself on trial.

Tobacco is not good for us.

It's hardly news. We have known about the dangers of smoking for decades.

But what exactly does tobacco do to us?

Let's take a look at what happens when those ingredients pass through our bodies, and what physical benefits we might get when we finally quit smoking.

Every time you inhale smoke, over 5,000 chemicals in smoke come into contact with your body's tissues.

From the outset, tar, a black, resinous substance, begins to coat the teeth and gums, damaging tooth enamel and eventually causing tooth decay.

Over time, smoke also damages nerve endings in the nose, causing loss of the sense of smell.

Inside the airways and lungs, smoke increases the chances of developing infections and chronic diseases such as bronchitis and emphysema.

It does this by damaging the cilia, the tiny hair-like structures that keep the airways clean.

It then fills the alveoli, tiny air sacs that allow the exchange of oxygen and carbon dioxide between the lungs and the blood.

A toxic gas called carbon monoxide passes through that membrane and enters the blood, where it binds to hemoglobin and replaces the oxygen that would normally be transported throughout the body.

This is one reason why smoking can cause oxygen depletion and shortness of breath.

Within about 10 seconds, the bloodstream carries a stimulant called nicotine to the brain, triggering the release of dopamine and other neurotransmitters such as endorphins that create the pleasure that makes smoking so addictive.

Nicotine and other chemicals from cigarettes simultaneously cause blood vessels to constrict, damaging their delicate endothelial layers and restricting blood flow.

These effects on blood vessels lead to thickening of the vessel walls, making platelets more sticky and making blood clots more likely to form and cause a heart attack or stroke.

Many of the chemicals in tobacco can cause dangerous mutations in the body's DNA, causing cancer to form.

In addition, ingredients such as arsenic and nickel can interfere with DNA repair processes and impair the body's ability to fight many cancers.

In fact, about one in three cancer deaths in the United States is due to smoking.

And it's not just lung cancer.

Smoking can cause cancer in multiple tissues and organs, as well as damage to vision and weakened bones.

It makes it harder for women to get pregnant.

And in men, it can cause erectile dysfunction.

However, for those who quit smoking, there is a big upside of near-immediate and long-term physical benefits.

A smoker's heart rate and blood pressure begin to return to normal just 20 minutes after smoking their last cigarette.

After 12 hours, carbon monoxide levels stabilize and the oxygen-carrying capacity of the blood increases.

One day after stopping, the risk of heart attack begins to decrease as blood pressure and heart rate normalize.

After two days, the nerve endings responsible for smell and taste begin to recover.

After about a month, your lungs will be healthier and you will be coughing and shortness of breath less.

The delicate, hair-like cilia in the airways and lungs begin to heal within a few weeks, and after 9 months, they become more resistant to infection.

By the first year after quitting smoking, your risk of heart disease is cut in half because your blood vessels improve.

After 5 years, the likelihood of blood clot formation has decreased dramatically and the risk of stroke continues to decline.

After 10 years, the odds of developing fatal lung cancer are reduced by 50%. This is probably due to the body's ability to repair DNA again.

After 15 years, the odds of developing coronary heart disease are essentially the same as those of nonsmokers.

It makes no sense to think that all this can be easily achieved.

Quitting smoking can lead to anxiety and depression caused by nicotine withdrawal.

Fortunately, however, such effects are usually temporary.

And quitting smoking is getting easier thanks to more tools.

Nicotine replacement therapy through gums, skin patches, lozenges, and sprays can help smokers move away from tobacco.

They prevent withdrawal symptoms by stimulating nicotinic receptors in the brain without the addition of other harmful chemicals.

Counseling and support groups, cognitive-behavioral therapy, and moderate-intensity exercise can also help smokers stay quit.

This is good news because quitting smoking will get you and your body back to health.

Every day we face questions like climate change and vaccine safety, and the answers depend heavily on scientific information.

Scientists say the world is warming.

Scientists tell us the vaccine is safe.

But how do we know if they are correct?

Why should we believe in science?

In fact, most of us don't believe in science.

Polls consistently show that a significant percentage of Americans do not believe in human-induced climate warming, do not believe in evolution by natural selection, and are unconvinced of the safety of vaccines.

So why should we believe in science?

Well, scientists don't like to talk about science as a matter of belief.

In fact, they would contrast science with faith, saying that faith is the realm of faith.

And faith is separate and distinct from science.

Surely they would say that religion is based on faith, or on the calculation of Pascal's wager.

Blaise Pascal was a 17th-century mathematician who tried to bring scientific reasoning to the question of whether we should believe in God. His bet went like this: "God doesn't exist, but I really have nothing to lose if I decide to believe in him."

A few hours on Sunday.

(Laughter.) But if he exists and I don't believe him, I'm in deep trouble.

So Pascal said, we had better believe in God.

Or, as one of my college professors put it, "He clutched the railings of faith."

He left behind science and rationalism to take that leap of faith.

But the truth is, for most of us, most of the scientific claims are just an afterthought.

Most of the time, we can't really judge scientific claims for ourselves.

And in fact, this is actually true for most scientists outside their own field as well.

So, come to think of it, geologists can't tell if vaccines are safe.

Most chemists are not evolutionary experts.

Physicists cannot tell whether cigarettes cause cancer, despite some claims.

So why accept the claims of other scientists if even scientists themselves have to take a leap of faith outside their own specialties?

Why would they believe each other's claims?

And should we believe those claims?

So what I want to argue is that yes it should, but it's not for the reasons that most of us think.

Most of us were taught in school that the reason we should believe in science is the scientific method.

We have been taught that scientists follow a certain method and that this method guarantees the veracity of their claims.

The method that most of us were taught in school, which can be called the textbook method, is hypothetical deduction.

According to the standard or textbook model, a scientist makes a hypothesis, speculates on the outcome of that hypothesis, and then goes out into the world and says, "Okay, is that result true?"

Can we observe what is happening in nature?

And if they're true, scientists say, "Great, it turns out the hypothesis was correct."

Therefore, the history of science is full of famous examples of scientists who have done just this.

One of the most famous examples comes from the work of Albert Einstein.

When Einstein developed his general theory of relativity, one of the consequences of his theory was that space-time is not just empty, it actually has structure.

And that the fabric bent in the presence of a massive object like the sun.

So if this theory is true, it means that light passing through the sun should actually be bent around the sun.

It was a pretty amazing prediction, and it took scientists several years before they could test it, but they did in 1919 and, alas, it turned out to be true.

In fact, starlight bends as it moves around the Sun.

This provided great support for the theory.

This was considered to be true proof of this radical new idea and was covered by many newspapers around the world.

Now, this theory or this model is sometimes called the deductive normative model, mainly because scholars like to complicate things.

But also because in the ideal case it's about the law.

Nomology, therefore, means to be related to laws.

And in the ideal case, the hypothesis should be a law of nature, not just an idea.

Why is it important that it is a law of nature?

Because the law cannot be broken.

If it's the law, it's always true anywhere, anytime, under any circumstances.

And you all know at least one example of the famous law. It is Einstein's famous equation E=MC2, which describes the relationship between energy and mass.

And the relationship is true no matter what.

However, it turned out that this model has some problems.

The main problem is that it's wrong.

that's not true. (Laughter) And I'll tell you three reasons why it's wrong.

So the first reason is the logical one.

It is a question of the fallacy of affirming the consequent.

This is another flashy, academic way of saying that a false theory can still make a correct prediction.

Therefore, a correct prediction does not prove logically that the theory is correct.

And there are good examples of this, again from the history of science.

This is a picture of the Ptolemaic Universe with the Earth at the center of the universe and the Sun and planets revolving around it.

The Ptolemaic model has been believed by many very wise people over the centuries.

Well, why?

The answer is that many predictions have come true.

Thanks to the geocentric theory, astronomers were able to accurately predict the motions of the planets. In fact, it was initially possible to make more accurate predictions than the now-correct Copernican theory.

This is one of the problems with the textbook model.

The second problem is a practical problem, a problem of auxiliary hypotheses.

Auxiliary hypotheses are assumptions that scientists make, even if they are not aware they are making them.

An important example of this therefore comes from Copernicus' model, which was eventually superseded by the Ptolemaic system.

So, as Nicolaus Copernicus said, in reality the earth is not the center of the universe, but the sun is the center of the solar system, and the earth moves around the sun.

Scientists said, "Okay, Nicholas, if that were true, we should be able to detect the movement of the Earth around the Sun."

This slide demonstrates a concept known as stellar parallax.

And astronomers say, if the earth is moving and we're looking at a star that stands out, say Sirius, I know you can't see the star because I'm in Manhattan, but imagine you're in the country, imagine you chose that country life — and we see a star in December, and we see that star against a background of distant stars.

If you make the same observations six months later in June when the Earth moves to this position, you will see the same stars in a different background.

The difference, the difference in angle, is the stellar parallax.

So this is a Copernican model prediction.

Astronomers searched for star parallax, but found none.

And many argued that this proved the Copernican model wrong.

what happened?

Well, in hindsight, we can say that the astronomers had two supporting hypotheses, and now we can say that they were both wrong.

The first is an assumption about the size of the Earth's orbit.

Astronomers assumed that the Earth's orbit is large compared to the distance to the stars.

Today we will paint more like this. This is from NASA and shows that the Earth's orbit is actually very small.

It's actually much smaller than what's shown here.

Therefore, stellar parallax is very small and in practice very difficult to detect.

And that leads to the second reason why the prediction didn't work. Scientists assumed that the telescopes they owned were sensitive enough to detect parallax.

And it turned out not to be true.

It wasn't until the 19th century that scientists were able to detect stellar parallax.

So there is also a third problem.

The third problem is that of the simple fact that much science does not fit the textbook model.

A lot of science isn't deductive, it's actually inductive.

This means that scientists don't always start with theories and hypotheses, but often with observations of what is happening in the world.

And the most famous example of that is Charles Darwin, one of the most famous scientists who ever lived.

When Darwin set out on the voyage of the Beagle as a young man, he had no hypotheses or theories.

He wanted to pursue a career as a scientist and started collecting data.

Mostly he knew he hated drugs because seeing blood made him sick. So I had to choose another career path.

So he started collecting data.

And he collected many, including the famous finch.

When he collected these finches, he threw them into the sack, not knowing what it meant.

Many years later, back in London, Darwin began examining the data again and developing an explanation. The explanation was natural selection theory.

In addition to inductive science, scientists often participate in modeling as well.

One of the things scientists want to do in life is explain why things happen.

So how do we do that?

One way to do that is to build a model to test your ideas.

This is a photograph of the 19th century Scottish geologist Henry Cadell.

You can tell he's Scottish because he wears a deerstalker and wellington boots.

(Laughter) And Cadell wanted to answer the question of how mountains are formed.

And one of the things he observed was that when you look at a mountain like the Appalachians, you can really see the rock in it being folded, and you can see that it's folded in a certain way, suggesting to him that it might actually be compressing sideways.

This idea would later play a major role in the discussion of continental drift.

So he built this model, a crazy contraption with levers and wood. And here is his wheelbarrow, bucket and big hammer.

I don't know why he's wearing Wellington boots.

It may rain.

And he created this physics model to demonstrate that, in fact, lateral compression of a rock can create patterns in rock, at least in this case mud, that look like mountains.

So it was a discussion about the cause of the mountain.

Most scientists today prefer to work internally, so they don't build physical models as much as they do computer simulations.

But a computer simulation is a kind of model.

It's a mathematical model that, like the 19th century physical model, is very important in thinking about causes.

One of the big problems with climate change is the overwhelming amount of evidence that the earth is warming.

The black line on this slide shows measurements that scientists have made over the past 150 years, showing that the Earth's temperature has been steadily rising. Especially in the last 50 years, we can see dramatic increases of nearly 1 degree Celsius and nearly 2 degrees Fahrenheit.

So what is driving that change?

How can we know the cause of the observed warming?

Well, scientists can model it using computer simulations.

This diagram shows a computer simulation that looks at all the different factors we know can influence Earth's climate: sulfate particles from air pollution, volcanic dust from volcanic eruptions, changes in solar radiation, and, of course, greenhouse gases.

And they asked, what set of variables can we incorporate into the model to actually replicate what we see in reality?

This is real black life.

Here is this light gray model and the answer is the model that includes all of the above. SAT answer E.

The only way we can reproduce the observed temperature measurements is to combine all of these, including greenhouse gases. In particular, we can see that the increase in greenhouse gases has tracked this very dramatic temperature increase over the past 50 years.

This is why climate scientists say we not only know climate change is happening, but that greenhouse gases are a major part of the reason.

Now, scientists do so many different things that the philosopher Paul Feylabent famously said, "The only principle of science that does not hinder progress is that anything goes."

Now, this quote is often taken out of context because Feiellaabend isn't actually saying anything is possible in science.

What he was saying, the full text he actually quoted, is, "If you ask me what the scientific method is, I can't help but say: Anything goes."

What he meant was that scientists do different things.

Scientists are creative.

But this leaves the doubts behind. If scientists do not use a single method, how do they decide what is right and what is wrong?

And who will judge?

The answer is that scientists judge, and they judge by judging the evidence.

Scientists collect evidence in many ways, but no matter how they are collected, it must be scrutinized.

This has led sociologist Robert Merton to focus on this question of how scientists scrutinize data and evidence, saying they do so in a way he calls "systematic skepticism."

And by that he meant they were organized because they were doing it in groups, and skeptical because they were doing it from a position of mistrust.

In other words, the burden of proof is on the person making the new allegation.

In this sense, science is inherently conservative.

It is very difficult to convince the scientific community to say, "Yes, we know something, this is true."

Thus, despite the popularity of the concept of paradigm shifts, in practice truly major changes in scientific thinking prove to be relatively rare in the history of science.

So, finally, another thought comes to mind. If scientists judge the evidence collectively, then historians come to focus on the question of consensus, and, after all, what science is, what scientific knowledge is, is the consensus of scientific experts who, through this process of systematic scrutiny, collective scrutiny, have judged the evidence and come to a yes or no conclusion about it.

Scientific knowledge can therefore be considered to be the consensus of experts.

You can also think of science as a kind of jury, except when it's a very specific kind of jury.

It's not a peer jury, it's a geek jury.

This is a jury made up of men and women with PhDs, and unlike a traditional jury, which has only two choices: guilty or not guilty, a scientific jury actually has many options.

Scientists can say, "Yes, something is true."

A scientist can say, "No, that's wrong."

Or they might say that it may be true, but that more effort needs to be made to gather evidence.

Or they could say that it might be true, but we don't know how to answer the question, so we'll put it aside and maybe come back to it later.

That's what scientists call "esoteric."

But this brings us to our final problem. If science is what scientists say, isn't it just an appeal to authority?

And weren't we all taught in school that appeals to authority are logical fallacies?

Now, here is the paradox of modern science, the paradox of the conclusions historians, philosophers and sociologists have reached. Indeed, science appeals to authority, but like Plato, Socrates, and Einstein, no matter how clever the individual is, it is not the authority of the individual.

It is the authority of the collective community.

It's a kind of crowd wisdom, but you can think of it as a very special kind of crowd.

Science appeals to authority, but it is not based on individuals, no matter how clever those individuals may be.

It is based on the collective wisdom, collective knowledge and collective research of all scientists who have worked on a particular problem.

Scientists have a kind of culture of collective distrust, and this "show me" culture is exemplified by this lovely lady showing evidence to her colleagues.

Of course, these people are so happy that they don't really look like scientists.

(Laughter) Now, let's move on to the last point.

Most of us wake up in the morning.

Most of us trust our cars.

Well, now that I think about it, I'm in Manhattan. It's a bad analogy, but most Americans who don't live in Manhattan wake up in the morning, get in their car, turn the ignition on, and the car moves. It works incredibly well.

Modern cars rarely break down.

Why is that? Why do cars work so well?

It's not the genius of Henry Ford or Karl Benz or even Elon Musk.

Because modern cars are the product of over 100 years of hard work by hundreds, thousands, and tens of thousands of people.

Modern automobiles are the culmination of the wisdom and experience of everyone who has been involved in automobiles, and the reliability of technology is the result of that accumulation.

We benefit not only from the genius of Benz, Ford and Musk, but also from the collective wisdom and hard work of all those involved in modern automobiles.

And the same applies to science, only science is even older.

The basis of our trust in science is really the same as the basis of our trust in technology, the same as the basis of our trust in everything: experience.

But just as we blindly trust something, we shouldn't blindly trust it either.

Our trust in science, like science itself, must be evidence-based, which means scientists must become better communicators.

They need to explain to us not only what they know, but how they know, which means we need to be better listeners.

thank you very much.

(applause)

In 1066, 7,000 Norman infantry and knights crossed the English Channel on warships.

Their target is Britain, which has a population of over 1 million people.

Their voyage was a short voyage with great consequences.

And at about the same time, other groups of Normans were setting out across Europe, making adventures that resonated throughout the continent's history.

So who were these warriors and how did they leave such far-reaching footprints?

Our story begins over 200 years ago, when Vikings began settling the northern coast of France as part of the Great Scandinavian Migration across Northern Europe.

French locals called these invaders Normans, after the direction from which they came.

Ultimately, the Frankish king Charles negotiated peace with the Viking leader Rollo in 911, granting him land along the northern French coast later known as Normandy.

It turned out that the Normans were able to adapt to their newly settled life.

They married Frankish women, adopted the French language, and soon began converting from Norse paganism to Christianity.

But even as they adapted, they maintained the warrior traditions and conquest spirit of their Viking ancestors.

In time, ambitious Norman knights sought new challenges.

The Normans' most famous achievement was the conquest of England.

In 1066, William, Duke of Normandy, challenged the claims of the new King of England, Harold Godwinson.

Shortly after landing in England, William and his knights encountered Harold's army near the town of Hastings.

The climactic moment of the battle, immortalized in the 70-metre-long tapestry of the Bayeux, saw an arrow hit Harold's eye that decided the Normans' victory.

William strengthened his interests with a massive castle-building movement and a restructuring of English society.

He lived up to the moniker of 'William the Conqueror' through the extensive survey known as the Domesday Book, which recorded the population and ownership of all lands in England.

Norman French became the language of the new court, but the common people continued to speak Anglo-Saxon.

Over time, the two merged to form the English we know today, but the distinction between lord and peasant is still felt in synonymous combinations such as cattle and beef.

By the end of the 12th century, the Normans had expanded further into Wales, Scotland and Ireland.

Meanwhile, an independent group of Norman knights traveled to the Mediterranean, inspired by the story of a pilgrim returning from Jerusalem.

There they threw themselves into a web of conflicts between established powers across the region.

They became highly respected mercenaries, and in one of these battles they made the first recorded heavy cavalry charge using a sleeper spear. This is a devastating tactic that quickly became standard in medieval warfare.

The Normans were also central figures in the First Crusade of 1095-1099, a bloody conflict that re-established Christian rule in certain parts of the Middle East.

But the Normans did more than just fight.

As a result of the victories, leaders like William Ironarm and Robert the Craft secured lands throughout southern Italy, eventually amalgamating them to form the Kingdom of Sicily in 1130.

Under Roger II, the kingdom became a beacon of multicultural tolerance in a world torn apart by religious and civil wars.

Muslim Arab poets and scholars served at the court alongside Greek sailors and architects of the Byzantine Empire.

Arabic remained an official language along with Latin, Greek and Norman French.

The geographic knowledge of the world was compiled in Roger's book, whose maps of the known world will remain the most accurate available for 300 years.

And the church built in Palermo combined Latin-inspired architecture, Arab ceilings, and Byzantine domes, all decorated with elaborate golden mosaics.

So if the Normans were so successful, why didn't they still exist?

In fact, this was a key part of their success. To not only rule the societies they have conquered, but to become part of them.

The Normans eventually disappeared as a separate group, but their contributions remained.

And today, from the castles and cathedrals that dot the European landscape, to the places where English is spoken, the Norman legacy lives on.

I want to tell you about one thing, just one thing, and this has to do with when people ask me, "What are you doing?"

I usually answer that I am doing computer music.

Now, a few people stopped talking to me right then and there, and the rest of the people usually had blank eyes as if to say, "What do you mean by that?"

And I feel like I'm actually taking information away from them by telling them this. At that point, I usually panic and spit out the first thing that comes to mind. It means you don't know what you're doing.

That's true.

After that, the thought usually arises that whatever I am doing, I love it.

And today, I want to share with you what I love and why.

I'll start with this question: What is computer music?

And I'll do my best to provide a definition, perhaps by telling a story through some of the things I've been working on.

And I think the first one in our story will be something called ChucK.

Well, ChucK is a programming language for music, open source and free to use. And I think all modern operating systems crash as well.

Instead of going into detail about it, I'll show you a demo.

By the way, don't panic because you'll only be geeky here for a few minutes.

In fact, I hope you all will join me in otaku.

If you've never written a single line of code before, don't worry.

I'm sure you can help with this too.

First create a sine wave oscillator. Let's call the sine wave generator "Ge".

And connect "Ge" to the DAC.

It's kind of an abstraction for sound output on my computer. have understood?

Then I tried connecting to the speaker.

Now suppose my frequency is 440 Hz. This action advances the time by 2 seconds.

got it. Play this -- (tone) -- and you'll hear a 440 hertz sine wave for 2 seconds.

Ok, great. Copy and paste this and change some of the numbers. Leave 220.5, 440 alone, and .5 and 880.

By doubling the frequency, you actually raise it in successive octaves, giving you this series of tones (tones).

got it. Now you can create all sorts of really scary single sine wave music. But I'm going to do what computers are good at: iteration.

Put this all in a while loop. You don't actually need to indent, it's purely for aesthetic reasons.

Good practice, isn't it?

And when we do this, (Tones) it's going to go on for a while.

In fact, it probably won't stop until this computer crashes.

I can't prove it empirically, but I hope you'll believe me.

Then replace this 220 with math.random2f.

Generate a random number between 30 and 1,000 and send it to my frequency.

Do this every 0.5 seconds.

(Tone) Let's do this every 200 ms.

(voice) One hundred.

(tones) Okay.

At this point, we have reached what we would like to consider the standard of computer music.

To me, this is the sound a mainframe should make when it's thinking seriously.

This sounds like the square root of 5 million.

So is this computer music?

Well, by definition, I think it's a kind of computer music.

It's probably not the kind of music you listen to while driving down the highway, but it's the cornerstone of computer-generated music, and we've actually used ChucK to build the instruments of the Stanford Laptop Orchestra, which is based here at the Stanford Music Acoustic Computer Research Center.

Today, the laptop orchestra is an ensemble of laptops, humans, and a specialized hemispherical speaker array.

The reason I have these is so that the instrument sounds I create from my laptop come from close to the instrument and the performer, just like traditional acoustic instruments.

Even if you play the violin here, naturally no sound will come out of the PA. system, but from the artifact itself.

So these speakers are meant to emulate that.

I'll show you how I built it.

First, go to IKEA and buy a salad bowl.

This is an 11 inch blandamat.

That's the real name, and I actually use it when I make salads at home. It's not a joke.

The first step is to turn it upside down, drill 6 holes per hemisphere, make a base plate, put the car speaker drivers in it, and place them with the amplifier in the enclosure. Put it all together and you have a hemispherical speaker array.

Add people, add laptops, and you have a laptop orchestra.

What would a laptop orchestra sound like?

Now let's demonstrate the approximately 200 instruments we've created so far for laptop orchestras.

And what I'm going to do is actually tackle this problem.

This in front of me was actually a commercial game controller called Gametrak.

It comes with a glove that you can actually put on your hand.

It is attached to the base and tracks your hand position in real time.

It was originally designed as a golf controller that detects swing motion.

It turned out to be a pretty big flop commercially, and at that point they slashed the price to $10, at which point computer music researchers said, "This is great!"

Now you can make a prototype of the instrument. ”

So let me introduce you to one of the many instruments we have created. The instrument is called "Twilight" and fits this metaphor of drawing sound from the ground.

So let's see if this works.

(music) And put it back.

And if you go left or go right, it sounds like an elephant in pain.

It sounds a little metallic.

Please turn it a little.

(Music) It's like a hovering car.

have understood.

This third one is a ratchet-like interaction, so let's turn it up.

(music) It's a different exchange.

The fourth is drones.

(music) And finally, this is a completely different interaction. Imagine a giant invisible drum sitting on stage that I would play.

(drums) (laughter) So this is one of many instruments in a laptop orchestra.

(Applause.) Thank you.

And when you put them together, you get something like this.

(music) Well, from my experience building a lot of instruments for laptop orchestras. I also wondered, out of curiosity, what would happen if we used these expressive instruments to reach a wider audience. What's more, a healthy bout of madness — all three combined — actually led me to co-found a startup called Smule in 2008.

Today, Smule's mission is to create expressive mobile music, and one of the first instruments we created is called the Ocarina.

Let's do a quick demo of this.

So the ocarina — (music) — is based on this ancient flute-like instrument called the ocarina. This is a 4-hole English pendant configuration that literally blows into the microphone to produce sound.

And there's actually a little ChucK script running here that detects how hard you blow and synthesizes a sound.

Since the (music) vibrato is mapped to the accelerometer, we know that — (music) I get it. So let me play a little Bach for you.

Here you can hear some melodic accompaniment.

The accompaniment actually follows the melody, not the other way around.

(music) And this is designed to help you take the time to figure out where your expressive space is. And if you want, when you're always ready, you can hang around here for a while for really dramatic effect — (music) And on those longer notes, use more vibrato towards the end of the note to give it a little more expressive quality.

(music) Hmm, what a nice chord to end this excerpt with.

(Applause.) Thank you.

I think it's a good question to ask about ocarinas. Is this a toy or a musical instrument? Probably both, but I think the more important question for me is whether it's expressive.

And at the same time, I think making these kinds of instruments raises questions about the role of technology and the role of technology in how we make music.

Apparently, not so long ago, say, just 100 years ago, and not too long in human history, families at the time made music together as a common form of entertainment.

I don't think that's actually happening anymore.

Look, this is before the radio, before the recording.

Over the last 100 years, all this technology has made music more accessible to us as listeners and consumers, but somehow it seems like we make less music than we used to.

I don't know why.

Maybe because it's too easy to just hit the play button.

Listening to music is great, but creating your own music is a special joy.

And I think part of what I'm doing this activity for is to take us back in time a little bit. right?

Now, if that's one goal, another is to look to the future and think about what new music can be made, enabled by technology, perhaps as yet unnamed, that could ultimately change the way humans make music.

I'll give you one example here, but that's another feature of Ocarina.

It's a globe, and you're actually listening to other Ocarina users blowing into their iPhone and playing something.

This is "GIR". "R.I.K." from Texas I don't know why Los Angeles has this three-letter name today.

They all play pretty minimalist music here.

(music) And the idea of ​​this is, well, the technology shouldn't come to the fore here, and — (laughter) — we've actually opened this up.

My first thought is that I know there is someone playing music somewhere. I think it's a small but important human connection, perhaps made possible by technology.

As a final example, and perhaps my favorite, in the wake of the 2011 Japan earthquake and tsunami disaster, a woman reached out on one of our singing apps to invite people to sing along to a version of "Lean on Me."

Now, these apps have features that allow any user to add their own voice to existing performances by other users or groups of users, and in a way she created this kind of global ad-hoc enclosure of strangers. And within a few weeks, thousands of people had joined in on this, and people from all over the world could be seen gathering all these lines in Tokyo, where the first performance of the song was sung.

This is what it looks like with 1,000 people.

That's 1,000 voices.

(Recording) ♪ Sometimes in life ♪ ♪ We all have pain and we all have sadness ♪ ♪ But if we're smart ♪ ♪ I know there's always a tomorrow ♪ ♪ Lean ♪ ♪ When you're not strong ♪ ♪ And I'll be your friend ♪ ♪ I'll help you keep going ♪ ♪ It won't last long ♪ ♪ Until you need it ♪ ♪ Is this computer music?

(Applause.) Was that computer music?

Um, I think so; it really wouldn't have been possible without a computer.

But at the same time, it's also just a human being, and what I've essentially answered so far is probably why I'm doing this. Finally, let's go back to the first question: what is computer music?

I think the catch here, at least for me, is that computer music isn't really about computers.

It's about people.

It's about how technology can change the way we think, act, and make music, and perhaps even more ways we can connect with each other through music.

So I would like to say, this is computer music, thank you for listening.

(applause)

Human Voice: It's the instrument we all play.

Probably the most powerful sound in the world.

He is the only one who can start a war or say "I love you".

Despite this, many people have the experience that even if they speak, the other person does not listen to them.

why?

How can we speak powerfully to make a difference in the world?

What I would like to suggest is that there are many habits that should be abandoned.

I have collected the seven deadly sins of speaking here for your enjoyment.

This isn't meant to be an exhaustive list, but I think these seven are pretty big habits that anyone can fall into.

First, gossip.

Speak ill of people who are not there.

It's not very good practice, and I know full well that the gossipers will be gossiping about us in five minutes.

Second, judge.

We know these people in our conversations, but it is very difficult to listen to them when we know that we are being valued and at the same time being perceived as lacking.

Third is negativity.

You can fall into this.

My mother was very negative in her later years, and it was hard to listen to her.

I remember one day I said to her, "Today is October 1st," and she said, "You know, aren't you scared?"

(Laughs) It's hard to hear when someone says something so negative.

(Laughter) And another form of negative attitude is complaining.

Well, this is England's national art.

It's our national sport.

We complain about the weather, sports, politics, everything, but really, complaining is viral misery.

We are not spreading the sun and brightness to the world.

excuse.

Perhaps we've all been this guy at some point.

Some people condemn it.

They don't take responsibility for their actions just passing it on to others. Again, it's hard to listen to someone with that kind of attitude.

Penultimate, 6th of 7, Embroidered, Exaggerated.

In fact, it can even demean our language.

For example, if you saw something really great, what would you call it?

(Laughter) And of course this exaggeration is a lie. We don't want to listen to people we know are lying.

And finally dogmatism.

Confusion of facts and opinions.

If you confuse the two things, you are hearing the sound of the wind.

Someone throws their opinion at you as if it were the truth.

It's hard to hear.

So let's talk about the seven deadly sins.

I think these should be avoided.

But is there a way to think positively about this?

yes, I have.

If we want to give strength to our speeches and make a difference in the world, I would like to suggest that there are four really strong cornerstones, foundations, on which we can stand.

Fortunately, these things spell words.

The word "hail" also has a great definition.

I'm not talking about things falling from the sky hitting your head.

What I am referring to is this definition of greeting or praising enthusiastically, and given these four things, I think our words will be taken that way.

So what do they stand for?

See if you can guess.

H. Honesty, of course, being true to what you say, being straight and clear.

A is real and who you are.

A friend of mine described it as standing true to yourself, which I think is a nice way of saying it.

“I” is integrity, being what you say, doing what you say, and being someone people can trust.

And L is love.

I don't mean romantic love, I mean wishing people happiness. There are two reasons.

First of all, I think absolute honesty may not be what we want.

I mean, well, you look ugly this morning.

You probably don't need it.

Of course, being love-forged and being honest is a wonderful thing.

But it's also very difficult to judge someone when you really want them to be happy.

I'm not even sure you can do these two things at the same time.

Hi hello

And now it's what you say, it's like an old song, it's what you say and how you say it.

You have a great toolbox.

This instrument is great, but it's a toolbox that few people have yet opened.

Now let's explore there with you a bit and pull out some tools you might want to take home and play with. This will improve your speaking ability.

For example, register.

Now, the falsetto range may not be very useful most of the time, but there is a range in between.

For those of you who are voice coaches, I'm not going to get too technical about this.

However, you can find your own voice.

If we go here to the throat area, that's where most of us start talking most of the time.

But if you want to gain weight, you have to drop from here to your chest.

Can you tell the difference?

It is true that we vote for politicians with low voices because we associate depth with power and authority.

That's the register.

Next is the tone.

That's how your voice feels.

Again, research shows that we prefer voices that are as rich, smooth and warm as hot chocolate.

Even if it's not you, it's not the end of the world, because you can train.

Go get a voice coach.

And there are so many amazing things you can do to improve your voice tone through breathing, posture, and exercise.

Then prosody. I love prosody.

This is the song we sing, the metalanguage we use to convey meaning.

It is the fundamental thing that determines the meaning of a conversation.

Without prosody at all, someone who speaks all on one note is very difficult to hear.

That's where the word "monotonic", or monotonous, monotonous, came from.

Also, now repetitive prosody is coming in and every sentence ends as if it were a question, even though it's actually a statement rather than a question.

(Laughter) Repeating that would limit your ability to actually communicate through prosody. I think that's unfortunate. So try to break that habit.

pace.

Sometimes I get very excited and say something quickly, sometimes I slow it down a bit to emphasize it, and then, of course, my old friend goes silent.

It's okay to have some silence during a conversation, right?

Hmmm, oh, no need to fill in.

it is very powerful.

Of course, the pitch often changes with the pace to show excitement, but it can also be done with just the pitch.

where did you put my key?

(high tone) Where did you put my key?

Therefore, these two deliveries have slightly different semantics.

And finally the volume.

(Loudly) You can really get excited with the volume.

I'm sorry if I startled anyone.

Or you can be very quiet and really get their attention.

Some are broadcasting all the time.

Please don't let that happen.

It's called sodocasting (laughter) and it's the careless and careless imposition of your sound onto the people around you.

Of course, this is most important when it's time to do something really important.

Maybe he's standing on a stage like this giving a lecture to people.

It could be a marriage proposal, a request for a raise, or a wedding speech.

Whatever it is, if it really matters, you owe it to yourself to look at this toolbox and the engine it works with. The engine will not run properly without warming up.

Warm up your voice

In fact, let me show you how.

Why don't you all stand up for a while?

Here are 6 vocal preparation exercises I do before every talk.

Do these whenever you talk to someone important.

First, raise your arms, take a deep breath, and sigh, ah ah, like that.

1 more time.

Oh that's very nice.

Now warm your lips and go ba, ba, ba, ba, ba, ba, ba, ba. very good.

And now, blu-lulu-lulu, just like when I was a kid.

Bururu. Your lips should now look lively.

Then exaggerate your tongue and do la, la, la, la, la, la, la, la, la, la.

beautiful. This is getting really good.

And roll R. Rrrrrrr.

It's like champagne for the tongue.

Finally, if there's one thing I can do, the pros call it a siren.

It's really good. It starts with ``we'' and continues to ``aw''.

"we" is high and "aw" is low.

So go, weeeaawww, weeeaawww.

wonderful. Let's applaud.

Please take a seat, thank you.

(Applause) Next time you speak, please speak in advance.

So let me finish by putting this in context.

This is a critical point.

Is this how it is now?

We do not speak well to people who are simply not listening in a noisy or acoustic environment.

I've talked about that at various stages on this stage.

What would the world be like if we were to speak forcefully to people who were consciously listening in an environment that was actually fit for purpose?

Or, more broadly, what would the world be like if we consciously made sound, consciously consumed sound, and consciously designed every environment for sound?

It certainly sounds beautiful, a world where understanding is the norm, and an idea worth spreading.

thank you.

(applause)

It has a lot of 1's and 0's.

It is the so-called binary information.

This is how computer conversation works.

That's how we store information.

That's the way computers think.

It's how computers do everything computers do.

I am a cybersecurity researcher. So my job is to take a deep dive into this information and try to understand what all the 1's and 0's mean.

Unfortunately, we're not just talking about the 1s and 0s you see on the screen here.

We're not just talking about a few pages of 1's and 0's.

We're talking about billions of 1's and 0's that nobody understands.

Now, as exciting as it is to say, when I first started cyber — (laughter) — when I first started cyber, I wasn't sure if sorting between 1's and 0's was what I wanted to do for the rest of my life. Because in my mind, cyber kept viruses out of Grandma's computer, kept people's Myspace pages from being hacked, and, perhaps, on my brightest day, kept someone's credit card info from being stolen.

It's important, but I didn't want to spend my life that way.

But after working as a defense contractor for 30 minutes, I quickly realized my cyber thinking was a little off.

In fact, from a national security perspective, keeping my grandmother's computer free of viruses was surprisingly low on the priority list.

The reason is that cyber is much bigger than any of them.

Even if you don't own a computer, cyber is an integral part of all of our lives because computers are an integral part of all of our lives.

Everything in your car is controlled by a computer, from GPS to airbags.

They control your phone.

Thanks to these, you can call 911 and call someone.

They control the entire infrastructure of our country.

Thanks to them we have electricity, heat, clean water and food.

Computers control all military equipment, from missile silos to satellites to nuclear defense networks.

All these things are possible thanks to the computer, and therefore if something goes wrong, the cyber can make all this impossible.

But that's where I intervene.

A large part of my job is to defend against all of these things and keep them working, but cyber is about attack as well as defense, so sometimes breaking any of these is part of my job.

We are entering an era of talking about cyber weapons.

In fact, the potential for cyberattacks is so high that cyber is considered the new arena of warfare.

war.

That's not necessarily a bad thing.

On the one hand, it means that we have a whole new front on which we need to defend ourselves, but on the other hand, we have a whole new way of attacking, a whole new way of thwarting the evil deeds of evil people.

Now let's consider a completely theoretical example.

Suppose a terrorist wants to blow up a building and wants to do the same again and again.

So he doesn't want to be in that building when it explodes.

He plans to use his mobile phone as a remote detonator.

Well, once a hail of bullets and a car chase was the only way to stop this terrorist, now that's not always the case.

We are entering an era where we can stop him from 1,000 miles away with the push of a button. Because whether he knew it or not, he stepped into cyber realm the moment he decided to use his cell phone.

A well-crafted cyber-attack can infiltrate your phone, defeating the battery's overvoltage protection and severely overloading the circuitry, causing the battery to overheat and explode.

No more phones, no detonators, no more terrorists, all at the push of a button from a thousand miles away.

So how does this work?

Everything goes back to 1's and 0's.

Binary information keeps your phone working, but if used correctly it can explode your phone.

So when you start looking at cyber from this perspective, spending your life sifting through binary information seems kind of exciting.

But there are pitfalls here. This is really, really hard. Here's why.

Think about everything you have on your phone.

I have the photo I took.

There's music you listen to

You have contact lists, emails, and probably 500 apps you've never used in your life. Behind all of this is the software, the code, that controls the phone, and somewhere embedded within that code is a tiny component that controls the battery. That's what I'm really after, but these are all just a bunch of 1's and 0's all mixed up.

In cyber parlance, this is called "finding a needle in a bunch of needles." This is because they all look pretty much the same.

I'm looking for one key piece that blends with everything else.

So let's move away from the theoretical situation of exploding a terrorist's cell phone and see what actually happened to me.

Whatever I do, my work always starts with working with large amounts of binary information, and I'm always looking for the key ingredients to do something specific.

In this case, I was looking for very advanced, high-tech code that I knew could be hacked, but it was buried among a billion 1's and 0's.

Unfortunately I wasn't quite sure what I was looking for.

It was really, really hard to find because I had no idea what it was going to look like.

When I have to do that, what I have to do is basically go through different pieces of this binary information and decipher each piece to see if that's what I'm asking for.

After a while, I thought I had found the piece I was looking for.

I thought maybe it was this.

It seems almost correct, but I'm not sure.

I didn't know what those 1's and 0's represent.

So I spent some time putting this together, but it didn't go very well. And finally I decided to get over this and come for the weekend and not leave until I understood what this represented.

that's what i did. I joined the company on Saturday morning and in about 10 hours it felt like I had all the pieces of the puzzle.

I just didn't understand how they fit together.

I had no idea what those 1's and 0's meant.

After 15 hours, I started to have a better idea of ​​what was there, but I had a creeping suspicion that what I was looking at had nothing to do with what I was looking for.

After 20 hours, the pieces started coming together very slowly — (laughs) — at this point I knew I was on the wrong track, but I wasn't about to give up.

After 30 hours in the lab, I knew exactly what I was looking at. And it was right. it wasn't what i was looking for.

I spent 30 hours piecing together the 1's and 0's to form the picture of the kitten.

(Laughter) I wasted 30 hours of my life looking for this kitten, and it had absolutely nothing to do with what I was trying to achieve.

That left me frustrated and exhausted.

After 30 hours in the lab, I probably smelled awful.

But instead of just going home and finishing it, I took a step back and asked myself. What was wrong here?

How could you make such a stupid mistake?

I'm really good at this.

I do this for a living.

what happened?

Well, I found it easy to lose track of what you were doing when looking at this level of information.

It's easy to lose sight of the forest through the trees.

It's easy to fall down the wrong rabbit hole and waste tons of time doing the wrong thing.

But I had this epiphany.

We were looking at the data completely wrong from day one.

This is the idea of ​​1's and 0's in a computer.

That's not how people think, but we've been trying to adapt our minds to think more like computers so that we can make sense of this information.

Instead of trying to fit the mind to the problem, I should have fitted the problem to my mind. This is because our brains have great potential to analyze vast amounts of information. Except for this time.

What if you could unlock that potential simply by transforming it into the right kind of information?

So, with those ideas in mind, I sprinted from my basement lab at work to my basement lab at home, and it looked pretty much the same.

The main difference was that at work I was surrounded by cyber-related material, but cyber seemed to be the problem in this situation.

At home I am surrounded by everything I have learned so far.

So I combed through every book I could find, every idea I'd come across, to see how a problem could be transformed from one realm to an entirely different realm.

The biggest question was what do you want it translated into?

What are some things our brains do completely naturally that we can take advantage of?

Vision was my answer.

We have an amazing ability to analyze visual information.

We can combine color gradients, depth cues, and these different signals to create one coherent picture of the world around us.

can't believe it.

So if we could find a way to translate these binary patterns into visual signals, we could really free up the brain's power to process this.

So I started digging into binary information and asking myself, what should I do the first time I come across something like this?

And the first thing I want to do, the first question I want to answer is, what is this?

I don't care what it does or how it works.

what i want to know is what is this? That's all.

The way to understand it is to look at chunks of binary information, consecutive chunks, and look at the relationships between those chunks.

Once you have collected enough of these sequences, you begin to understand what exactly the information is.

Now let's go back to the situation of blowing up a terrorist's phone.

This is what English text looks like at the binary level.

If I go through my contact list, it looks like this:

It's very difficult to analyze this at this level, but if I take the same binary blob that I'm trying to find, and instead convert it to a visual representation, and convert those relationships, this is what I get.

This is what English text looks like in terms of visual abstraction.

Suddenly you see all the same information that was contained in 1 and 0, but in a completely different way - in a way that you can immediately understand.

You can quickly see all the patterns here.

It takes seconds to find patterns here, but hours and days to find patterns in 1s and 0s.

It would take anyone a few minutes to figure out what these patterns represent here, but it would take years of cyber experience to know what the same pattern represents with 1's and 0's.

So this part is caused by lowercase followed by lowercase in the contact list.

This is uppercase and uppercase, uppercase and lowercase, lowercase and uppercase.

This is caused by spaces. This is caused by carriage returns.

At this level, every detail of binary information can be seen in seconds as opposed to weeks or months.

Here's an image from my cell phone.

But a visual abstraction would look like this:

Here's what your music should look like, but here's a visual abstraction:

Most important to me, this is what your phone code looks like.

This is what I'm ultimately after, but this is its visual abstraction.

If you can find this, you can't blow up your phone.

You could spend weeks finding this in 1's and 0's, but it takes seconds to pick such a visual abstraction.

One of the most remarkable things about all of this is that it gives us a whole new way of understanding new information—things we've never seen before.

So I know what English is like at the binary level and I know what its visual abstraction is like, but I have never seen a Russian binary in my life.

It takes weeks just to figure out what you're looking at from raw 1s and 0s. But our brains can instantly recognize and recognize subtle patterns within these visual abstractions, so we can unconsciously apply them to new situations.

This is what visually abstracted Russian looks like.

Because we know what one language is like, we can recognize other languages ​​even if we are not familiar with that language.

It looks like this when it's a picture, but it looks like this when it's clip art.

The code on my phone looks like this, but the code on my computer looks like this:

Our brains are able to perceive these patterns in ways that we could never perceive if we looked at the raw 1s and 0s.

But really, we've only scratched the surface of what this approach can do.

We are just beginning to unlock our mind's ability to process visual information.

Transforming the same concept into three dimensions reveals a whole new way of understanding information.

Here you can find all patterns in seconds.

You can see the cross associated with the code.

A cube associated with the text appears.

Even the smallest visual artifacts can be picked up.

Things that would take weeks or months to find 1's and 0's are quickly revealed by some kind of visual abstraction. If you keep looking at this and throwing in more information, you'll find that you can process billions of 1's and 0's in seconds just by using your brain's built-in pattern analysis abilities.

This is really nice and useful, but it only tells me what I'm seeing.

So at this point, you can find the code on your phone based on visual patterns.

But that alone isn't enough to blow the battery.

The next thing we need to find is the code that controls the battery, but back to the bunch of needles problem.

That code looks pretty much like any other code on that system.

So you may not find the code that controls the battery, but there are many similar ones.

There's code that controls the screen, code that controls the buttons, and code that controls the microphone, so even if you can't find the battery code, you should be able to find one.

So the next step in the binary analysis process is to look at pieces of information that are similar to each other.

It's very difficult to do this at the binary level, but instead translate these similarities into visual abstractions so you don't even have to scrutinize the raw data.

All I have to do is wait for the image to light up and see if I've reached a similar part.

I track similarities like breadcrumb trails to find exactly what I'm looking for.

So at this point in the process, we've identified the code that controls the battery, but it's still not enough to blow up the phone.

The final piece of the puzzle is figuring out how that code controls the battery.

This requires identifying very subtle and detailed relationships within that binary information, which is also very difficult to do when looking at 1s and 0s.

But translating that information into a physical representation allows us to sit back and let the visual cortex do all the hard work.

It finds every detailed pattern, every important part.

You can see exactly how each piece of code works together to control the battery.

All this can be done in hours whereas previously the same process took months.

In the situation of theoretically blowing up a terrorist's phone, this is perfectly fine.

I wanted to know if this would really help with the work I do every day.

So I experimented with the same concept using some of the data I had looked at in the past, and again, trying to find very detailed and specific pieces of code in a huge amount of binary information.

So I looked into it at this level thinking I was looking at the right thing, but found this didn't have the connectivity I was hoping for for the code I was looking for.

Actually, I'm not sure what this is, but when I went down one level and looked at the similarities in the code, it didn't have any similarities like the code that exists there.

I can't even see the code.

In fact, if you look at it from this perspective, you can see that this is not code.

This is some kind of image.

From here you can see that this is a photo, not just an image.

Now that I know it's a picture, I have dozens of other binary conversion techniques to visualize and understand that information. So, in a matter of seconds, we can take this information and pass it through 12 other visual transformation techniques to find out exactly what we were looking at.

I saw — (laughter) — it was that kitten again.

All of this is possible because we have been able to find ways to translate extremely difficult problems into things that our brains do quite naturally.

So what does this mean?

Well, for kittens, this means no more hiding in 1's and 0's.

For me, that means no more wasted weekends.

For cyber, this means a radically new way of tackling the most impossible problems.

This means we have new weapons in the evolving cyber warfare arena, but for all of us, cyber engineers have the ability to be first responders in emergencies.

When time counts, we've unlocked the means to stop the bad guys.

thank you.

(applause)

I've been thinking a lot lately about the world and how it's changed over the last 20, 30, 40 years.

It would have been a tragedy for the chicken and its immediate family if a chicken had caught a cold and sneezed and died in a remote village in East Asia 20-30 years ago, but I don't think we were likely to fear a global pandemic and millions of deaths.

Twenty or thirty years ago, when North American banks went bankrupt because they lent too much money to some people who couldn't repay, it was bad for lenders and borrowers alike, but we didn't expect it to collapse the global economic system for nearly a decade.

This is globalization.

This is a miracle that has allowed us to transport our bodies, minds, words, pictures, ideas, teachings and learnings onto Earth faster and cheaper than ever before.

It brought a lot of bad things, as I just explained, but it also brought a lot of good things.

Many of us are unaware of the extraordinary successes of the Millennium Development Goals, some of which have been met long before the deadline.

It proves that this kind of humanity can achieve extraordinary progress if they really cooperate and work hard.

But lately, in a nutshell, globalization has taken us by surprise and we feel we are too late to respond to it.

Looking at the downsides of globalization, it can sometimes seem overwhelming.

I could go on and on about all the big challenges we face today: climate change, human rights, demographics, terrorism, pandemics, drug trafficking, human slavery, species loss, but against so many of these challenges we haven't made much progress.

In a nutshell, that is the challenge facing us all today at an interesting point in history.

Obviously that's what we have to do next.

We must somehow get our act together and find ways to better globalize our solutions so that we don't just become victims of the globalization of our problems.

Why are we so slow in achieving these advances?

What is the reason?

There are many reasons, of course, but perhaps the main reason is that we are organized as a species in the same way that we were organized 200 or 300 years ago.

There is one superpower left on Earth and it is 7 billion people. The seven billion of us who are causing all these problems, by the way, the same seven billion will solve them all.

But how is that seven billion organized?

They are still organized in some 200 nation-states that have governments that make the rules and force us to behave in certain ways.

It's a very efficient system, but the problem is that the way these laws are made and the way governments think is completely wrong for solving global problems. Because everything looks inward.

Politicians we have elected and politicians we have not elected are generally very fine-grained thinkers.

They don't have the brains to telescope.

They pretend and act as if they believe that all nations are islands that very happily exist independently of all other nations on tiny planets in their own little solar system.

This is the problem. Countries are competing with each other, countries are fighting with each other.

This week, like every week we've been watching, we're seeing people actually trying to kill each other from country to country, but even when that's not happening, there's a race between nations, each trying to move the next.

This is clearly not a good arrangement.

Clearly it needs to change.

We clearly need to find ways to encourage countries to start working together a little better.

And why wouldn't they?

Why are our leaders still so fixated on inwards?

Well, the first and most obvious reason is because that's what we want them to do.

That's what we tell them to do.

When we elect a government, or tolerate an unelected government, we are effectively saying that what we want is for the government to provide our country with a certain number of things.

We want them to thrive, grow, be competitive, be transparent, be just, and all of that.

So if we don't ask our governments to think a little bit outside and start thinking about the global problems that we're all going to end up with if we don't start thinking about it, we can hardly blame them if what they're doing is inward looking, if they still have microscopic minds instead of telescopic minds.

That is the first reason why things are so slow to change.

The second reason is that these governments, like the rest of us, are cultural psychopaths.

I don't mean to be rude, but you know what a psychopath is.

A psychopath is someone who unfortunately lacks the ability to truly empathize with other human beings.

When they look around, they see no other human being with a deep, rich, three-dimensional personal life, goals and ambitions.

What they see is a cardboard cutout, and it's so sad, so lonely, and fortunately, it's so rare.

But the truth is, most of us aren't very good at empathizing, are we?

Oh, sure, when we deal with people who look like us and walk, talk, eat, pray, and dress like us, we are very good at empathizing, but when it comes to those who don't, who don't dress like us, pray like us, or speak exactly like us, aren't we also apt to see them as cardboard cutouts?

And this is the question we must ask ourselves.

I think we need to keep an eye on it.

Are we and politicians cultural psychopaths in some way?

The third reason, too ridiculous to be worth mentioning, is the belief among governments that national and international agendas are and will not be compatible.

This is complete nonsense.

I am a policy adviser by profession.

In the past 15 years or so of advising governments around the world, I have never seen a domestic policy problem that can be solved more imaginatively, effectively and faster than treating it as an international problem, looking at the international context, comparing what other countries have done, introducing other countries, and working outside instead of inside.

So you might say, all things considered, why not work then?

Why can't we change politicians?

why can't we demand them?

Well, like many people, I spend a lot of time complaining about how difficult it is to get people to change, but I don't think there's a need to fuss about it.

I think we should accept that we are an inherently conservative race.

We don't like change.

It exists for very sensible evolutionary reasons.

If we weren't so resistant to change, we probably wouldn't be here today.

It's very simple. Thousands of years ago we discovered that we could keep doing the same thing and not die. Because what we did before, by definition, doesn't let us die. So as long as we keep doing it, we'll be fine. And it might kill you, so it's very wise not to do anything new.

But of course there are exceptions to that.

Otherwise we will get nowhere.

And one exception, an interesting exception, is when people can take a leap of faith and show people that there can be some selfish interest in changing a little bit.

So I've spent a lot of time in the last 10 or 15 years exploring what those self-interests are that encourage us all, not just politicians but businesses and the general public, to start thinking a little bit more outwardly, not always inwards, but sometimes outwards, to think bigger.

And here I discovered something very important.

In 2005, I started a study called the Nation Brands Index.

What it is, it's a very large survey of a very large sample of the world's population, a sample representing about 70 percent of the planet's population, and I started asking them a series of questions about how they perceive other countries.

And over the years, the Nation Brands Index has grown into a very large database.

It's about 200 billion data points that track what the general public thinks about other countries and why.

why did i do this Well, because the governments I'm advising want to know how they're viewed.

Partly because I urged them to understand, they know that countries rely heavily on their reputations to survive and thrive in the world.

When a country has a great and positive image, like Germany or Sweden or Switzerland, everything is easy and everything is cheap.

The number of tourists will increase. Get more investors.

Sell ​​your product at a higher price.

On the other hand, in a country that is very weak or has a very negative image, everything is difficult and everything is expensive.

So the government cares desperately about its image. Because it makes a direct difference in how much money the government makes, and that's what the government promises to its people.

So a few years ago, I decided to take the time to talk to that huge database and ask why some people prefer one country over another.

And the answer the database gave me completely blew me away.

It was 6.8.

I don't have time to go into detail.

Basically, it taught me — (laughter) (applause) — that the kind of country we like is a good country.

We admire a country not primarily because it is rich, powerful, successful, modern, or technologically advanced.

We mostly admire good countries.

What do you mean by good?

I mean countries that seem to contribute something to the world we live in, countries that actually make the world safer, better, richer and fairer.

Those are our favorite countries.

This is a very important discovery - you see where I'm going - because it makes a circle a square.

I can now tell any government that in order to do good they need to do good, and I often do.

If you want to sell more products, get more investment, be more competitive, then you need to take action. Doing so will make people respect you and do business with you, so the more you work together, the more competitive you will be.

This is a very important discovery, and the moment I discovered it, I felt that another indicator was emerging.

I swear that as I get older, my thoughts become simpler and more childish.

It's called the "Good Country Index" and it does exactly what it says.

It accurately measures, or at least seeks to measure, how much each country on the planet contributes to the rest of humanity rather than its own population.

Strangely, no one has ever thought to measure this before.

So my colleague Dr. Robert Gevers and I have spent the better part of the last two years, with the help of many very serious and smart people, cramming together all the reliable data we can find in the world about what each country has to offer the world.

And you are waiting for me to tell you which one will be the best.

And I tell you, first of all, I want to tell you exactly what I mean when I say good country.

It doesn't mean morally good.

When I say country X is the best country on earth, I mean the best, but not the best.

Something is different about the best.

When you talk about good nations, you can be good nations, better nations, and best nations.

It is not the same as good, better, or the best.

This country is a country that gives more to mankind than any other country.

I won't talk about how they behave at home. Because it is measured elsewhere.

And the winner is Ireland.

(Applause.) Based on the data here, no country on the planet contributes more to the world we live in per capita and per dollar of GDP than Ireland.

What does this mean?

This means that when we fall asleep at night, in the last 15 seconds before falling asleep, we should all finally be like, "Damn, I'm glad we had Ireland."

(Laughter) And that's -- (applause) -- in the midst of a very deep economic recession, I think there's a very important lesson there. If we can remember our international obligations while trying to rebuild our economies, that's really important.

Finland is in about the same position.

The only reason it's lower than Ireland is because the lowest score is lower than Ireland's lowest score.

Now, another thing to notice about the top 10 is that, of course, all the countries except New Zealand are Western European countries.

They are all rich too.

This depressed me, because one thing I didn't want to discover in this indicator was that it was purely the jurisdiction of the rich to help the poor.

This is not all.

And yes, if you look further down the list, you'll see that, although there are no slides here, I was really, really happy. Kenya is in the top 30. This proves one very important thing.

This is not about money.

This is about attitude.

This is about culture.

This is a story about a government and a people with the imagination and the courage to look out for the rest of the world and not only think about selfish things, but outwards.

We'll skim through the other slides so you can see some of the low-lying countries.

Germany is 13th, the United States is 21st, Mexico is 66th, and there are also some large developing countries such as Russia at 95th and China at 107th.

Countries such as China, Russia and India have also fallen in the same part of the index, which is, well, not surprising in a way.

They have spent a lot of time building their own economy, their own society, their own politics over the past few decades, but the second stage of growth is expected to be somewhat more outward-looking than the first.

Then you can categorize each country in terms of the actual datasets embedded in it.

Allow it.

Starting at midnight tonight, you can see the country at goodcountry.org.

You can see down to the level of individual datasets.

This is the "good country index".

What are you there for?

Well, really this word exists because I want to introduce it into discourse, or reintroduce it.

We've heard enough about competitive countries.

We've heard enough about prosperous, wealthy, and fast-growing countries.

Because we've heard enough about Happy Nation, it's still selfish at the end of the day.

It's still about us, and if we keep thinking about us, we'll be in very serious trouble.

I think we all know what we want to hear.

We want to hear stories of good countries, so I would like to ask you all.

I didn't ask for much.

It's something you might find easy, fun and even helpful. It simply starts using the word "good" in this context.

When you think of your own country, when you think of other people's countries, when you think of businesses, and when you talk about the world we live in today, start using the word in the ways I spoke about tonight.

Not good, the opposite of bad, because it's a never-ending debate.

Good thing, the opposite of selfish, it's good to be a country that cares about all of us.

That's what I want you to do, and use it as a cane to beat politicians.

When you elect them, when you re-elect them, when you vote for them, when you listen to what they propose to you, use the word "good" and ask yourself, "Is that what a good country would do?"

If the answer is no, be very skeptical.

Ask yourself if that is what my country is doing.

Would I want to come from a country where the government does such things in my name?

Or do I, on the other hand, prefer the idea of ​​walking around the world thinking, "Oh, I'm proud to be from a good country"?

and everyone welcomes you.

And in the last 15 seconds before falling asleep at night, everyone will say, "Oh, I'm glad I have his country."

Ultimately, I think that's what makes a difference.

The word "nice", the number 6.8, and the discovery behind it changed my life.

I think they can change your life, and I think we can use them to change the behavior of politicians and corporations, and in doing so, we can change the world.

After thinking about these things, I started to think about my country in a completely different way.

I used to want to live in a rich country, but then I wanted to live in a happy country, but I started to realize that it wasn't enough.

I don't want to live in a rich country.

I don't want to live in a fast-growing or highly competitive country.

I want and want to live in a good country, and I hope you do too.

thank you.

(applause)

I will talk about how AI and humanity can coexist, but first we need to rethink human values.

So, let me first confess to the error of my values.

It was December 16, 1991, at 11:00 am.

I was about to become a father for the first time.

My wife, Shenling, lay in a hospital bed going through a very difficult 12-hour contraction.

I sat by her bedside, anxiously looking at my watch, knowing something she didn't know.

I knew that if the kids didn't come in an hour, I would leave them there, go back to work, and give a presentation on AI to my boss, the CEO of Apple.

Luckily my daughter was born at 11:30. (Laughter) (Applause) It saved me the unthinkable. And to this day, I deeply regret putting my work ethic before the love of my family.

(Applause.) But my AI talk ended well.

(Laughter) Apple liked my work and decided to present it on this very stage at TED1992 26 years ago.

I thought I had made one of the biggest and most important discoveries in AI. The same was true for The Wall Street Journal the next day.

But when it comes to discoveries, it turns out I didn't discover India or America.

They probably discovered a small island off the coast of Portugal.

But as the age of AI discovery continued, more and more scientists poured their souls into it.

About 10 years ago, three scientists in North America discovered an epic form of AI. It is known as deep learning.

Deep learning is a technology that can take vast amounts of data within one single domain and learn how to make predictions or decisions with superhuman accuracy.

For example, if you show a deep learning network a large number of pictures of food, it can recognize foods such as hotdogs or non-hotdogs.

(Applause.) Or, if you show them lots of pictures and videos and sensor data from highway driving, cars can actually drive on highways like humans do.

And what if we showed all of President Trump's speeches to this deep learning network?

And then, President Trump with this artificial intelligence, it's actually a network -- (laughter) it can -- (applause) you like double contradictions.

(Laughter) (Applause) So if this network is asked to give a speech about AI, he or the AI ​​might say -- (recording) Donald Trump: Building a better world with artificial intelligence is great.

Kai-Fu Lee: And maybe in another language?

DT: (speaking Chinese) (laughter) KFL: You didn't know he knew Chinese, did you?

In short, deep learning is at the heart of the age of AI discovery, and the United States is leading the way.

But we are now in the era of implementation and what really matters is execution, product quality, speed and data.

And then China appears.

The Chinese entrepreneurs I fund as a venture capitalist are great workers and have great work ethics.

My example in the delivery room is nothing compared to the hard work of the Chinese people.

As an example, one startup tried to advocate work-life balance. "We are 996 years old, so come work for us."

And what does that mean?

This means working hours from 9am to 9pm, 6 days a week.

This is in contrast to other startups doing 997.

Also, the quality of Chinese products has improved consistently over the past decade, thanks to a fiercely competitive environment.

In Silicon Valley, entrepreneurs compete in a very gentlemanly fashion, much like old wars where both sides took turns firing at each other.

(Laughter) But in the Chinese environment, it's just a gladiatorial fight.

In this hostile environment, entrepreneurs learn to grow rapidly, learn to make their products better at lightning speed, and learn to hone their business models until they are impregnable.

As a result, good Chinese products such as WeChat and Weibo are arguably better than comparable US products such as Facebook and Twitter.

And the Chinese market has embraced this change, accelerating changes and paradigm shifts.

As an example, anyone going to China will find it almost cashless and no credit cards required. Because mobile payments we all talk about are a reality in China.

Last year, US$18.8 trillion were traded over the mobile internet. This is thanks to the extremely robust technology built behind it.

This is even larger than China's GDP.

And how can this technology exceed GDP?

Because it includes all transactions, wholesale, channel, retail, online, offline, mall placements, farmer's market placements like this.

The technology is used not only by merchants, but by 700 million people to pay each other, so it's peer-to-peer and transaction fees are virtually free.

And it's instant and used everywhere.

And finally, the Chinese market is huge.

The size of this market allows entrepreneurs to get more users, more revenue, more investment, but most importantly, it gives entrepreneurs the opportunity to collect vast amounts of data that fuels their AI engines with rocket fuel.

As a result, China's AI companies have exploded, and today the most valuable companies in computer vision, speech recognition, text-to-speech, machine translation, and drones are all Chinese.

With the United States leading the Age of Discovery and China leading the Age of Implementation, we are now in an amazing time when the dual engines of these two superpowers will work together to drive the fastest technological revolution mankind has ever seen.

And this will result in tremendous wealth, unprecedented wealth: by 2030, global GDP plus GDP will be $16 trillion, according to PwC.

It will also pose immense challenges in terms of potential employment alternatives.

The Industrial Age, on the other hand, decomposed artisan jobs into assembly line jobs, creating more jobs.

But AI will completely replace individual tasks on the assembly line with robots.

And it's not just factories, but truck drivers, chauffeurs, even telephone sales, customer service, hematologists, radiologists, and other jobs that will gradually be replaced by artificial intelligence over the next 15 years.

And only creative work -- (Laughter) you have to keep yourself safe, right?

Since AI can optimize but not create, it is the creative work that is really protected.

But more serious than the loss of jobs is the loss of meaning. Because the work ethic of the industrial age has brainwashed us into thinking that work is our reason for being and that work defines the meaning of our lives.

And I was the primary and active victim of that kind of workaholic thinking.

I worked incredibly hard.

That's why I almost left my wife in the delivery room, and why I worked with entrepreneurs at 996.

And that obsession I had with my job ended abruptly a few years ago when I was diagnosed with stage 4 lymphoma.

A PET scan here showed more than 20 malignant tumors bursting out like fireballs, melting my ambitions.

But more importantly, it helped me rethink my life.

When I realized I might only have a few months left to live, I realized how foolish it would be to base all my worth on how much I worked and what I earned from that effort.

My priorities were completely insane.

I ignored my family.

My father passed away and I never got the chance to tell him I loved him.

My mother has dementia and can no longer recognize me, and my children have grown up.

During chemotherapy, I read Bronnie Ware's book. The book was about the dying wishes and regrets of people on their deathbeds.

She realized that in the face of death, no one in this world regrets not trying hard enough.

They only regretted not spending enough time with their loved ones and expressing their love.

So, fortunately, I am in remission today.

(Applause.) So I'm back at TED to share with you what I've done differently.

Now I only work 965 hours. Sometimes I work 996 hours, but usually 965 hours.

I moved closer to my mother. My wife always travels with me. When the children are on vacation, when they don't come home, I go to them.

So this is a new way of living that has helped me realize how important love is to me, and facing death has helped change my life, but it has also helped me understand new ways of how AI should impact, work and coexist with humanity. In fact, AI is taking away many mundane jobs, but mundane jobs are not ours.

Love is the reason we exist.

Whether it's hugging a newborn baby, falling in love at first sight, or helping someone in need, humans are uniquely able to give and receive love, which is what differentiates them from AI.

I can responsibly say that AI has no love, no matter what sci-fi portrays it.

When AlphaGo defeated world champion Ke Jie, Ke Jie cried and loved the game, but AlphaGo didn't feel the joy of winning, let alone want to hug his loved ones.

So how can we, as humans, differentiate ourselves in the age of AI?

We talked about the axis of creativity, which is certainly one of the possibilities, and now we introduce a new axis that can be called compassion, love, or empathy.

That's something AI can't do.

As AI takes over mundane jobs, I believe we can, should, and must create compassionate work.

You might ask how many of them are there, but I ask you: Don't you think we'll need a lot of social workers to help with this transition?

Don't you think we need more caring caregivers to provide more care to more people?

Don't you think we'll need ten times as many teachers to help our children find ways to survive and thrive in this brave new world?

And shouldn't we use all our newfound wealth to make the labor of love a career, as well as caring for the elderly and homeschooling?

(Applause) This graph is certainly not perfect, but it shows four ways we can work with AI.

AI will come and take our mundane jobs and eventually we will be appreciated.

AI will be a great tool for creators, allowing scientists, artists, musicians and writers to be even more creative.

AI will work with humans as an analytical tool that allows humans to embrace warmth and perform compassionate work.

And we can tap into our irreplaceable brains and hearts to consistently differentiate ourselves with unique and competent work that combines compassion and creativity.

The blueprint for human-AI coexistence is now complete.

AI is serendipity.

It's here to get us out of the mundane and remind us of what makes us human.

So choose to embrace AI and love each other.

thank you.

(applause)

When we think of prejudice and prejudice, we tend to think of stupid and evil people doing stupid and evil things.

And this idea is nicely summed up by the British critic William Hazlitt, who wrote, "Prejudice is the child of ignorance."

Now I would like to convince you that this is a mistake.

I would like to convince you that prejudices and prejudices are natural and often rational and even moral, but I believe that understanding this will help us better understand when it goes wrong, when it has terrible consequences, and better know what to do when such things happen.

So let's start with stereotypes. You see me, you know my name, you know certain facts about me, you can make certain decisions.

You can make assumptions about my ethnicity, political affiliation, and religious beliefs.

And the problem is that these judgments tend to be accurate.

We are very good at this kind of thing.

And we're very good at this sort of thing because our ability to stereotype people is a specific example of a more general process rather than some sort of arbitrary quirk of the mind. That is, we have experience with things and people in the world that fall into categories, and we can use that experience to generalize about new examples of those categories.

Everyone here has extensive experience with chairs, apples, and dogs, and based on this they can look at unfamiliar examples and deduce whether a chair can sit, an apple can be eaten, and a dog can bark.

Now we may be wrong.

Chairs may tip over when you sit down, apples may be poisonous, and dogs may not bark. And in fact, this is Tessie the barkless dog.

But for the most part we are good at this.

Most of the time we make good guesses in both social and non-social spheres, but if we fail to do so, or fail to make guesses about new instances we encounter, we do not survive.

And indeed, Hazlitt admits this in a later excellent essay.

He writes, "Without the help of prejudices and habits, I would not be able to find my way across rooms, nor would I know how to conduct myself in any situation, or what to feel in any relationship in life."

Or be prejudiced.

Now, sometimes we divide the world into us versus them, the inner group versus the outer group, and when we do, we know we're doing something wrong and we're kind of ashamed of it.

But sometimes I am proud of it.

We frankly admit it.

My favorite example is a question from the audience at the last pre-election Republican debate.

(Video) Anderson Cooper: Did you understand the floor's question about foreign aid? Yes ma'am.

Woman: The American people are suffering in our country right now.

We need all the help we can get ourselves, so why keep sending aid to other countries?

AC: Governor Perry, what about that?

(Applause.) Rick Perry: Of course I think so— Paul Bloom: Each of the people on stage agreed with the premise of her question. As Americans, we should care more about Americans than about other people.

And indeed, in general, people are often swayed by a sense of solidarity, loyalty, pride, and patriotism towards their country and their people.

Regardless of politics, many people are proud to be Americans and prefer Americans to other nations.

Residents of other countries feel the same about their country, and we feel the same about our people.

Now, some of you may reject this.

Some of you may think that it is too international and that race and nationality should not have a moral effect.

But even those of you who are sophisticated recognize that there must be some attraction to ingroups in the realm of friends, family, and those close to you, and thus you also distinguish us from them.

Now, while this distinction is natural enough and often moral enough, it can be problematic, and it was part of the work of the great social psychologist Henri Tasifel.

Tajfel was born in Poland in 1919.

As a Jew, he was unable to attend a university in Poland, so he attended a university in France and later joined the French army in World War II.

He was captured and placed in a prison camp, but if it was known that he was Jewish, he could have been transferred to a concentration camp and probably would not have survived. It was a scary time for him.

And in fact, when the war ended and he was liberated, most of his friends and family were dead.

He participated in various activities.

He helped war orphans.

But he had a long-standing interest in the science of prejudice, so when the prestigious UK scholarship on stereotypes came up, he applied for it, won it, and then launched this wonderful career.

And the beginning of his career was the insight that most people's thinking about the Holocaust was wrong.

Many people, most people at the time, saw the Holocaust as symbolic of tragic flaws, genetic contamination and an authoritarian character on the part of the Germans.

And Tajfel refused this.

Tajfel said what we see in the Holocaust is just an exaggeration of the normal psychological processes that exist within each of us.

And to explore this, he conducted a series of classical studies of British adolescents.

And in one of his studies he asked young people in England all sorts of questions, and based on their answers he said, ``I saw your answers, and based on your answers you decided one or the other.

It was a total hoax.

Their answers had nothing to do with Kandinsky or Klee.

They probably had never heard of the artist.

He just divided it arbitrarily.

But what he found was that these categories were so important that when giving money to subjects later, they would prefer to give money to members of their own group over members of other groups.

Worse, they are actually most interested in establishing a difference between their group and others, and would give up money for their own group if doing so would give them even less money.

This prejudice seems to emerge very early.

So my colleague and wife at Yale University, Karen Wynn, did a series of studies with babies that gave them dolls and revealed that dolls have specific food preferences.

So one of the dolls might like green beans.

Another doll might like graham crackers.

They test the baby's own food preferences and babies usually prefer graham crackers.

But the question is, will this affect how the baby treats the doll? And that is very important.

They tend to prefer dolls that have the same food preferences as them, or worse, dolls that actually punish them for different food tastes.

(Laughter) You see this kind of inner group versus outer group psychology all the time.

We see it in political clashes within groups with different ideologies.

This is taken to an extreme in the case of war, where outgroups are not only given less but are dehumanized, like the Nazi view of the Jews as vermin and lice, or the American view of the Japanese as rats.

Sometimes stereotypes break down.

Often they are reasonable and useful, but sometimes they are irrational, give wrong answers, and sometimes have outright immoral consequences.

And the most studied is the case of race.

Before the 2008 election, there was an interesting study by social psychologists looking at how well candidates associated with the United States, including their unconscious association with the American flag.

In one of their studies, they compared Obama and McCain and found that McCain is considered more American than Obama, and to some extent, people aren't too surprised to hear that.

McCain is a famous war hero, and many would argue that he has a more American story than Obama.

But they also compared Obama to British Prime Minister Tony Blair and found that Blair was also thought to be more American than Obama, even though the subjects clearly understood that he was not American at all.

But they were of course responding to his skin color.

These stereotypes and prejudices have subtle and very important real-world effects.

In one recent study, researchers posted ads on eBay selling baseball cards.

Some of them were held with white hands, some with black hands.

They were the same baseball cards.

Those with black hands got significantly lower bids than those with white hands.

In a study conducted at Stanford University, psychologists examined cases of people convicted of murdering white people.

After all, if you keep everything else constant, you're much more likely to be executed if you look more like the guy on the right than the guy on the left. This is mostly because the guy on the right looks more typically Black, more typically African American, and this obviously influences people's decisions about what to do with him.

Now that we know this, how do we combat it?

And there are many different paths.

One way is to appeal to people's emotional response, to appeal to people's empathy, and we often do that through stories.

So if you're a liberal parent and want to inspire your kids to believe in the benefits of non-traditional families, give them a book like this one. ["Heather Has Two Mommys"] If you're conservative and have a different attitude, you might gift them a book like this.

(Laughter) ["Help! Mama! There's a liberal under my bed!"] But in general, the idea that stories can turn anonymous strangers into important figures, and care about people when they focus on people as individuals, is an idea that has emerged throughout history.

Stalin said, "One death is a tragedy, but a million deaths is a statistic." Mother Teresa said, "When I see the masses, I never act.

When I see that, I will. ”

Psychologists have investigated this.

For example, one study gave people a list of facts about the crisis and asked how much they would donate to help solve this crisis. Also, another group were given no facts at all, but individuals were described, given names and faces, and it turned out that they gave much more.

I don't think any of these are secrets for those involved in philanthropy.

People don't want to churn out facts and statistics.

Rather, you show them your face, you show them people.

As our sympathy extends to an individual, it can extend sympathy to the group to which that individual belongs.

Harriet Beecher Stowe.

Perhaps falsely, President Lincoln invited her to the White House during the Civil War and said, "So you're the girl who started this great war."

And he was talking about "Uncle Tom's Cabin".

Uncle Tom's Cabin isn't a great philosophical or theological book, or perhaps a literary one, but it does a wonderful job of getting people to put themselves in the shoes of people they wouldn't normally think of, putting themselves in the shoes of slaves.

And it may have been the catalyst for major social change.

These days, looking at America in the last few decades, there is some reason to believe that shows like "The Cosby Show" fundamentally changed American attitudes toward African-Americans, and shows like "Will and Grace" and "Modern Family" changed American attitudes toward gay men and women.

I think it's fair to say that the main catalyst for moral change in America was the situation comedy.

However, I would like to conclude by appealing to the power of reason, not just emotion.

Stephen Pinker states at one point in his wonderful book, The Better Angels of Our Nature, that the Old Testament says love your neighbors and the New Testament says love your enemies, but I love neither, I really don't love them, but I don't want to kill them.

I know I have obligations to them, but my moral feelings toward them and my moral beliefs about how I should behave toward them are not based on love.

Underlying them is an understanding of human rights, a belief that their lives are as valuable to them as they are to me, and to back this up he tells the story of the great philosopher Adam Smith. I would like to tell this story too, slightly modified for modern times.

So Adam Smith said, first imagine thousands of people dying, and imagine those thousands in a country you don't know.

It could be China, India, or a country in Africa.

And Smith says, How would you answer?

And you'll say, "That's a shame," and go on for the rest of your life.

If you open up the New York Times or something online and discover this, in fact this happens to us all the time and we go about our daily lives.

But instead, imagine tomorrow that you find out your little finger will be cut off, says Smith.

Smith says it's very important.

I wouldn't be able to sleep that night thinking about it.

This raises the following questions. Would you sacrifice thousands of lives to save your little finger?

Now answer this in your head. But Smith says that's not the case at all, what a terrible idea.

That's where the question arises. As Smith puts it, "While our passive feelings are most often so mean and selfish, why are our active principles often so generous and noble?"

And Smith replied, "It is reason, principle, and conscience.

[This] calls us, in a voice that astounds our most arrogant passions, that we are but one of many, and that we are not better than any other among them. ”

And this last part is what is often described as the fairness principle.

And this principle of fairness is manifested in all the world's religions, in all the various golden rules, and in all the world's moral philosophies, which differ in many respects but share the premise that morality should be judged in some kind of impartial light.

In fact, to me, the best expression of this view is not by theologian or philosopher, but by Humphrey Bogart at the end of "Casablanca."

So, spoiler alert, he's telling his lover he has to separate for the more general good, and he tells her, and I don't accent, but he tells her, "It doesn't take long to find out that the problems of three little people are no match for a pile of beans in this mad world."

We can let our reason ignore our passions.

Our reason can motivate us to expand our empathy, to write books like Uncle Tom's Cabin, and to read books like Uncle Tom's Cabin. Reason can also motivate us to create habits, taboos, and laws that restrict us from acting on our impulses when we feel that we should be restrained as rational beings.

This is the constitution.

The Constitution, written in the past and applicable in the present, says that no matter how popular a president might be reelected to a third term, no matter how much white Americans want to restore slavery, they cannot do so.

We tied ourselves up.

And we bind ourselves in other ways too.

We know that when we choose someone for a job or an award, we are strongly biased by their race, gender, and attractiveness, but sometimes we might say, "Well, that's how it should be."

But sometimes we say, "This is wrong."

And to counter this, we don't just strive, but rather set up situations where other sources can't bias us. That's why many orchestras audition musicians behind a screen. So the only information they have is what they believe is important.

I think prejudice and prejudice represent the fundamental duality of human nature.

We have instincts, instincts, and emotions that influence our judgments and actions for good and bad, but we are also capable of rational deliberation and intelligent planning, which can be used to accelerate and nourish our emotions, or to curb them.

And in this way reason helps us create a better world.

thank you.

(applause)

I am a Veteran of the Starship Enterprise.

I piloted a huge spaceship with a crew made up of people from all over the world, different races, different cultures, different heritages, all working together to fly across the galaxy. Our mission was to explore strange new worlds, search for new life and new civilizations, and dare to go where no one has gone before.

Yes — (applause) — I am the grandson of a Japanese immigrant who came to America. In search of new opportunities, he boldly ventured into a new, unfamiliar world.

My mother was born in Sacramento, California.

My father was San Francisco.

They met and got married in Los Angeles and I was born there.

I was four years old when the Japanese bombed Pearl Harbor on December 7, 1941 and plunged the world into World War II overnight.

America was suddenly seized with hysteria.

Japanese Americans, Japanese Americans, were met with suspicion, fear, and outright hatred simply because they happened to resemble the people who bombed Pearl Harbor.

And the hysteria grew, and in February 1942, U.S. President Franklin Delano Roosevelt ordered the immediate arrest of all Japanese Americans on the U.S. West Coast without charge, trial, or due process.

Due process, this is the heart of the justice system.

It's all gone.

We were to be rounded up and imprisoned in ten barbed-wire prisoner-of-war camps in the most desolate places in America. The scorching deserts of Arizona, the steamy swamps of Arkansas, the wilds of Wyoming, Idaho, Utah, Colorado, and two of California's wildest places.

I turned 5 on April 20th, and just a few weeks after my birthday, my parents woke my brother, little sister, and me very early one morning to hurry up and get me dressed.

My brother and I were looking out the front window in the living room and saw two soldiers marching down the driveway.

They carried bayonets on their rifles.

They stomped on the front porch and banged on the door.

When my father answered, the soldiers ordered us out of the house.

My father gave my brother and I a small package to carry and we went outside and stood in the driveway waiting for my mother to come out. When my mother finally came out, she had her little sister in one arm and a large duffel bag in the other, with tears streaming down her cheeks.

I will never forget that scene.

It's burned into my memory.

We were taken from our home and put on a train with other Japanese American families.

There were guards stationed at each end of each vehicle, as if we were criminals.

We traveled about two-thirds of the way across the country, and it took us four days and three nights on that train to the swamps of Arkansas.

I still remember the barbed wire fence that locked me in.

I remember high watchtowers with machine guns pointed at them.

I remember searchlights following me as I ran from the barracks to the toilet at night.

But for a 5-year-old me, I thought it was kind of nice to light up the path to pee.

I was a child, too young to understand the situation I was in.

Children are amazingly adaptable.

In the POW camp, grotesquely abnormal things became my daily routine.

It became a routine for me to stand in line three times a day for bad food in a noisy cafeteria.

Going to a group shower with my father became the norm.

Being in prisons, barbed wire prison camps became the norm for me.

When the war ended, we were released and given a one-way ticket to anywhere in America.

My parents decided to move back to Los Angeles, which was not a welcoming place.

We were penniless.

Everything was taken from us and the hostility was intense.

Our first home was on Skid Row, in the lowest part of town, with derelicts, heavy drinkers and lunatics, and the streets, alleys, corridors, and everywhere reeked of urine.

It was a terrifying experience and for us kids it was terrifying.

I remember once a drunk staggered over and collapsed in front of us and vomited.

My little sister said, "Mommy, let's go home." Because the other side of the barbed wire is the house.

My parents worked hard to get back on their feet.

we have lost everything.

They were in the middle of their lives and starting over.

They worked to the bone and finally managed to raise the money to buy a three-bedroom house in a nice neighborhood.

And as a teenager, I was very curious about being incarcerated as a child.

I was reading a civics book that talks about the ideals of American democracy.

All human beings are born equal and we have an inalienable right to life, liberty and the pursuit of happiness. But I couldn't quite reconcile it with the incarceration conditions I experienced as a child.

I tried reading history books, but found nothing about it.

There I had long, sometimes heated conversations with my father after dinner.

We had many such conversations, and what I learned was my father's wisdom.

He was the one who suffered the most under the circumstances of imprisonment, but he still understood American democracy.

He said that our democracy is a people's democracy, that people can be as great as they can be, but that they are also as fallible as humans.

He said American democracy relies heavily on good people who care about the ideals of our system and actively participate in the process of making it work.

And he took me to the election campaign (where the governor of Illinois was running for president) and introduced me to electoral politics in America.

And he also told me about young Japanese Americans during World War II.

When Pearl Harbor was bombed, young Japanese Americans, like all young Americans, flooded the draft board to volunteer to fight for our country.

That act of patriotism was returned with a slap in the face.

We were denied service and classified as non-enemy aliens.

It was outrageous to be called an enemy when I volunteered to fight for my country, but the word 'non-alien', which means 'citizen' in a negative way, superimposed it.

They even took the word "citizen" from us and imprisoned us for a year.

And just as the government realized it was wartime understaffed and rounded up us, it suddenly opened up the military to young Japanese Americans for service.

It was totally absurd, but what was amazing, amazing, was that thousands of young Japanese American men and women, leaving their families imprisoned, came out again behind barbed wire fences, wore the same uniforms as our guards, and fought for this country.

They said they were fighting not just to get their families out behind barbed wire fences, but because they valued the very ideals of what our government stands for and should stand for, and was about to be nullified by what was being done.

All people are created equal.

And they went to fight for this country.

They were placed in segregated units of Japanese descent and sent to the battlefields of Europe, where they threw themselves.

They fought with amazing, incredible bravery and bravery.

They were sent on the most dangerous missions and proportionately recorded the highest combat casualty rate of any unit.

There is one battle that shows it.

It was a battle over the Gothic line.

The Germans were embedded in the hillsides, rocky hillsides, and impregnable caves of this mountain, where three Allied battalions fought hard for six months before reaching a stalemate.

The 442nd Division was called in to further intensify the fighting, but the soldiers of the 442nd Division came up with a unique but dangerous idea. It was that the back side of the mountain was a steep rocky cliff.

The Germans believed that an attack from the rear would be impossible.

The members of the 442nd are determined to do the impossible.

On a dark, moonless night, in full combat gear, they began climbing over 1,000 feet of rock.

They climbed the sheer cliff all night long.

Some lost their hands and foothold in the darkness and fell into the ravine below and died.

They all fell silently.

No one yelled at them not to give up their position.

The men climbed for eight hours straight, and those who reached the summit remained there until the first light faded, at which point they attacked.

The Germans were taken by surprise, occupied the hill and broke through the Gothic perimeter.

The six-month stalemate was broken in 32 minutes by the 442nd.

It was an amazing act, and when the war ended, the 442nd returned to the United States as the most decorated unit of the entire World War II.

When they returned to the White House lawn, President Truman greeted them.

they are my heroes.

They stood by their belief in the glorious ideals of this country, proving that being an American isn't just for a few people, and that race doesn't define who you are as an American.

They expanded what it meant to be American to include Japanese Americans who were feared, suspected and hated.

They were change agents and left me a legacy.

They are my heroes and my father is my hero for understanding democracy and guiding me.

They gave me an inheritance. And with that legacy comes responsibility. I am dedicated to making my homeland a better America and our government a truer democracy. Because of the heroism I have and the struggles we have gone through, I am able to stand before you as a gay Japanese American, but more than that, I am a proud American.

thank you very much.

(applause)

What comes to mind when you hear the word "design"?

You probably think of things like this, finely crafted objects that you can hold in your hand, or logos, posters, maps, and classic icons with timeless designs that describe things visually.

But I'm not here to talk about that kind of design.

What I want to talk about is the kind of design that you probably use every day and you might not think much about, the ever-changing design that exists in your pocket.

I'm talking about designing digital experiences, especially systems that are too big to understand.

Consider the fact that Google processes over 1 billion search queries every day and over 100 hours of video is uploaded to YouTube every minute.

That's more than all three major US networks broadcast in one day combined in the last five years.

And Facebook has sent over 1.23 billion photos, messages and stories.

That's almost half of the Internet population and one-sixth of humanity.

These are some of the products I've helped design throughout my career, and their sheer scale presents unprecedented design challenges.

But the real challenge with large-scale designs is this. This is difficult in part because it requires a combination of two things: boldness and humility. The boldness to believe that what you're creating is what the world wants and needs, and the humility to understand that as a designer it's not about you or your portfolio, it's about the people you're designing for and how your work can help them live a better life.

Unfortunately, there are currently no schools offering courses in Designing for Humanity 101.

Me and other designers working on this kind of product have had to invent it as they go, learning ourselves new best practices for large-scale design. Today I would like to share some of the things we have learned over the years.

Now, the first thing you need to know about large-scale design is that the small things really matter.

This is a great example of how very small design elements can have a big impact.

The Facebook team that manages Facebook's Like button decided it needed to be redesigned.

The button was getting out of sync with the brand evolution and needed to be modernized.

Now, this is a tiny little button that you would probably think was a very simple and easy design assignment, but it wasn't.

Turns out, this button design had all sorts of constraints after all.

I had to work within certain height and width parameters.

Using fancy gradients and borders was tricky as it was tricky to work with different languages ​​and gracefully degraded in older web browsers.

The truth is, designing this tiny little button was quite a painstaking task.

Well, this is a new version of the button, and the designer who led this project estimated that he spent over 280 hours over months redesigning it.

So why do we spend so much time on such little things?

That's because when you're doing a big design, there's no such thing as small details.

This innocent little button is displayed on average 22 billion times a day on over 7.5 million websites.

It is one of the most viewed design elements ever created.

That's a lot of pressure for the little buttons and the designers behind them, but with this kind of product, even the smallest details have to get right.

Now, the next thing we need to understand is how to design with data.

Working on a product like this gives us an incredible amount of information about how people use the product, which we can use to influence design decisions, but it's more than just following the numbers.

To help you understand what I mean, let me give you an example.

Facebook has long had tools that let you report photos that may violate community standards, such as spam or abuse.

And while tons of photos were reported, in the end only a few actually violated community standards.

Most of them were typical party photos.

Now, to give a concrete hypothetical example, let's say my friend Laura uploaded a picture of me from a drunken night at karaoke.

This is purely hypothetical, I swear.

(Laughter.) Well, by the way, did you know that some people worry that their bosses or employees will discover embarrassing photos of them on Facebook?

Do you know how hard it is to avoid it when you're actually working at Facebook?

Anyway, many of these photos were misreported as spam or abuse, and one of the engineers on the team had a hunch.

He really thought something else was going on, and he was right. Because after looking into a large number of incidents, I found that most of them were from people requesting their photos be removed.

Now, this was a scenario the team had never even considered before.

So they added a new feature that lets you message your friends to delete their photos.

But it didn't work.

Only 20% messaged a friend.

So the team started over.

They consulted experts on dispute resolution.

They even researched the universal principle of polite language, which I didn't even know existed until this research was done.

And they found something really interesting.

They had to do more than just help people ask their friends to remove the photos.

They needed to be able to express to their friends how people felt when they saw the photo.

Here's how this experience works today.

So I found a fictional photo of myself. This is not spam or abuse, but it would have been really nice if it hadn't been posted on the site.

So I report it and say, 'I'm in this picture and I don't like it,' and then I dig deeper.

Why don't you like this picture of yourself?

And I choose "embarrassed".

And you're encouraged to message your friends, but here's the crucial difference.

Specific wording suggestions are provided to help you convey to Laura how you feel about the photo.

This time, the team found that this relatively small change had a big impact.

Previously, only 20 percent of people were sending messages, now 60 percent are sending them, and research shows that people on both sides of the conversation feel better as a result.

The same survey found that 90% of your friends want to know if you've done something that offended them.

I don't know who the other 10% are, but maybe that's where the "unfriend" feature comes in handy.

As you can see, these decisions are very subtle.

Of course, we use a lot of data to make decisions, but we also rely heavily on iteration, research, testing, intuition, and human empathy.

It is both art and science.

Now, the designers working on these products are sometimes called "data-driven," a term that completely confuses us.

In fact, it would be irresponsible not to rigorously test a design when so many people expect it to get it right, but data analysis will never replace design intuition.

Data can help make good design great, but it can't make bad design good.

The next principle you need to understand is that you have to be very careful when introducing change.

Now, I often joke that I spend as much time designing the change implementation as I do the change itself. I'm sure everyone can relate to that when something you use a lot changes and then needs to be adjusted.

The fact is that people can end up using bad design so effectively that even if the change is good for them in the long run, it's still incredibly frustrating when it happens. This is especially true for user-generated content platforms. Because people can legitimately claim ownership.

After all, it's their content.

Well, many years ago when I worked at YouTube, we were looking for ways to get more people to rate our videos. Looking through the data, we found that almost everyone used only the highest 5-star rating, a few people used the lowest 1-star rating, and virtually no one used 2-, 3-, or 4-star ratings.

So I decided to simplify to an up-down voting binary model.

You will find it easier to relate to people.

But people were very attached to the 5-star rating system.

Video creators loved their ratings.

Millions of people were used to the old design.

So, to help people prepare for change and adapt to the new design faster, we published a data graph sharing with the community the rationale for what we're actually trying to do, and engaged the larger industry in conversations that resulted in my all-time favorite TechCrunch headline, "YouTube Delivers 5 Stars: Its Ratings Don't Help."

Now, when it comes to making changes to a product that many people use, it's impossible to completely avoid change avoidance.

Despite all our efforts to do the right thing, we still received the usual flood of protest videos, angry emails, and even packages requiring security scanning. But we have to remember that people care a lot about things like this. Because these products, this feature, are really, really important to them.

Now, we know that we need to pay attention to detail, we need to be aware of how data is used in the design process, and we need to introduce change very carefully.

Well, these are all really useful.

These are good best practices for large-scale design.

But they mean nothing if you don't understand something more fundamental.

You need to understand who you are designing for.

Now, if you set a goal to design for all of humanity and start getting serious about that goal, at some point you hit the wall of the bubble you're living in.

Now, in San Francisco, it's a little frustrating when your phone hits the dead-sell zone because you can't use your phone to get to the new hipster coffee shop.

But what if you had to drive four hours to charge your phone due to lack of reliable power?

What if you can't access the public library?

What if your country didn't have press freedom?

What do these products mean to you?

This is what Google, YouTube, and Facebook look like to most people in the world, and they will look the same to most of the 5 billion people who will be online in the future.

Designing for low-end phones is not a glamorous design task, but if you want to design for the whole world, you have to design for where people are, not where you are.

So how do you keep this big picture in mind?

We strive to step outside of ourselves to see, hear and understand the people for whom we design.

We use it to ensure that our products work equally well in languages ​​other than English.

And we try to use one of these phones from time to time to stay in touch with their reality.

So what does it mean to design globally?

This means a difficult and sometimes infuriating task of trying to improve and evolve the product.

Finding the boldness and humility to do the right thing to them can be pretty exhausting, and the humility part, it's a bit harsh on the design ego.

These products are constantly changing, so most of what I've designed in my career is gone, and everything I design in the future is gone.

But here is what remains. The never-ending thrill of being part of something so big, mind-boggling, and the promise that it might change the world.

thank you.

(applause)

Have you ever stopped during a romantic dinner and thought, 'I left my fingerprints on my wine glass'?

(laughter) Or have you ever been worried that when you visit a friend, every surface you touch will leave a small part of you behind?

And did you pay attention to sitting still this evening without touching anything?

So you are not alone.

Thankfully, criminals also underestimate the power of fingerprints.

And we're not just talking about the twisted division of lines that makes our fingerprints unique.

I'm talking about a whole world of information hidden in small, often invisible things.

In fact, fingerprints are made up of molecules belonging to three classes. One is sweat molecules, which we all produce in very different amounts.

This includes the molecules we introduce into our bodies that cause us to sweat, the molecules that can contaminate our fingertips when we encounter substances such as blood, paint and grease, as well as invisible substances.

And the molecule is the storyteller of who we are and what we have done.

All we need is the right technology to make them talk.

So let us take you on a journey of unimaginable power.

Katie was raped and found dead in the woods three days after her disappearance.

Police are targeting three suspects, narrowing their search from more than 20 men seen in the area on the same day.

The only evidence is two very faint overlapping fingerprints on a tape around Katie's neck.

In many cases, thin overlapping fingerprints are not enough to help police identify you.

And until recently, this may have been the end of it, but here we can make a difference.

The tapes are sent to our lab, where we are asked to use cutting-edge technology to help investigate.

And here we use an existing form of mass spectrometry imaging technology that has been further developed and adapted specifically for molecular and image analysis of fingerprints.

Essentially, the print is exposed to a UV laser, detaching molecules from the print, ready for capture by a mass spectrometer.

Mass spectrometry measures the weight, or mass, of molecules. The number displayed there indicates its mass.

But more importantly, it shows who those molecules are. Forensically speaking, it indicates whether I'm seeing paracetamol or something more sinister.

We applied this technology to the evidence we have and discovered the existence of condom lubricants.

In fact, we have developed a protocol that can even suggest which brand of condom was used.

So we passed this information on to the police, who in the meantime obtained a search warrant and discovered the same brand of condoms on Dalton's property.

Dalton and Thomson also have sexual assault records, so Chapman may be an unlikely suspect.

But is this information enough to make an arrest?

Of course not, we are being asked to dig deeper.

So we also discovered the existence of two other very interesting molecules.

One is an antidepressant and the other is a very special molecule.

It is produced in the body only when alcohol is consumed and cocaine is taken at the same time.

And since alcohol is known to potentiate the effects of cocaine, here's a hint about an individual's mental state while committing a crime.

We passed this information on to the police and it turned out that Thomson was in fact a drug addict and also had a medical record of a psychotic episode where antidepressants were probably prescribed.

Thomson is therefore a likely suspect.

But in reality, we still don't know where these molecules came from, what fingerprint they came from, and who those two fingerprints belonged to.

don't be afraid

Mass spectrometry imaging is even more helpful.

In fact, the technology is so powerful that you can see where these molecules are on your fingerprint.

As you can see in this video, all of these peaks correspond to masses, all masses correspond to molecules, and by selecting each of those molecules we can ask the software where they are on the fingerprint.

And some images are less revealing, some are better, and some are very good.

Then, depending on how many molecules you detect, you can create multiple images of the same mark (theoretically hundreds of images of the same fingerprint).

So step 1...

In the case of duplicate fingerprints, especially if the fingerprints are from different individuals, the molecular composition is unlikely to be identical, so let's ask the software to visualize the unique molecules that are only present in one fingerprint and not the other.

That way you can separate the two raised patterns.

And this is very important. Because police are now able to identify one of the two fingerprints, the one that actually corresponds to Katie.

And they say so because they compared two separate images with images taken after Katie's death.

So now we can focus on just one fingerprint: the killer's fingerprint.

Now for step 2...

Where are these three molecules that I saw?

Now let's look at the software -- tell me where the software is.

That way, only a portion of the image of the killer's fingerprint is displayed.

In other words, those substances exist only in the killer's print.

So if the fingerprint is Thomson's, our molecular findings start to match police information about Thomson very well.

But in reality, the print is still not enough for identification.

Step 3: Now that we can generate hundreds of images of the same fingerprint, why not overlay them to improve the continuity and clarity of the rich pattern?

That's the result.

Impressive.

Now we have a very clear image of our fingerprints, which the police can run through our database.

Thomson wins the match.

Thomson is our killer.

(Applause.) Katie, neither the suspects nor the criminal circumstances are real, but this story has elements of real police case investigations that we've been confronted with, and it's a combination of information that we can provide -- information that we could have given the police.

And after nine years of intense research, I'm really, really excited to be contributing to police investigations as of 2017.

It's no longer a dream for me. that's the goal.

We intend to do this more extensively and on a larger scale to learn more about the suspects and build an identification kit.

I believe this is also a new era for criminal profiling.

Criminologist research is based on the expert's perception that behavioral patterns observed so far belong to a particular type, a particular profile.

In contrast to this expert but subjective assessment, we are trying to do the same thing, but based on the molecular composition of fingerprints, and the two can work together.

We said the molecule is a storyteller, but the information about health, behavior, lifestyle and routines is all there, accessible with your fingerprint.

And molecules are the storytellers who can tell us our secrets with just a touch.

thank you.

(audience) Wow.

(applause)

Thank you very much. It's really scary to have the smartest of the smartest people here.

I am here to tell you some stories of passion.

There is a Jewish saying that I love.

What is truer than true? Answer: It's a story.

I am a storyteller. I want to tell you more truth than truth about our common humanity.

I'm interested in all stories, and some stories stick in my head until I've written them.

Certain themes emerge one after another: justice, loyalty, violence, death, political and social issues, and freedom.

I write about chance, premonitions, emotions, dreams, forces of nature, and magic because I am aware of the mysteries around us.

Over the last 20 years, I have published several books, but lived an anonymous life until February 2006, when I hoisted the Olympic flag at the Italian Winter Olympics.

That's what made me famous. Now people recognize me at Macy's and my grandchildren think I'm cool.

(Laughter) Let me tell you about my four minutes of fame.

One of the organizers of the Olympic ceremony, the opening ceremony, called me and told me that I had been selected as one of the flag bearers.

I am far from an athlete, so I answered that this was definitely the wrong person.

In fact, I wasn't even sure if I could go around the stadium without a walker.

(laughter) I was told this was no laughing matter.

It will be the first time that only women will carry the Olympic flag.

5 women and 3 Olympic gold medal winners representing 5 continents.

My first question, of course, was what to wear.

(laughter) She said it was a uniform and asked for my measurements.

my measurements.

I imagined myself wearing a fluffy anorak and looking like the Michelin Man.

(Laughter) By mid-February, I was in Turin, where an enthusiastic crowd cheered as any of the 80 Olympic teams hit the streets.

They have sacrificed everything to be in the game.

Everyone deserved to win, but there is also an element of luck.

A grain of snow, a few inches of ice, and the strength of the wind can determine the outcome of a race or game.

But the most important thing is the heart rather than training or luck.

Only a fearless and determined mind can win a gold medal.

Everything is passion.

The streets of Turin were covered with red posters announcing Olympic slogans.

Passion lives here. Isn't that always true?

The mind is what drives us and determines our destinies.

That's what the characters in my book need: passionate hearts.

I need heretics, dissidents, adventurers, outsiders, rebels who question, bend the rules, and take risks.

Everyone in this room likes you.

Good people with common sense don't make interesting characters.

(Laughter) They just make good ex-spouses.

(Laughter) (Applause) Backstage at the stadium, I met the other flag bearers, three athletes and actresses Susan Sarandon and Sophia Loren.

Also two women with passionate hearts, Kenyan Nobel laureate Wangari Maathai, who planted 30 million trees. In doing so, she changed the soil, weather and of course the economic situation of many villages in several parts of Africa.

And Somali Mam, a Cambodian activist who is passionate about fighting child prostitution.

When she was 14, her grandfather sold her to a brothel.

She told of girls being raped by men who believed that sex with young virgins would cure them of AIDS.

In brothels, children are forced to accept between 5 and 15 customers a day, and are subjected to electrical torture if they resist.

I received my uniform in the waiting room.

It wasn't the kind of outfit I normally wear, but it was far from the Michelin Man suit I expected. Not bad, really.

It looked like a refrigerator.

(Laughter) But so did most of the flag bearers, with the exception of Sophia Loren, who is a universal icon of beauty and passion.

Sophia is over 70 years old, but very nice.

She is sexy, slim and tall with a dark tan.

So how can you get a deep tan without wrinkles?

don't know.

When asked in a TV interview, "Why does she look so beautiful?"

She replied, "Posture. Always straight and don't make old noises."

(Laughter.) So, I got some free advice from one of the most beautiful women on the planet.

No moaning, coughing, wheezing, talking to yourself or farting.

(Laughter) Well, she didn't exactly say that.

(Laughter.) Around midnight, we were summoned to the sleeves of the stadium, the loudspeakers announced the Olympic flag, and the music started—by the way, it was the same music that started here, the Aida March.

Sophia Loren was right in front of me. She's a foot taller than I am, notwithstanding her bushy hair.

(Laughter) She walked gracefully like a giraffe running through the African savannah with a flag on her shoulder. I was trotting backwards (laughs)--on my tiptoes--with the flag in my outstretched arms, my head practically under the flag.

(Laughter) Of course, the cameras were all pointing at Sophia.

It was lucky for me. Because most of the press photos show me, but I'm often between Sophia's legs.

(laughs) It's a place that most men dream of.

(Laughter) (Applause) The best four minutes of my life were those four minutes at the Olympic Stadium.

My husband gets mad when I say this, but I explained to him that what we do in private usually takes less than 4 minutes lol, so he shouldn't take it personally.

I have all of this great 4 minute press clippings. Because I don't want to forget when my brain cells are destroyed by aging.

I want to keep the keyword of the Olympics, “passion,” forever in my heart.

So here are some stories of passion.

The year is 1998 and the place is a prisoner of war camp for Tutsi refugees in Congo.

By the way, 80% of the world's refugees and displaced persons are women and girls.

This place in Congo can be called a death camp. Because those who are not killed will die of disease or starvation.

The protagonists of this story are a young woman, Rose Mapendo, and her children.

She is pregnant and widowed.

Soldiers were forced to watch her husband being tortured and killed.

She manages to keep seven children alive and gives birth to premature twins months later.

two little boys.

She cuts the umbilical cord with a stick and ties it in her own hair.

She names the twins after the camp commander to attract their favor, and gives them tea because they can't stand milk.

When soldiers broke into her cell to rape her eldest daughter, she held onto her with a gun to her head and wouldn't let go.

Somehow, the family survived for 16 months, and then, through extraordinary luck and the passionate heart of a young American man, Sasha Chanoff, managed to get her on a US rescue plane, and Rose Mapendo and her nine children ended up in Phoenix, Arizona, where they now live and thrive.

Mapendo means "great love" in Swahili.

The protagonists of my books are strong, passionate women like Rose Mapendo.

I am not making them up. You don't have to.

Look around, they are everywhere.

All my life I have worked with and for women.

I know them very well.

I was born in ancient times, at the end of the world, into a patriarchal Catholic and conservative family.

No wonder I was a raging feminist by the time I was five. However, the word had not yet reached Chile, so no one knew what was wrong with me.

(Laughter) I quickly realized that I had to pay a high price for questioning my freedom and patriarchy.

But I was happy to pay the price because I was able to deliver two shots for every blow I received.

(Laughter) Once, when my daughter, Paula, was in her twenties, she told me that feminism was outdated and that we should move on.

It was a memorable battle. Is feminism obsolete?

Yes for privileged women like my daughter and all of us here today, but not for most sisters in the rest of the world who are still forced into early marriage, prostitution and forced labor. They either have unwanted children or are unable to provide for them.

They have no control over their bodies or their lives.

They have no education and no freedom.

They are raped, beaten and sometimes killed with impunity.

For most Western young women today, being called a feminist is an insult.

Feminism has never been a sexy thing, but it has never stopped me from flirting, and it has rarely bothered me with a lack of men.

(Laughter.) Feminism never died.

It has evolved. If you don't like the term, change it, for Goddess' sake.

Call me Aphrodite, Venus, Bimbo, whatever you want. The name doesn't matter as long as we understand what it is and support it.

Now, let me tell you another story of passion, but this one is sad.

The location is a small women's clinic in a Bangladeshi village.

The year is 2005.

Jenny is a young American dental hygienist who is volunteering at the clinic for a three-week vacation.

She was ready to have her teeth cleaned, but when she got there, she found that there were no doctors or dentists and the clinic was just a hut full of flies.

Outside, there are hours of lines of women waiting for treatment.

The first patient has several rotten back teeth and is in excruciating pain.

Jenny realizes that the only solution is to pull out the bad tooth.

She doesn't have permission to do so. she never did it.

She takes many risks and is terrified.

She doesn't even have the proper equipment, but luckily she brought novocaine with her.

Jenny is a brave and passionate soul.

She whispers a prayer and continues the operation.

Finally, the reassured patient kisses his hand.

The hygienist pulled out more teeth that day.

The next morning, when she visited the so-called clinic again, the first patient was waiting for her with her husband.

The woman's face looks like a watermelon.

It's so swollen I can't see.

Her husband was furious and threatened to kill the American.

Jenny is horrified by what she has done, but the interpreter explains that the patient's condition has nothing to do with the operation.

The day before, her husband beat her because she was late for dinner.

Today millions of women live like this.

They are the poorest of the poor.

Women perform two-thirds of the world's work, yet they own less than 1 percent of the world's assets.

They remain vulnerable because, even if they are paid, they are paid less than men for the same jobs, are less economically independent, and are constantly threatened with exploitation, violence and abuse.

It is true that giving women an education, a job, the ability to control their own income, and inherit and own property benefits society.

Her children and family will be better off if a woman is empowered.

If the family prospers, the village will prosper, and eventually the whole country will prosper.

Wangari Maathai goes to a Kenyan village.

She spoke with the women and explained that the land had become barren because they cut and sold the trees.

She instructs the women to plant new trees and water them drop by drop.

In five or six years, the forest will grow, the soil will become richer, and the village will be saved.

The poorest and most backward societies are those that always oppress women.

However, this obvious truth is ignored by governments and philanthropic efforts.

For every $1 given to the women's program, $20 is given to the men's program.

Women are 51 percent of humanity.

Empowering them changes everything, not just technology, design and entertainment.

I can promise that connected, informed, educated and collaborative women can bring peace and prosperity to this forsaken planet.

In any war today, most of the casualties are civilians, mostly women and children. Those are collateral damage.

Men run the world and see our turmoil.

what kind of world do we want?

This is the fundamental question most of us have.

Does it make sense to participate in the existing world order?

We want a world where life is sustained and the quality of life is enriched for everyone, not just for the privileged.

In January, I saw an exhibition of Fernando Botero's paintings at the University of California, Berkeley library.

With the exception of New York galleries exhibiting Botero's work, museums and galleries in the United States have dared not display the painting because its theme is the Abu Ghraib prison.

These are huge paintings depicting an enormous amount of torture and abuse of power in the Botero style.

I couldn't get those images out of my head or heart.

My greatest fear is power with impunity.

I fear abuse of power, and abuse of power.

In our species, the alpha male defines reality and forces the rest of the herd to accept that reality and follow the rules.

The rules change all the time, but they always benefit us. In this case the trickle-down effect, which does not work in economics, works perfectly.

Abuse drips from the top of the ladder to the bottom.

Women and children, especially the poor, are at the bottom.

Even the poorest men have people they can abuse, women and children.

I am sick and tired of the power of the few over the many through gender, income, race and class.

I believe the time has come to make a fundamental change in our civilization.

But for real change, we need female energy in the running of the world.

We need women in significant numbers in positions of power and we need to cultivate feminine energy within men.

I am, of course, referring to young-minded men.

Old people are desperate. We have to wait for them to become extinct.

(Laughs) Yes, I would love to have Sophia Loren's long legs and legendary breasts.

But given the choice, I would like to have the warrior hearts of Wangari Maathai, Somali Mamu, Jenny and Rose Mapendo.

I want to make this world a better place.

Not for better, but for better.

why not? Is possible. Look around this room. See all this knowledge, energy, talent and technology.

Throw off your fanny, roll up your sleeves, and get passionate about creating a near-perfect world.

thank you.

On March 10, 2011, I was in Cambridge at a meeting of faculty, students, and staff at the MIT Media Lab to consider whether I should be the next Director.

That night, at midnight, a magnitude 9 earthquake struck off the Pacific coast of Japan.

My wife and family were in Japan and when the news started coming in, I panicked.

I watched news streams and listened to press conferences from government officials and TEPCO about the reactor explosion and the clouds of fallout that were raining down on our house only about 200 kilometers away.

And the people on TV weren't saying anything we wanted to hear.

I wanted to know what was happening with the reactor, what was happening with the radiation, and if my family was in danger.

So I did what intuitively seemed right. It was to go to the internet and see if I could fix the problem myself.

After finding out on the net that there were many others just like me trying to figure out what was going on, we formed a loose group together and called it Safecast. It was clear that the government was not going to do this for us, so we decided to measure radiation and provide the data to others.

Three years later, we have designed our own Geiger counter with 16 million data points and the ability to download designs and connect to the network.

There are apps that display most of the radiation doses for Japan and other parts of the world.

We are perhaps one of the most successful citizen science projects in the world and have created the largest open dataset on radiation measurements.

What's interesting here is how — (applause) — thank you.

How did amateurs who had no idea what we were doing come together to do what NGOs and governments could never do?

And I suspect this has something to do with the internet. Not a fluke.

It wasn't our luck and it wasn't our fault.

It helped that it was an event that brought everyone together, but it was a new way of doing things made possible by the internet and other things going on. I would like to say a few words about what that new principle is.

So remember before the internet? (Laughter) I call this B.I. have understood?

Life at B.I. was simple.

Things were Euclidean, Newtonian, and somewhat predictable.

People, including economists, have actually tried to predict the future.

And then the Internet came along, and the world became very complex, very cheap, and very fast. And it turned out that Newton's laws, which we so dearly cherished, were just local regulations. And what we discovered was that in this completely unpredictable world, most people who survive operate according to some sort of different set of principles. I would like to talk a little bit about that.

If you remember, before the Internet, when we tried to create a service, we would create the hardware layer, the network layer, the software, and it cost millions of dollars to do anything substantial.

I mean, when it costs millions of dollars to do something important, you get an MBA, you plan it, you get money from VCs and big corporations, you hire designers and engineers, and they build it.

This is the Before Internet (BI) innovation model.

What happened after the Internet is that the cost of innovation has dropped significantly. With the cost of collaboration, the cost of distribution, the cost of communication, and Moore's Law, the cost of trying new things is almost zero. So Google, Facebook, Yahoo, students without permission, innovation without permission. They didn't have permits, they didn't have PowerPoint, so they just built stuff, then raised money, then came up with a business plan, and probably hired some MBA's after that.

In other words, the Internet has sparked innovation, at least in software and services, moving from an MBA-led model of innovation to a designer-engineer-led model of innovation, pushing innovation farther out into the fringes, dorm rooms, and start-ups, away from the big and crappy old organizations that had power, money, and authority.

And we all know this. We all know this happened on the internet.

I've found the same thing happening with other things.

Here are some examples.

In other words, Media Lab is not just doing hardware.

we do all sorts of things.

We study biology, we study hardware. Nicholas Negroponte famously said, "Demonstration or death," rather than the traditional academic thinking of "publish or perish."

And he used to say, "The demo only needs to work once, because the main way we impacted the world was for big companies to take inspiration from us and develop products like the Kindle and Lego Mindstorms."

But today, with the ability to deploy things in the real world at such a low cost, I am changing my motto and this is the official statement.

I officially say "deploy or die".

For it to be truly valuable, it needs to be introduced into the real world. Sometimes it can be big business, but Nicholas can talk about satellites.

(Applause.) Thank you.

But instead of relying on large institutions, we should be on our own.

So last year we sent a bunch of students to Shenzhen and they sat on the factory floor with the Shenzhen innovators and it was great.

What was happening there was that we had these manufacturing machines and we weren't making prototypes or powerpoints.

They were tinkering with the manufacturing equipment and innovating the manufacturing equipment itself.

The factory was in the designer, and the designer was literally in the factory.

So what do you do, you go to a stall and you see these phones.

So instead of launching a tiny website like the Palo Alto kids, the Shenzhen kids build a new mobile phone.

They're building new mobile phones in the same way the children of Palo Alto build websites. So there is a rainforest of innovation happening in mobile phones.

What they do is make a cell phone, go to a stall, sell some, look at other kids' stuff, go up, make a few thousand more, and go down.

Doesn't this sound like a software problem?

Agile software development, A/B testing and iteration, and things I thought only software could do, the kids in Shenzhen seem to be doing with hardware.

I hope my next colleague will be one of the innovators from Shenzhen.

And you can see it pushing innovation around every corner.

We're talking about 3D printers and all that's great, but here's Limor.

She's one of our favorite alumni, standing in front of a Samsung Techwin pick and place machine.

The equipment can place 23,000 parts on electronic boards per hour.

This is a factory in a box.

So what used to be done manually in this little box in New York in a factory full of employees can now be done effectively without having to go to Shenzhen to actually do this manufacturing.

She can buy this box and she can manufacture it.

So the cost of manufacturing, the cost of innovation, prototyping, distribution, manufacturing, and hardware is so low that innovation is being pushed to the edge and allowing students and start-ups to build it.

This is recent, but as with software, this will happen and change.

Sorona is DuPont's process that uses genetically modified microorganisms to turn corn sugar into polyester.

It is 30% more efficient than fossil fuel methods and much better for the environment.

Genetic and bioengineering are creating many exciting new opportunities in chemistry, computation, and memory.

We'll probably be doing a lot of things, of course we're doing health stuff, but probably more chairs and more buildings soon.

The problem is that Sorona cost about $400 million and took seven years to build.

It kind of reminds me of the old days of mainframes.

The problem is that the cost of innovation in biotechnology is also falling.

This is a desktop gene sequencer.

It used to cost millions of dollars to sequence a gene.

Now you can do it on a desktop like this and your kids can do this in their dorm rooms.

This is the Gen9 gene assembler, and today when you try to print a gene, someone in the factory assembles it by hand with a pipette, one error in every 100 base pairs, which takes a long time and costs a lot of money.

The new device assembles genes on a chip, making one error in every 10,000 base pairs instead of one in every 100 base pairs.

Within a year, the lab will have a global gene-printing capacity of 200 million base pairs per year.

It's like going from a hand-packaged transistor radio to a Pentium.

This will be the pentium of bioengineering, pushing it into the hands of dorm rooms and start-ups.

So it's happening in software, hardware, and biotechnology, and this is a radical new way of thinking about innovation.

It's bottom-up innovation, it's democratic, it's chaotic, and it's hard to control.

That's not a bad thing, but it's a lot different and I think the traditional rules we have for organizations don't work anymore and most of us here operate on a different set of principles.

One of my favorite principles is pull power. The idea is to pull resources from the network as needed, rather than stocking them centrally and controlling everything.

In the case of Safecast, I knew nothing when the earthquake hit, but I was able to find Sean, who was the organizer of the hackerspace community, Peter, the analog hardware hacker who built the first Geiger counter, and Dan, who built the Three Mile Island surveillance system after the Three Mile Island meltdown.

And these people I could not have found ahead of time, and probably would have been better off just in time from the network.

I am a three-time college dropout, so learning is more important than teaching, but for me, education is what people do to themselves, and learning is what people do to themselves.

(Applause.) And, this is my bias, it feels like they're trying to get you to memorize an entire encyclopedia before they let you go out to play, and to me, I have Wikipedia on my phone, and it feels like you're being thought of like you're on the top of a mountain alone with a number two pencil trying to figure out what to do when you're actually always connected, always with a friend, and able to pull up Wikipedia whenever you need it. , and what needs to be learned is how to learn.

In the case of Safecast, we were a collective of amateurs when we founded three years ago, but as a group we claim to know more about how to collect data, how to publish data, and how to do citizen science than perhaps any other organization.

compass on the map.

The idea is that the cost of creating a plan or mapping something becomes so expensive that even being very precise is useless.

So in Safecast's story, we knew we needed to collect the data, we knew we wanted the data to be public, but instead of trying to come up with an exact plan, we first said, 'Oh, let's get a Geiger counter.

Oh it's gone.

Let's build them. Not enough sensors.

Now, let's make a portable Geiger counter.

You can drive around. You can hire volunteers.

I don't have enough money. Let's kickstarter.

We couldn't have planned all of this, but having a very strong compass helped us reach our destination in the end. To me, this is very similar to Agile software development, but this compass idea is very important.

So I think the good news is that even though the world is very complex, the things to do are very simple.

I think it's about letting go of this notion of having to plan everything, stock everything, and be well prepared, and focus on connecting, learning all the time, being fully aware, and being the best you can be.

That's why I don't like the word "futurist".

I think we should be the nowists, as we are now.

thank you.

(applause)

Can I use a paring knife to protect my father from Islamist armed groups?

That was the question I faced one Tuesday morning in June 1993 when I was a law student.

That morning, I was awakened by a relentless knock on the front door of my father's apartment outside of Algiers, Algeria.

As the local paper reported, every Tuesday was the season for academics to fall to the bullets of fundamentalist assassins.

My father's teaching of Darwin at the university had already provoked classroom visits by so-called Islamic Salvation Front leaders, who had denounced him as an advocate of biology before he expelled the man, and whoever was outside now would not name himself and would not leave.

So my father tried to call the police, but they didn't even answer, fearing the rise of armed extremism that had already claimed the lives of many Algerian police officers.

And when I went to the kitchen, got out my paring knife, and took up position inside the front door.

It was really silly, but I just stood there thinking of nothing else.

Looking back now, I think that was the moment that paved the way for me to write the book Your Fatwas Don't Apply Here: The Untold Stories from Fighting Islamic Fundamentalism.

The title is from a Pakistani play.

In fact, I believe this moment set me on a journey to interview 300 people of Muslim heritage in about 30 countries, from Afghanistan to Mali. To explore how they, like my father, peacefully fought against fundamentalism, and how they dealt with the risks that entailed.

Fortunately, in June 1993, an unidentified visitor left, but other families were not so lucky. That was the idea that motivated my research.

In any case, someone returns a few months later and leaves a note on my father's kitchen table that simply says, "Think of yourself as dead."

Then, during what became known as the Dark Decade of the 1990s, fundamentalist armed groups in Algeria murdered as many as 200,000 civilians, including all the women you see here.

States have resorted to torture and enforced disappearances as a tough counter-terrorism measure, but despite the horrors of all these events, they have been largely ignored by the international community.

Finally, my father, the son of an Algerian peasant turned professor, was forced to quit his teaching position at the university and flee his apartment, but what I will never forget about my father, Mahfud Benun, is that, like many other Algerian intellectuals, he refused to leave the country and continued to publish sharp criticisms of the fundamentalists and sometimes even the governments they fought against.

For example, in November 1994, he published a series in El Watan, titled How Fundamentalism Has Created Unprecedented Terrorism, accusing terrorists of making what he called a radical break with the true Islam lived by our ancestors.

It was a word that could kill you.

My father's country taught me during the dark decade of the 1990s that the popular struggle against Islamic fundamentalism was one of the most important and overlooked human rights struggles in the world.

This is still true today, nearly 20 years later.

As you know, in every country you hear about armed jihadists targeting civilians, there are also unarmed people who are going against the extremists you've never heard of, and they need our help to succeed.

In the West, Muslims are generally thought to condone terrorism.

Some on the right think this way because they think Islamic culture is inherently violent, and some on the left think this way because they think Islamic violence, fundamentalist violence, is simply a product of legitimate grievances.

But both views are completely wrong.

In fact, many people of Muslim descent around the world are adamantly opposed to both fundamentalism and terrorism, and often for good reasons.

As you know, they are far more likely to be victims of this violence than perpetrators.

Let me give you an example.

A 2009 survey of Arabic-language media resources found that between 2004 and 2008, only 15 percent of al-Qaeda victims were Westerners.

It was a terrible toll, but the majority were people of Muslim descent who were murdered by Islamic fundamentalists.

Now, I've been talking about fundamentalism for the last five minutes, and you have a right to know exactly what I mean.

I quote the definition of Algerian sociologist Marieme Heli Lucas, who notes that fundamentalism is an 's' and that, of all the world's great religious traditions, "fundamentalism is a far-right political movement that manipulates religion to achieve political ends in the context of globalization."

Sadia Abbas called this the radical politicization of theology.

Now, I would like to avoid projecting the idea that there is some kind of monolith called Islamic Fundamentalism and that it is the same everywhere. Because these exercises are also diverse.

Some people use violence or advocate violence.

Some are interrelated, some are not.

they take various forms.

Here in England there may also be non-governmental organizations like the Cage Prisoners.

Some, like the Muslim Brotherhood, may become political parties, while others, like the Taliban, may become openly armed groups.

But in any case, these are all radical projects.

These are not conservative or traditional approaches.

They are mostly about changing people's relationship with Islam rather than maintaining it.

I'm talking about the Islamic far right, and the fact that its supporters are or claim to be Muslims makes them as uncomfortable as any other far right.

So, in my view, if we consider ourselves liberal or leftist, human rights activist or feminist, we must oppose these movements and support grassroots opponents.

I would like to make it clear here that not only do I support an effective struggle against fundamentalism, but that the struggle itself must respect international law, so what I am saying should not be taken as justification for rejecting democratization. And here I am today sending a cry of support to the democracy movement in Algeria, Barakat.

Nor should my remarks be taken as justification for human rights abuses such as the mass death sentence handed down in Egypt earlier this week.

But what I want to say is that we must counter these Islamic fundamentalist movements because they threaten human rights across Muslim-majority settings, and they threaten this in many ways, the most obvious being direct attacks on civilians by the armed groups that carry them out.

But that violence is just the tip of the iceberg.

Collectively, these movements promote discrimination against religious and sexual minorities.

They seek to suppress the religious freedom of all those who choose to practice differently or not.

And most crucially, they are leading an all-out war on women's rights.

Now, in the face of these developments in recent years, Western discourse has, for the most part, offered two flawed responses.

The first statement we sometimes see on the right suggests that most Muslims are fundamentalists, or that something about Islam is inherently fundamentalist, which is simply offensive and wrong, but unfortunately on the left we sometimes encounter statements that are too politically correct to acknowledge the problem of Islamic fundamentalism at all, or worse, apologize for it, which is also unacceptable.

What I'm looking for, therefore, is a new way to collectively talk about this issue, based on the lived experiences and hopes of those on the front lines.

While we are acutely aware of the increasing discrimination against Muslims in recent years in countries such as the United Kingdom and the United States, which is also a matter of great concern, we strongly believe that telling these anti-stereotype stories of people of Muslim descent who have confronted fundamentalists and been their chief victims is a great way to counter that discrimination.

Now, I would like to introduce you to the four people I had the honor of telling their stories.

Named after Faizan Piazzada and his father, the Rafi Pia Theater workshop has been promoting the performing arts in Pakistan for many years.

As jihadist violence escalated, they began receiving threats to cancel events, but they turned a deaf ear.

Then, in 2008, the 8th World Performing Arts Festival held in Lahore was hit by a bomber, and a rain of glass fell on the venue, injuring nine people. Later that same night, Mr. and Mrs. Piazzada made a very difficult decision. It was announced that the festival would continue as planned the next day.

As Faizan said at the time, if we bow down to the Islamists, we'll just be sitting in a dark corner.

But they didn't know what would happen.

Would someone please come over?

In fact, the next day, thousands of people gathered to support the performing arts in Lahore. This made Mr. Faizan both excited and terrified. Then he ran up to a woman who had two small children and said, "You know there was a bomb here yesterday, and you know there's a threat here today."

And she said, "I know that, but I came to the festival with my mother when she was the same age. I still have that image in my head.

we must be here ”

Thanks to such an enthusiastic audience, the Pierzada family was able to finish the festival on schedule.

The following year, we lost all sponsors due to security risks.

So when I met them in 2010, they were in the middle of the first follow-on event that could be held at the same venue. This was the ninth Youth Performing Arts Festival in a year that had already experienced 44 terrorist attacks in Lahore.

This is when Pakistan's Taliban began systematically targeting girls' schools, eventually culminating in an attack on Malala Yousafzai.

What did the Peerzada family do in that environment?

They put on a girls' school play.

There I had the opportunity to see the Punjabi musical 'Nan Wal'. Girls from the Lahore Grammar School played all the roles.

They sang, danced, acted as rats and buffaloes. And I held my breath and wondered if this wonderful show would ever end.

And when we did, the whole audience exhaled in unison, and some actually cried. And the auditorium filled with peaceful applause.

And I remember in that moment thinking, two years ago, the bombers made headlines here, and tonight, these people are just as important.

Maria Bashir is Afghanistan's first and only female chief prosecutor.

She has held the position since 2008 and has actually opened an office to investigate cases of violence against women, which she says is the most important area of ​​her work.

When I met her at her office in Herat, she walked in surrounded by four big men with four huge guns.

In fact, she now has 23 bodyguards. Because she survived a bomb attack that killed her children and tore off the leg of one of the guards.

why does she keep going?

That's the question everyone has, she says with a smile. In her words, "Why risk not living?"

And it's just that for her, for the entire Maria Bashir family to come, a better future is worth the risk, and she knows that if people like her don't take the risks, there won't be a better future.

Later in our interview, Prosecutor Bashir told me how worried she was about the possible outcome of government talks with the Taliban, the people who are trying to kill her.

"If we give them a place in government, who will defend women's rights?" she asks.

And she appeals to the international community to remember their promises about women, as they now want peace with the Taliban.

A few weeks after leaving Afghanistan, I saw this headline on the Internet.

Afghan prosecutor assassinated.

I googled frantically and thankfully found that Maria was not a victim that day. Sadly, however, another Afghan prosecutor was shot on his way to work.

And hearing such headlines now makes me think that as international forces withdraw from Afghanistan beyond this year, we must continue to care about what happens to the people there and to the entire Maria Bashir family.

I still sometimes hear her say, without any bravado, in my head. “Someday things will get better for Afghan women.

Even if we are killed, we must prepare for it. ”

There are no words to adequately condemn the al-Shabaab terrorists who attacked Nairobi's Westgate mall in September 2013, the same day as a children's cooking contest.

He killed 67 people, including a poet and a pregnant woman.

Far away in the American Midwest, I was fortunate enough to meet a Somali-American from the city of Minneapolis who was working to counter al-Shabaab's efforts to involve minorities of young people in atrocities such as Westgate.

Abdilizak Bihi's hard-working 17-year-old nephew Burhan Hassan was recruited here in 2008 and triumphantly crossed to Somalia before being killed trying to return home.

Since then, Mr. Bihi, director of the unfunded Somali Center for Education and Advocacy, has been a vocal critic of the failures of recruiting and of Somali-American institutions and governments such as the Abubakar al-Sadiq Islamic Center, which his nephew believes was radicalized during a youth program.

But he doesn't just criticize mosques.

He also accuses the government of not taking further steps to prevent poverty in the community.

Given Bhihi's own lack of financial resources, he had to get creative.

He organized a Ramadan basketball tournament in Minneapolis in response to al-Shabaab's efforts to mobilize more disaffected youth after al-Shabaab attacked World Cup spectators in Uganda in 2010.

Many Somali-American children participated to embrace the sport despite fatwas against it.

They played basketball that Burhan Hassan never wanted to play again.

Bihi's efforts have resulted in him being expelled from the leadership of the Abubakar as Sadieq Islamic Center, with which he had previously had good relations.

He told me, "One day I saw an imam on TV calling us infidels and saying, 'This family is trying to destroy the mosque.'"

Now, I would like to talk about one last thing. It's the story of Amer Zenoun Zuani, a 22-year-old law student from Algeria who had the same dream of becoming a lawyer as I did in the 90's.

She did not give up on her studies, even though the fundamentalists who were fighting the Algerian state at the time threatened everyone to continue their education.

On January 26, 1997, Amell boarded a bus in Algiers, where he was studying to go home and spend the night of Ramadan with his family, but he had no intention of finishing law school.

When the bus arrived on the outskirts of her hometown, it stopped at a checkpoint with men from Islamic armed groups.

Amer was taken off the bus with his school bag on his back and killed on the street.

The men who cut her throat told those around her that if she went to university, the day would come when they would all be killed.

Amell died at exactly 5:17 p.m., it is known that her watch was broken when she collapsed in the street.

Her mother showed me a watch that remained optimistically pointing up towards 5:18, when the second hand would never come.

Just before he died, Amer said to himself and his sister's mother, "Nothing will happen to us, Inshallah, God wills, but if anything does happen, we must know that we are dead for knowledge.

Both you and your father should hold their heads high. ”

The loss of a young woman like this is immeasurable, and as I researched, I found myself looking for Amell's hope again. Her name means "hope" in Arabic.

I think I found it in 2 places.

The first is the strength of her family and all other family members to continue to tell their stories and move on with their lives despite the terrorism.

In fact, Amer's sister Lamia overcame her grief, attended law school, and now works as a lawyer in Algiers, which is only possible because the armed fundamentalists were largely defeated in Algiers.

And the second place I found hope for Amer was everywhere where women and men continued to rebel against jihadists.

We must support all those who honor Amer who continue this human rights struggle today, such as the Women's Network Living Under Islamic Law.

As victims rights activist Cherifa Kedar told me in Algiers, fighting terrorism alone is not enough.

We must also challenge fundamentalism because it is the ideology that breeds this terrorism.

Why aren't people like her better known, like everyone else?

Why is it that everyone knows who Osama bin Laden is, but few know the people who stand up to him in their respective contexts?

We have to change this situation. So please help us share these stories through your network.

Take another look at the permanently frozen Amer Zenoun watch. And now look at your watch and decide that now is the moment to dedicate yourself to supporting people like Amell.

We have no right to be silent about them because it is easier or because Western policies are flawed. Because 5:17 still reaches far too many Amer Zenoons in places like northern Nigeria where jihadists are still killing students.

Now is the time to speak up to support all those who peacefully counter fundamentalism and terrorism in their communities.

thank you.

(applause)

(Video) Nicolas Negroponte: Can I switch to a video disc that is in playback mode?

I'm very interested in how you combine humans and computers.

In the future, we will use TV screens or equivalents for e-books.

(music, crosstalk) I'm very interested in touch-sensitive displays, hi-tech, high-touch, no need to lift a finger to use.

There is another way computers contact people. It's about wearing it, physically wearing it.

On September 11th, the world suddenly got bigger.

NN: Thank you. (Applause.) Thank you.

When I was asked to do this, I was also asked to watch all 14 TED talks I gave in chronological order.

The first was actually two hours.

The second time it was an hour, then it's been 30 hours and the only thing I've noticed is that my baldness has gotten bigger.

(Laughter.) Imagine your life, 30 years going by. It was a pretty shocking experience for me, to say the least.

So what I'm going to do is share with you what happened in 30 years, then make predictions, and then tell a little bit about what I'm doing next.

And I put up the slides where TED 1 happened in my life.

And it's pretty important. Because I had 15 years of research before that, and I had a backlog, so it was easy.

It wasn't like I was Fidel Castro talking for two hours or Bucky Fuller.

I had 15 years of work and the Media Lab was about to start.

It was easy.

But there are some really very important things about that period and what happened.

One is that it was an era when computers had not yet spread to humans.

And another thing that happened during that time was that we were supposed to be picky computer scientists.

We weren't considered authentic.

So what I'm about to show you is, in retrospect, much more interesting and much more accepted than it was then.

So I'm going to go back to my very early work, characterizing these years. This was like what I used to do in the 60's. It was a very direct operation and I was very influenced by the architect Moshe Safdie because I studied his architecture. And you'll see we've also built robots that can build habitat-like structures.

For me, this wasn't the Media Lab yet, but it was the beginning of something called sensory computing. I also pick my fingers because everyone thought it was silly.

A paper was published about how stupid it is to use your fingers.

There are 3 reasons. One is low resolution.

Another was that my hands were blocking what I wanted to see, and the third winner was that fingers were never a device to use because they smeared the screen.

And this was a device we made in the 70's, but it was never picked up.

It has not only a touch sensor, but also a pressure sensor.

(Video) Audio: Put a yellow circle there.

NN: After work, this was also before TED 1 — (video) Audio: Please move west of the diamond.

Create a large green circle there.

Man: Oh shit.

NN: — I was planning to run the interfaces simultaneously, so when I spoke or pointed, I had multiple channels.

Entebbe happened.

In 1976, an Air France airliner was hijacked and taken to Entebbe. Not only did the Israelis perform an extraordinary rescue, but they also did so because they had practiced on a physical model of the airport. We built an airport, so we built a model in the desert, and when we arrived in Entebbe, we knew where to go because we had actually been there.

The US government asked us in '76 if we could reproduce it in our calculations. Of course, someone like me would say yes.

We'll get a contract soon, Department of Defense, and we built this truck and this rig.

I had a video disc, so I did some kind of simulation, but again this is 1976.

And years later, when you get this truck, you can use Google Maps.

Yet people thought, no, it wasn't serious computer science. And it was a guy named Jerry Wiesner who happened to be the president of MIT who thought it was computer science.

And one of the most important things for anyone wanting to start something in life is to make sure the president is on board with it.

So when I was doing the Media Lab, I felt like I had a gorilla in the front seat.

If you're stopped for speeding and a cop looks in the window and sees who's in the passenger seat, he'll say, "Oh, just keep going."

And we were able to make it happen. This is, inside the brackets, actually a cute device.

This is a lenticular photo of Jerry Weisner, and the only thing that changed in the photo was the lips.

So vibrating a small section of the lenticular sheet with his photo will lip-sync with zero bandwidth.

At the time, it was a zero-bandwidth teleconferencing system.

This was from the Media Lab. This is what we said we would do, the world of computers, publishing, etc. coming together.

Again, not universally accepted, but it was a very important part of early TED.

And this is exactly where we wanted to go.

And that set up the Media Lab.

One thing about age, one thing I can say with confidence is that I have been to the future.

I've actually been there many times.

The reason I say that is because how many times in my life have I said, "Oh, in 10 years this is going to happen," and 10 years have come.

And then you say, "Oh, in five years, this is going to happen."

And five years pass.

So I felt like I'd been there many times so I said a few things about this. And one of the most quoted things I've ever said is that computing isn't about computers. And it didn't get enough attention, but then it started spreading.

It started because people realized the medium wasn't the message.

And the reason I actually introduced this car in a pretty ugly slide is to re-tell the kind of story that characterized a little bit of my life.

This is a student of mine with a Ph.D. Known as the "backseat driver".

In the early days of GPS, cars were aware of their location and verbally told drivers when to turn right, when to turn left, and so on.

After all, there were a lot of things in these instructions that were very difficult for those times. For example, what does "next to the right" mean?

Well, if you come down the street, the next right is probably the next, there are a lot of problems, and the student wrote a great paper, and the MIT Patent Office said, "Don't patent it."

It will never be accepted.

Too much debt.

There may also be insurance issues.

Please don't patent it. ”

So we didn't, but this also shows that sometimes people don't really see what's going on.

Some work, but I'll briefly describe many of these sensory ones.

Some of you may know that young Yo-Yo Ma tracks his body to play the cello or hypercello.

Back then, they literally walked around like that.

Now it's a little less prominent and more common.

And there are at least three heroes I want to mention right away.

I will briefly talk about Marvin Minsky, who taught me a lot about common sense, and Muriel Cooper, who was very important to Ricky Worman and to TED. In fact, when she took the stage, the first thing she said was, "I introduced Ricky to Nicky."

And nobody calls me Nicky, nobody calls me Richard Ricky. So no one knew who she was talking about.

And, of course, Seymour Papert is the man who said, "You can't think about something unless you want to think about it."

And it can actually be unzipped later.

That's a pretty deep statement.

I'm going to show you some slides from TED 2, and they might be a little silly as slides.

At that time, I felt that TV was really a display.

Again, we're past TED 1 now, but it was right around TED 2. The point here is that as much as we can imagine the intelligence built into our devices, today I look at some of the research that is going on around the Internet of Things and I think this is kind of tragic. Because what's happening is people pick up the oven panel and put it on their phone or put the door key on their phone and they just take it and bring it to you. Because that's actually what you don't want. .

If you try to put the chicken in the oven, the oven will say "oh, it's chicken" and cook the chicken.

"Oh, I'm cooking chicken for Nicolas, and he likes this and that."

That's why we're starting today to bring intelligence back to the phone and closer to the user, rather than putting it inside the device. This is not a particularly enlightened view of the Internet of Things.

Television, again, television, what I said today goes back to 1990, but tomorrow's television will be like that.

Again, people laughed cynically, but not very gratefully.

In 1990s telecommunications, George Gilder decided to call this diagram the Negroponte switch.

I'm probably far less famous than George, so when he called it the Negroponte switch it took hold, but the idea that what came to the ground went to the air and what was in the air to the ground worked.

That was the original slide that year, and it worked steadily and obediently.

Launched Wired magazine.

I had a parent who regularly shared a reception desk, and a parent called me, mad that my son had quit Sports Illustrated and subscribed to Wired, and said, "Is it a porn magazine or something?"

Either way, I didn't understand why my son was interested in Wired.

I will explain a little sooner.

This is the back page of my favorite 1995 Newsweek magazine.

have understood. Read it. (Laughter) ["Nicholas Negroponte, Director of the MIT Media Lab, predicts that soon we will be able to buy books and newspapers directly over the Internet. Oh, sure." - Clifford Stoll, Newsweek, 1995] I have to admit it, but at least I am happy when someone tells you how wrong you are.

"Being Digital" came out.

For me, this gave me more exposure in the trade press and the opportunity to bring this to the public. It also allowed us to build a new media lab. If you haven't been there yet, please do visit. Not only is it a great place to work, it's also a beautiful piece of architecture.

That's what we said at TED.

[Today, multimedia is supposed to be experienced on the desktop or in the living room. The reason is that this device is very clumsy. This changes dramatically with smaller, brighter, thinner and higher resolution displays. — 1995] We came to them.

I looked forward to it every year.

It was a party like no other for Ricky Worman in the sense that he invited many old friends, including myself.

And something changed for me quite a lot.

I became more involved with computers and learning, and was influenced by Seymour, but in particular I see learning as most similar to computer programming.

When you write a computer program, you just have to enumerate things to get an algorithm and turn it into a sequence of instructions. But if there is a bug, and all programs have bugs, then you have to debug it.

You have to change, rerun, iterate. That iteration is a very good approximation of learning.

That led to Seymour and myself working in places like Cambodia and starting one laptop for our kids.

One laptop per kid is enough for a TED Talk, so I'll just go through it briefly, but it gave us the opportunity to do something relatively large in the areas of learning, development, and computing.

Few people know that "one laptop for one" was a billion dollar project. At least in the 7 years I've been doing it, but more importantly, the World Bank donated zero and USAID donated zero.

It's mostly countries using their own Treasuries, which was very interesting, at least for me, in terms of what they're going to do next.

Here are the various places it happened.

So I did an experiment, and that experiment happened in Ethiopia.

And here is the experiment.

The experiment is whether it is possible to learn without school.

And dropped the tablet without instructions and let the kids figure it out.

And within a short period of time, not only did they turn on their devices and use 50 apps per child within 5 days, they were singing "ABC" songs within 2 weeks, they were hacking Android within 6 months.

So it seemed interesting enough.

This is probably the best photo I have.

The kid on your right seems to have named himself a teacher.

Look at the child on the left.

Adults have nothing to do with this.

So I said, "Can we do this on a bigger scale?"

And what is missing?

At this point the kids are giving a press conference and it's like writing something on the dirt.

The answer is, what am I missing?

For lack of time, I will omit my predictions. Now the question is, what will happen?

I think the challenge is connecting the last billion people. Connecting the last billion is very different than connecting the next billion. The reason it's different is that the next billion people are an easy achievement, but the last billion people live in rural areas.

Being rural is not the same as being poor.

Poverty tends to be created by our societies, but people in that community are not just as poor.

They may be primitive, but the way you approach it, the way you connect them, the history of one laptop per child, and the experiment in Ethiopia have actually led me to believe that this can be done in a very short time.

So my plan is to do this on a geostationary satellite, which unfortunately I haven't been able to get permission from my partners to publish at the moment.

There are many reasons geostationary satellites aren't the best, but $2 billion could connect well over 100 million people. But the reason I chose two, and I'll leave this as the last slide, is because $2 billion is what we spent every week in Afghanistan.

So if you can connect Africa with the last billion people and get such numbers, there is no doubt that you should do it.

thank you very much.

(Applause) Chris Anderson: Stay there. please stay there

NN: Are you willing to give me extra time?

CA: No, it was very clever, very clever.

You played it beautifully.

Nicholas, what are your expectations?

(laughs) NN: Thank you for your question.

I'll tell you what my predictions are. my prediction. This is a prediction. Because it's 30 years later. I'm not here

However, as part of learning to read, we have consumed so much information through our eyes that it can be a very inefficient method.

So my prediction is that we will be ingesting information. You'll be swallowing pills and understanding English.

Swallow a pill and you'll know Shakespeare.

And the way to do that is through the bloodstream.

So when it gets into the bloodstream, it basically goes through the bloodstream into the brain and when it finds out it's in different parts of the brain it deposits in the right places.

So ingestion.

CA: Did you happen to date Ray Kurzweil?

NN: No, but I've been hanging out with Ed Boyden, and I've been hanging out with one of the speakers here, Hugh Herr, and there's a lot of people there.

This isn't so outlandish, so 30 years from now.

CA: I'll look into it.

I'm going to come back 30 years later and play this clip and we're all going to eat the red pill.

Thank you.

Nicholas Negroponte.

NN: Thank you.

(applause)

As I was preparing this talk, I searched for some quotes to share with you.

The good news: I found three books that I particularly liked. The first is Samuel Johnson's "When you make a choice in life, remember to live", the second reminds you of Aeschylus's "Happiness is a choice that takes effort", and the third is Groucho Marx's "I do not choose to belong to a club that makes me a member".

Now for the bad news. I didn't know which of these quotes to choose to share with you.

Sweet anxiety of choice.

In today's era of post-industrial capitalism, choice has been elevated to an ideal, along with ideas of individual freedom and self-actualization.

Now, with this, we also have a belief in infinite progress.

But behind this ideology is a growing sense of insecurity, guilt, a sense of inadequacy, a sense that our choices are failing.

Sadly, this ideology of individual choice has prevented us from thinking about social change.

This ideology actually seems to have been very effective in calming us down as political and social thinkers.

Instead of social criticism, we increasingly engage in self-criticism, sometimes leading to self-destruction.

So why is the ideology of choice still so powerful, even among people who don't have much to choose from?

Why do even the very poor identify with the idea of ​​choice, rational choice as we accept it?

Today, the ideology of choice is very successful in giving us room to think about our imaginary future.

Let's take an example.

My friend Manya was earning money working at a car dealership when she was in college in California.

Now, when Manya meets a typical customer, she discusses their lifestyle, how much they want to spend, how many children they have, what they need the car for, and so on.

They usually come to the apt conclusion of what the perfect car is.

Now, before Manya's customer went home and thought things over, she told him: "The car you're buying now is perfect, but in a few years, when the kids are already out of the house and you have a little more money, that other car will be ideal."

But what you're buying now is great. ”

Well, the majority of Manya's customers who came back the next day bought that other car - a car they didn't need - a car that was too expensive.

Well, Manya had great success selling cars and soon moved on to selling planes.

(Laughter) And knowing a lot about people's psychology prepared her well for her current job, that of a psychoanalyst.

So why were Manya's customers so unreasonable?

Manya's success was that she was able to open up in their heads an idealized image of the future, an image of themselves when they were already more successful and freer, and for them choosing another car was as if they were approaching this ideal, as if Manya had already seen them.

Now, we rarely really make perfectly rational choices.

Choices are influenced by our unconscious and community.

We often make choices by guessing, but what do other people think of our choices?

We also make choices based on what other people are choosing.

I'm also guessing what would be a socially acceptable choice.

Now, because of this, we actually continue to read reviews about cars endlessly, even after we've already picked one, such as after we've bought it, as if we want to convince ourselves that we made the right choice.

Well, choices cause anxiety.

They lead to risks and losses.

they are very unpredictable.

Because of that, people are now more and more worried that they can't choose anything.

Not long ago, I was at a wedding reception and met a young, beautiful woman. She immediately started talking to me about her fears of choice.

She told me, "It took me a month to decide which dress to wear."

She then said, "I spent weeks trying to figure out which hotel to stay for this one night.

And now I need to choose a sperm donor. ”

(laughter) I stared at this woman in shock.

"Sperm donor? What are you in a hurry?"

"I'll be 40 at the end of this year and I've been very bad at choosing men my whole life," she said.

Well, it was already the famous Danish philosopher Soren Kierkegaard who pointed out that choice is associated with risk and therefore causes anxiety, and anxiety is associated with possibility.

Well, we believe we can prevent these risks today.

We do endless market analysis and forecast future earnings.

Even in a market where chance and randomness matter, we think we can reasonably predict where it will go.

Now, coincidences are actually becoming very traumatic.

Last year my friend Bernard Harcourt from the University of Chicago organized an event called a conference on the concept of chance.

He and I were on a panel discussion together, and just before we submitted our papers, we decided to take the coincidence seriously, even though we didn't know each other's papers.

So we told the audience that what they were going to hear was a random paper, a mix of two papers that each had no idea what they were writing.

Well, I delivered the conference in this way.

Bernard read the first paragraph, I read the first paragraph, Bernard read his second paragraph, I read the second paragraph, and so on towards the end of the paper.

Now, you'd be surprised that the majority of our audience didn't think what they were just hearing was a completely random paper.

They couldn't believe that speaking from such an authoritative position as our two professors would take us seriously.

They thought we prepared the paperwork together and just joked that it was random.

We are living in an era of information, big data and knowledge about the inside of our bodies.

We have sequenced the genome.

We know more about our brains than ever before.

But surprisingly, more and more people are turning a blind eye to this knowledge.

Ignorance and denial are on the rise.

Now, regarding the current economic crisis, we believe that once we wake up again everything will be the same, no political or social change is necessary.

Regarding the ecological crisis, we do not believe that we need to do anything right now. Otherwise, we believe that others need to act before us.

Or even when an environmental crisis like the Fukushima disaster is already happening, there are often people living in the same environment with the same amount of information, half of whom will be worried about radiation and half of whom will ignore it.

Well, psychoanalysts are well aware that people surprisingly have a passion not for knowledge, but for ignorance.

Now what does that mean?

For example, let's say that when we're facing a life-threatening illness, many people don't want to know about it.

They'd rather deny the illness, so it's not very wise to tell them about it without asking.

Surprisingly, studies show that people who deny their illness can live longer than those who rationally choose the best treatments.

But this ignorance does not help much at the level of society.

A lot of societal damage can be caused if we don't understand where we are going.

Now, in addition to facing ignorance, we are also facing a kind of obviousness today.

Now, it was the French philosopher Louis Althusser who pointed out that ideology works in such a way as to create a veil of obviousness.

We really need to remove the veil of obviousness and think a little differently before making social criticism.

Going back to the ideology of personal and rational choice that we are so accustomed to, it is precisely here that we need to remove this obviousness and think a little differently.

Now, I often wonder why capitalism still embraces the idea of ​​the self-made human being, on which it has depended since its inception.

Why do we think we are the masters of our lives and can rationally make the best and ideal choices and not accept loss or risk?

And for me it is very shocking to see sometimes very poor people who don't support the idea of, say, taxing the rich more.

Here they often still have some kind of lottery mentality superimposed on themselves.

Well, maybe they don't think they're going to be successful in the future, but maybe they think my son could be the next Bill Gates.

And who would want to tax their son?

Alternatively, the question for me is why people without health insurance don't accept universal coverage.

Sometimes they do not accept it and again equate the idea of ​​choice, but they have nothing to choose from.

Well, Margaret Thatcher said, "Nothing beats society."

There is no society, only individuals and their families.

Sadly, this ideology still works well and is why the poor are ashamed of their poverty.

We may feel endlessly guilty that we weren't making the right choices and that's why we didn't succeed.

We worry that we are not good enough.

That's why we work long hours at work and just as hard to remake ourselves.

Now, when we worry about choice, we can easily give up our power to choose.

We either identify with gurus, self-help therapists who tell us what to do, or embrace totalitarian leaders who seem to vaguely know without questioning any choices.

Now, people often ask me, "What did you learn in your study of choice?"

And there is an important message that I learned.

When thinking about choices, I personally stopped taking them too seriously.

First, I realized that many of the choices I make are not rational.

It has to do with my unconscious, my guesses about what other people are choosing, or socially accepted choices.

I also embrace the idea that beyond thinking about individual choices, it is very important to rethink social choices. Because this ideology of individual choice has lulled us.

It really prevented us from thinking about social change.

We spend a lot of time choosing things for ourselves and give little thought to the choices we can make jointly.

Now, remember that choices always lead to change.

We can change individuals, but we can also change societies.

You can also keep more wolves.

We can choose to change our environment to grow more bees.

You can choose from a variety of rating agencies.

We can choose to control companies instead of letting them control us.

We may make changes.

Well, I started with Samuel Johnson saying that when you make choices in life, don't forget to live.

Finally, you can see that I had the option of choosing one of the three quotes at the beginning of the lecture.

I have the choice of nations, and we have the choice of rethinking what kind of society we want to live in in the future.

thank you.

(applause)

Four years ago, here at TED, I announced Mission 1 for Planet. Democratize access to the planet by launching constellations of satellites that image the entire planet every day.

The problem we were trying to solve was simple.

The satellite images you find online are old, usually years old, but human activity takes place over days, weeks, and months, and you can't fix what you can't see.

We wanted to give people the tools to see that change and take action.

A beautiful image of the Blue Marble taken by the Apollo 17 astronauts in 1972 helped mankind realize that they were on a fragile planet.

And we wanted to take it to the next level and give people the tools to take action and deal with it.

Well, after many Apollo programs of our own, we have achieved our goal, launching the largest constellation of satellites in human history.

Planet now captures images of the entire planet every day.

Mission accomplished.

(Applause.) Thank you.

It took 21 rocket launches -- it looks very simple in this animation, but it really wasn't.

And now there are over 200 satellites in orbit, with data downlinked to 31 ground stations built on Earth.

We get a total of 1.5 million 29-megapixel images of the Earth every day.

And there are on average over 500 images stored at one location on the Earth's surface.

A deep stack of data documenting massive changes.

And many people use this image.

Agricultural companies use it to improve crop yields for farmers.

Consumer mapping companies use it to improve the maps they find online.

Governments use it for border security and disaster response after floods, fires and earthquakes.

And many NGOs use it.

to track and stop deforestation.

Or help find refugees who have fled Myanmar.

Alternatively, it could track all activity in the ongoing crisis in Syria and hold all sides accountable.

And today, we are excited to announce Planet Stories.

Anyone can go online to Planet.com to open an account and view all images online.

It's a bit like Google Earth, except it uses the most recent imagery and lets you go back in time.

Compare any two days to see the dramatic changes happening around the Earth.

Or you can create a timelapse from our 500 images and watch them change dramatically over time.

And you can also share these on social media.

It's so cool.

(Applause.) Thank you.

We originally created this tool for news journalists who wanted to get unbiased information about world events.

But now we've made it available to anyone, whether for non-commercial or personal use.

And I hope it gives people the tools to spot and see changes on the planet and take action.

Well, mankind now has a database of information about the Earth that changes over time.

What is the next mission, what is mission 2?

In a nutshell, space and AI.

What we're doing with artificial intelligence is finding objects in all the satellite images.

The same AI tools used to find cats in online videos can also be used to find information in our photos.

So imagine being able to say that this is a ship, this is a tree, this is a car, this is a road, this is a building, this is a truck.

And if you can do that for all the millions of images that come down in a day, you're essentially creating a daily database of all the big objects on Earth.

And the database is searchable.

That's exactly what we do.

This is a prototype working with the API.

This is Beijing.

Now let's say we want to count the number of planes in an airport.

Selecting an airport will search for planes in today's image, as well as across the previous image stack, and output a graph of all planes at Beijing Airport over time.

Of course, you can also do this for all airports in the world.

Let's take a look here at the Port of Vancouver.

So do the same, but this time look for ships.

So, zoom in on Vancouver, select an area, and search for ships.

And it prints where all the ships are.

Now imagine how useful this would be for Coast Guard folks trying to track and stop illegal fishing.

Legitimate fishing vessels use AIS beacons to transmit their location.

However, we frequently find ships that do not.

Pictures don't lie.

So the Coast Guard can use that to go look for illegal fishing vessels.

And soon, not just ships and planes, but all other objects will be added, and we will be able to output a data feed of the positions of all these objects over time, allowing them to be digitally integrated into people's workflows.

Over time, we may see more sophisticated browsers that people pull from a variety of sources.

But in the end, you can imagine that we will completely abstract the image and have only a queryable interface to the Earth.

Imagine if I could ask, "Hey, how many houses are there in Pakistan?"

Plot it in relation to time. ”

"How many trees are there in the Amazon? Can you tell me where the trees were felled from this week to last week?"

Isn't that great?

That's what we're aiming for, and we call it 'Queryable Earth'.

Therefore, Planet's Mission 1 was to image the entire planet daily and make it accessible.

Planet's Mission 2 is to make all objects on Earth indexed and queryable over time.

Let me tell you a parable.

Google has indexed content on the internet and made it searchable.

Well, we index and make things searchable on the planet.

thank you very much.

(applause)

A movie is playing in your head right now.

It's a great multi-track movie.

With 3D vision and surround sound, you can recreate what you see and hear, but that's just the beginning.

Your movies have smells and tastes and touches.

It has sensations in your body, pain, hunger and orgasm.

There is emotion, anger and happiness.

There is a memory there that the scene of my childhood was flowing in front of me.

And in your conscious stream of thought contains this constant voice-over narration.

The heart of this film is that you experience all of this first hand.

This film is your stream of consciousness, the subject of your mind and experience of the world.

Consciousness is one of the basic facts of human existence.

Each of us is conscious.

We all have our own inner movie of you and you and you.

There is nothing more we know first hand.

At least I know first hand about my consciousness.

I don't know if you are conscious.

Consciousness is also what makes life worth living.

Our life has no meaning or value if we are not conscious of it.

But at the same time, it is also the most mysterious phenomenon in the universe.

Why are we conscious?

Why do we have such inner cinema?

Why aren't we just robots processing all this input and generating all this output without experiencing any inner movie?

No one knows the answers to these questions at this time.

I would like to suggest that integrating consciousness into science may require some radical ideas.

Some say the science of consciousness is impossible.

Science, by its very nature, is objective.

Consciousness is, by its very nature, subjective.

Therefore, the science of consciousness will never exist.

That view prevailed for most of the 20th century.

Psychologists studied behavior objectively, neuroscientists objectively studied the brain, and no one even mentioned consciousness.

Even 30 years ago, when TED began, there was very little scientific research on consciousness.

Well, about 20 years ago, everything started to change.

Neuroscientists like Francis Crick and physicists like Roger Penrose said it was time for science to attack consciousness.

And since then, there has been a real explosion of scientific research into consciousness.

And this work was also wonderful. It was very good.

But so far there are also some fundamental limitations.

A recent focus of consciousness science has been the exploration of correlations and correlations between specific regions of the brain and specific states of consciousness.

We've seen some of this kind of work by Nancy Kanwisher and the amazing work she put out just a few minutes ago.

For example, we now have a better understanding of the types of brain regions involved in the conscious experience of seeing faces, feeling pain, and feeling happy.

But this is still the science of correlation.

It's not a science of explanation.

We know that these brain regions accompany certain types of conscious experience, but we don't know why.

What I mean by this is that this kind of research in neuroscience answers some of the questions we want to answer about consciousness: what do specific areas of the brain do and what do they correlate with?

But in a way they are easy questions.

No need to blame neuroscientists.

There are really no simple problems with consciousness.

But it doesn't address the real mystery at the heart of the subject: why consciousness accompanies all physical processing in the brain.

Why are there such inner subjective films?

There is no specific information about it at this time.

And give neuroscience a few years, you might say.

It turns out to be another emerging phenomenon like traffic jams, hurricanes, life, and we will figure it out.

Classic emergent cases are all cases of emergent behavior, how traffic jams work, how hurricanes work, how organisms reproduce, adapt, metabolize, etc., all of which are problems of objective function.

We can apply this to the human brain to explain some of the behaviors and functions of the human brain as emergent phenomena. So how we walk, how we talk, how we play chess, all these questions of behavior.

But when it comes to consciousness, the question of behavior is one of the easier ones.

When it comes to hard questions, the question arises as to why all this behavior is accompanied by subjective experience.

And here the canonical paradigm of emergence, and even the canonical paradigm of neuroscience, so far, doesn't say much.

Well, I'm a scientific materialist at heart.

I want a scientific theory of consciousness that works, and have been banging my head against the wall for a long time looking for a theory of consciousness in purely physical terms that works.

But in the end I came to the conclusion that it didn't work for systemic reasons.

It's a long story, but the core idea is that what you get from a purely reductionist explanation in physical language, brain-based language, is a story about how a system works, its structure, its dynamics, the behavior it produces, which is great for solving simple problems of how we act and how it works, but when it comes to subjective experience, why does all this feel like it's from within?

So I think we're kind of stuck here.

We have this wonderful chain of explanations, and we're used to it that physics explains chemistry, chemistry explains biology, and biology explains parts of psychology.

But consciousness doesn't seem to apply to this diagram.

On the one hand, it is the data that we are conscious of.

On the other hand, we don't know how to fit it into our scientific worldview.

So I think that our current consciousness is a kind of anomaly and that it needs to be integrated into our worldview, but we don't know how yet.

Faced with such an anomaly, radical ideas may be required. I think we may need an idea or two that seem crazy at first before we can scientifically understand consciousness.

Well, I have a few suggestions as to what those crazy ideas are.

My friend Dan Dennett here today has one too.

His crazy idea is that the hard problem of consciousness does not exist.

The whole inner subjective idea of ​​cinema contains some kind of illusion and confusion.

In fact, just explaining the objective function and how the brain works explained everything that needed to be explained.

Well, give him more power.

This is the kind of radical idea we need to explore if we want a purely reductionist brain-based theory of consciousness.

At the same time, for me and many others, that view comes a little too close to simply denying consciousness data as satisfying.

So I go in a different direction.

In the rest of my time, I'd like to explore two crazy ideas that seem promising.

The first crazy idea is that consciousness is fundamental.

Physicists sometimes take several aspects of the universe as their fundamental building blocks: space, time, and mass.

They postulate fundamental laws that govern them, such as the law of gravity and quantum mechanics.

These basic properties and laws have not been explained from a more basic point of view.

Rather, they are seen as primitives, from which the world is built.

In some cases, the list of basics may be expanded.

In the 19th century, Maxwell realized that the existing fundamental laws (space, time, mass, Newton's laws) could not explain electromagnetic phenomena, so he postulated the fundamental laws of electromagnetism and postulated the electric charge as the fundamental element governing those laws.

I think that's the state of our consciousness.

As a matter of logic, if consciousness cannot be explained in terms of its existing primitives (space, time, mass, charge), the list must be extended.

The natural thing is to assume that consciousness itself is something fundamental, a basic component of nature.

This does not mean that suddenly science cannot be done with it.

This paves the way for doing science with it.

What we need, then, is to study the fundamental laws that govern consciousness, the laws that bind consciousness to other fundamental things (space, time, mass, physical processes).

Physicists sometimes say they need basic laws so simple they can be written on the front of a T-shirt.

Well, I think something similar to that is the situation of our consciousness.

We want to find a basic law simple enough to write on the front of a T-shirt.

We don't yet know what those laws are, but that's what we're after.

The second crazy idea is that consciousness may be universal.

Any system can have some degree of consciousness.

This view is sometimes called pan-spiritualism. Pan-mind to all, mind to mind, not only humans, dogs, mice, flies, but even Rob Knight's microbes, subatomic particles, all systems are conscious.

Photons also have some degree of consciousness.

The idea is not that photons are intelligent or think.

It's not like Photon is freaking out thinking, "Oh, I'm always flying around near the speed of light."

You can never slow down and smell the roses. ”

No, not at all.

It is possible, however, that photons probably contain raw subjective emotional elements, the primordial precursors of consciousness.

This may sound a little strange.

I mean, why would anyone think such a crazy thing?

Part of the motivation comes from the initial crazy idea that consciousness is fundamental.

If it's something as fundamental as space, time, and mass, it's natural to think that it can be universal.

It is also worth noting that while this idea seems counterintuitive to us, it is less counterintuitive to people of different cultures, where the human mind is considered more continuous with nature.

A deeper motivation comes from the idea that perhaps the easiest and most powerful way to find the fundamental laws that bind consciousness to physical processing is to bind consciousness to information.

Wherever there is information processing, there is consciousness.

Complex information processing like human complex consciousness.

Simple information processing, simple consciousness.

What's really interesting is that neuroscientist Giulio Tononi recently took this kind of theory and developed it rigorously using mathematical theory.

He has a mathematical measure of information integration called phi, which measures the amount of information integrated into a system.

And he thinks phi is with consciousness.

The human brain integrates an incredible amount of information, a high degree of phi, and a large amount of consciousness.

In mice, there is moderate information integration, still fairly important, and a fairly serious amount of consciousness.

However, the amount of phi decreases as we progress to worms, microbes, and particles.

The amount of information integration is reduced, but still not zero.

According to Tononi's theory, the level of consciousness will still be non-zero.

In fact, he proposes a basic law of consciousness: high phi, high consciousness.

Now, I don't know if this theory is true or not, but in fact it is probably the leading theory in the science of consciousness today, used to integrate the full spectrum of scientific data, and has the great property of being so simple that it can actually be written on the front of a T-shirt.

Another final motivation is that panpsychism might help integrate consciousness into the physical world.

Physicists and philosophers are well aware that physics is strangely abstract.

It uses a multitude of equations to describe the structure of reality, but it doesn't tell us about its underlying reality.

What ignites the equation, as Dr. Stephen Hawking puts it?

Well, in a pan-spiritualist view, we can leave the physical equations as they are, but we can also think of them as describing the stream of consciousness.

That's what physics is really doing in the end, and it explains stream of consciousness.

In this view, it is consciousness that ignites the equation.

From that point of view, consciousness does not hang outside the material world as some kind of extra.

It's right in the center.

This view, a pan-spiritualist view, has the potential to transform our relationship with nature, with potentially profound social and ethical consequences.

Some of these may be counter-intuitive.

I consciously thought I shouldn't eat anything, so I should become a vegetarian.

Well, if you're a pan-spiritualist and take that view, you're going to be very hungry.

So when you think about it, and I think this tends to change your view, it's the degree and complexity of consciousness that matters in ethical purposes and moral considerations, not the facts of consciousness.

It is also natural to ask about consciousness in other systems such as computers.

What about the artificial intelligence system in the movie Her, Samantha?

is she conscious?

Well, from an informational, panpsychistic perspective, she certainly has complex information processing and integration, so the answer is very likely "yes, she is conscious."

If true, it raises some pretty serious ethical questions about both the ethics of developing intelligent computer systems and the ethics of powering them down.

Finally, you may ask about the consciousness of the whole group, the whole planet.

Does Canada have its own consciousness?

Or, on a more local level, is the integrated group like a TED conference audience? Do we now have a collective TED consciousness, an inner movie of this collective TED group that is different from the inner movies of each part of us?

I don't know the answer to that question, but I think it's at least a question worth taking seriously.

Now, this pan-spiritualist vision is a radical one, but I don't know if it's true.

I'm actually more confident in the first crazy idea, that consciousness is fundamental, than in the second idea that consciousness is universal.

In short, this view raises countless questions and challenges, such as how those tiny consciousnesses form the complex consciousness we know and love.

If we can answer those questions, I think we are well on our way to a full-fledged theory of consciousness.

If not, this is probably the hardest problem in science and philosophy.

Don't expect to solve it overnight.

But I think it will work out eventually.

I believe that understanding consciousness is the real key to understanding the universe and to understanding ourselves.

It may require the right crazy idea.

thank you.

(applause)

When I first stood in the operating room and saw the actual surgery, I had no idea what was going to happen.

I was an engineering college student.

I thought it would be like TV.

Eerie music played in the background, and beads of sweat ran down the surgeon's face.

But it wasn't like that at all.

There was music playing that day, and I think it was probably Madonna's biggest hit. (Laughter) And there were a lot of conversations, not just about the patient's heart rate, but also about sports and weekend plans.

Since then, the more I've seen surgery, the more I understand what this means.

Oddly enough, today is just another day in the office.

But sometimes the music is rejected and everyone stops talking and stares at the exact same thing.

And then you know that something absolutely serious and dangerous is happening.

The first time I saw it was a type of surgery called laparoscopic surgery. And for those unfamiliar with laparoscopic surgery, in laparoscopic surgery, the surgeon makes three or more small incisions in the patient instead of the large incisions they are accustomed to.

These elongated instruments and cameras are then inserted to actually perform the procedure inside the patient's body.

This is great because it greatly reduces the risk of infection, greatly reduces pain, and speeds up recovery time.

However, there are tradeoffs because these incisions are made using a long, sharp instrument called a trocar.

The way the surgeon uses this device is to pick it up and push it into the abdomen until it pierces.

And the reason everyone in the operating room was staring at it that day was because they had to be very careful not to puncture the organs and blood vessels underneath.

However, this issue should be familiar to all of you. Because you must have seen it somewhere.

(laughs) Remember this?

(Applause.) You knew the straw was about to come through, and you didn't know if it would come out the other side and go straight to your hand, or if it would splatter all over the place, but you were terrified. right?

Every time I do this, I experience the same basic physics that I was watching in the operating room that day.

And that turned out to be really the problem.

In fact, in 2003 the FDA announced that trocar incision may be the most dangerous step in minimally invasive surgery.

In 2009, I saw a paper stating that more than half of the major complications in laparoscopic surgery were due to trocars.

And oh, by the way, this hasn't changed in 25 years.

So when I entered graduate school, I wanted to work on this.

As I was trying to explain to my friend exactly what I was spending my time doing, I said, "It's like drilling holes in your apartment to hang something.

There is a moment when the drill first breaks through the wall and plummets. right?

And he looked at me and said, "You mean when they drill into people's brains?"

And I said, "Excuse me?" (Laughter) So I did some research and found that they drilled into people's brains.

In fact, many neurosurgical procedures begin with a drill through the skull.

And if the surgeon isn't careful, it can plunge directly into the brain.

So this is the moment I started thinking, yes, cranial drills, laparoscopic surgery, why not in other medical fields?

Think about it, when was the last time you went to the doctor and didn't get stuck on something? Right?

So the truth is that it's everywhere in the world of medicine.

Here are some of the procedures that I have discovered that involve a tissue puncture step.

And even if you take just three of them—laparoscopic, epidural, and cranial drilling—these operations cause more than 30,000 complications each year in this country alone.

I call it a problem worth solving.

Now let's take a look at some of the devices used in this kind of procedure.

You mentioned epidural anesthesia. This is an epidural needle.

It is used to puncture and anesthetize the ligaments of the spine during childbirth.

This is a set of bone marrow biopsy tools.

These are used to actually dig a hole into the bone and take a bone marrow sample or take a sample of a bone lesion.

This is a bayonet from the Civil War.

(Laughter.) If I told you this was a medical lancing device, you probably would have believed me.

I mean, what's the difference?

So the more I did this research, the more I realized there had to be a better way.

And to me, the key to this problem is that all these different lancing devices share a common set of basic physics.

So what are those physics?

Let's go back to drilling the wall.

In other words, you are applying force to the drill toward the wall.

And Newton says the wall will apply the same and opposite force.

So drilling a hole in a wall balances these forces.

But there is a moment when the drill hits the other side of the wall for the first time, and at that moment the wall can no longer push back.

But your brain is not responding to that power change.

So for that millisecond, or how long it took you to react, you're still pushing and that unbalanced force causes acceleration, which is a dive.

But what if you could pull that tip back at the moment of the puncture and actually counter the forward acceleration?

That's what I tried to do.

So imagine you have a device with some kind of sharp tip to cut tissue.

What's the easiest way to undo that tip?

I chose Spring.

So when the spring is extended, the tip is ready to extend outward and puncture tissue, and the spring tries to pull the tip back.

How can I keep the tip in place until the moment of puncture?

I used this system.

When the tip of the device is pressed against the tissue, the mechanism expands outward and pushes into place against the wall.

The friction created then locks the tip in place and prevents the spring from pushing it back.

However, at the moment of puncture, the tissue cannot push the tip back any further.

The mechanism is thus unlocked and the spring retracts the tip.

Let's see it in slow motion.

That's about 2,000 frames per second. Notice the tip is on the bottom and trying to pierce the tissue.

And the moment the hole is opened, you will see the mechanism unlock and replace the chip on the spot.

Once again, I would like to show you a little more.

You'll see the sharp edge of the blade, and as soon as it punctures the rubber membrane, it disappears into this white, dull sheath.

right there.

It occurs within 4/100th of a second after puncture.

Also, because the device is designed to address the physics of puncture rather than the specifics of cranial punctures, laparoscopic surgery, and other procedures, it can be applied to these different medical disciplines and different length scales.

But it didn't always look like this.

This was my first prototype.

Yes, this is a popsicle stick with a rubber band on top.

This took about 30 minutes, but it worked.

And it proved my idea worked and justified working on this project for years to come.

I worked on this because I was very intrigued by this issue.

I couldn't sleep at night because of it.

But since I said punk is everywhere, I think you should be fascinated too.

So at some point it becomes your own problem too.

On my first day in the operating room, I never thought I would find myself on the other side of the trocar.

But last year, when I visited Greece, I got appendicitis.

So I was in a hospital in Athens and the surgeon told me he was going to do a laparoscopic surgery.

He was going to have my appendix removed through these small incisions and was talking about what to expect in recovery and what would happen.

He said, "Do you have any questions?" And I said, "Just one thing, sir.

What kind of trocar do you use? ”

So my favorite quote on laparoscopic surgery is that of Dr. H. C. Jacobeus. “It is the puncture itself that poses the risk.”

This is my favorite quote. Jacobis was the first to perform laparoscopic surgery on humans, writing about it in 1912.

This is a problem that has injured and sometimes killed people for over 100 years.

So it's easy to assume that for every big problem, there's a team of experts working around the clock to solve it.

The truth is, that's not always the case.

We have to get better at finding ways to find and solve those problems.

So if you come across a problem that bothers you, stay awake at night.

There are so many lives to save, so go crazy.

(applause)

I was born in Taiwan.

I grew up surrounded by all kinds of hardware stores, so I like going to night markets.

I love the energy of night markets, the colors, the lights, the toys, and all the unexpected things you find every time you go. Things like watermelons with straw antennas and Mohawk puppies.

As a child, I loved taking toys apart. When my brother wasn't home, I liked to take apart all the toys we had in the house, like his BB gun.

I also loved creating environments where people could explore and play.

For these early installations, I used plastic sheets, plastic bags, and other things I found at hardware stores and around the house.

I mixed something like a highlighter with water and pumped it through a plastic tube to create a glowing circulatory system that people could walk around and enjoy.

I like these materials because they look, feel and are very affordable.

I also liked making devices for manipulating body parts.

Strapped to my waist with a camera LED light and bungee cord, I videoed my navel and looked at it from a different perspective to see what it did.

(laughs) I also like modifying home appliances.

This is an automatic night light.

I cut out a light sensor, added auxiliary lines, stuck it to the TV using modeling clay, then videotaped my eyes and used the dark part of the eye to trick the sensor into thinking it was night and turn on a light bulb.

The whites of the eyes and eyelids trick the sensor into daylight, blocking out light.

I wanted to collect more different kinds of eyes, so I made this device using a bicycle helmet, a light bulb, and a TV.

It will be easier for others to wear a helmet and record their eyes.

This device allows you to symbolically extract other people's eyes, so you can use different eyes for other sculptures.

This sculpture has four eyes.

Each eye controls a different device.

This eye is spinning in circles on TV.

This eye is a bulging plastic tube.

This eye is watching a video in which another piece is being made.

And these two eyes are activating the glowing water.

Many of these works are later exhibited in museums, biennials and triennials around the world.

I love science and biology.

In 2007, I was a Fellow at the Smithsonian Museum of Natural History investigating marine bioluminescent organisms.

i love these creatures I love the way they look and feel.

They were soft and slimy, and I was fascinated by the way they used light in their surroundings to attract mates, protect themselves, or attract food.

This research has inspired my work in many ways, including movement and different light patterns.

So I started collecting different types of material in my studio, trying this, trying that, trying what kind of creatures I could come up with.

I've used a lot of computer cooling fans and tried combinations of them to see what happens.

It's an 8,000-square-foot installation made up of a variety of creatures, some hanging from the ceiling and others perched on the floor.

From a distance, it looks like an alien, but if you look closely, it's made of black garbage bags and Tupperware.

I would like to share with you how the ordinary can be transformed into something magical and wonderful.

(Applause.) Thank you.

(applause)

I am here to tell not only my story, but the stories of the outstanding Indian women I have met.

They continue to inspire me, teach me, and guide me on my journey through life.

They are wonderful women.

They had no chance to go to school, no degree, no travel, no exposure.

Ordinary women who acted extraordinary with the utmost courage, wisdom and humility.

they are my teachers

For the last 30 years I have worked, lived and lived in India and worked with rural Indian women.

I was born and raised in Mumbai.

When I was in college, I met Jayaprakash Narayan, the famous Gandhi leader who inspired young people to work in rural India.

I went to a village to work in rural India.

I was in the land rights movement, the farmers movement, the women's movement.

In a similar vein, I ended up in a very small village and fell in love with a young, handsome and dynamic young peasant leader. Although he was not well educated, he was able to lead the crowd.

So, driven by the passion of my youth, I married him and left Mumbai for a small village with no running water or toilets.

To be honest, my family and friends were horrified.

(laughter) I was staying in a village with my family and three children, and one day a few years later a woman named Kantabai came to me.

Kantabai said, "I want to open a savings account.

I asked Cantabai. "You work as a blacksmith.

Do you have enough money to save?

you are staying on the street

Can you help me? ”

Cantabai insisted.

She said, "I want to save money because I want to buy plastic sheets before the monsoon hits.

I want to protect my family from the rain. ”

I went to the bank with Kantabai.

Kanthabai wanted to save 10 rupees, or less than 15 cents per day.

The bank manager refused to open an account for Kantabai.

He said Mr Cantabai's amount was too small to be worth his time.

Kantabai had not asked the bank for a loan.

She was not seeking any subsidies or subsidies from the government.

All she wanted was to have a safe place to store her hard-earned money.

And it was her right.

And I went - and said, if the bank doesn't open an account for Cantabai, why don't you start a bank that gives women a chance to save like Cantabai?

and applied for a banking license from the Reserve Bank of India.

(Applause.) No, it was not an easy task.

Our license was denied -- because (laughter) -- the Reserve Bank said it couldn't issue a license to a bank with illiterate promoting members.

I was scared.

I was crying

And when I got home, I cried all the time.

I told Ms Kanthabai and other women that our women cannot get a license because they are illiterate.

Our women say, 'Stop crying.

We are going to learn to read and write and apply it again, but what then? ”

(Applause) We started a literacy class.

Women came every day.

They had a strong determination to come to class and learn to read and write after working all day.

I applied again 5 months later, but this time I didn't go alone.

Fifteen women accompanied me to the Reserve Bank of India.

Our women told Reserve Bank officials, "You refused a license because we can't read or write.

You refused the license because we can't read or write. ”

But they said, "There were no schools when we were growing up, so we are not responsible for not getting an education."

Then they said, "We can't read or write, but we can count."

(Laughter) (Applause) And they challenged the cops.

"Now tell me to calculate the interest on the principal."

(Laughter) "If you can't do that, don't license it.

Tell the police officers to do the math without calculators and see who can do it faster. ”

(Applause.) Needless to say, we have a banking license.

(Laughter) (Applause) Today, we have over 100,000 women banking with us and our capital is over $20 million.

This is all women's savings, women's capital, no outside investors asking for business plans.

no.

It's our own rural women's savings.

(Applause) I also want to say, yes, after getting the license, today Mr. Kantabai has his own house and is staying with his family in his own house for himself and his family.

(Applause.) When we started banking, I found that women were unable to come to the bank because they had lost their working day.

I started Doorstep Banking because I thought that if women didn't come to the bank, the bank would go to the women.

I recently started digital banking.

Digital banking requires you to remember your PIN number.

Our women said, 'We don't need a PIN.

And we tried to explain to them that maybe they should remember the PIN number. We will help you remember your PIN number.

they were solid.

They said, "Suggest something else," and they -- (laughter) and they said, "What about your thumb?"

I thought it was a great idea.

We linked that digital banking with biometrics and women are now using their thumbs to make digital financial transactions.

And do you know what they said?

They said, "Anyone can steal my PIN and take my hard-earned money, but no one can steal my thumb."

(Applause.) This reinforced a lesson I've always learned from women: never provide poor solutions to the poor.

they are smart.

(Applause.) A few months later, another woman, Kellabai, came to the bank.

She mortgaged her money and took out a loan.

I asked Kellabai, "Why would you mortgage your precious jewels for a loan?"

Kerabai said, "Don't you know that this is a terrible drought?"

No water.

I am mortgaging money to buy food and feed for the animals. ”

And she asks me, "Can I mortgage the gold and get some water?"

There was no answer.

Kerabai said to me, “You work in a village with women and financial people, what would you do if one day you ran out of water?”

Who are you going to do banking with when you leave this village? ”

Kerabai's pertinent question, we decided to start a cattle camp in the area during this drought.

This is where farmers can gather their livestock in one place to get feed and water.

It didn't rain.

Cattle camp extended for 18 months.

Kerabai was moving around the cattle camp singing songs of encouragement.

Kerabai became very popular.

The rain ended cow camp, but Kellabai came to our radio after cow camp ended. Our community radio has over 100,000 listeners.

"I want to have a regular program on the radio," he said.

Our radio manager said, "Kerabai, you are illiterate.

Do you know what she said?

"I can't read or write, but I can sing.

what's the problem? ”

(Laughter) And today Kerabai has a regular radio show. Not only that, she has become a famous radio jockey and has been invited to all radio stations even from Mumbai.

She receives an invitation and puts on a show.

(Applause) Mr. Kellabai has become a local celebrity.

One day I asked Kellabai, "How did you learn to sing?"

She said, "Shall I tell you the truth?"

When I was pregnant with my first child, I was always hungry.

I didn't have enough to eat.

I didn't have enough money to buy food, so I started singing to forget my hunger. ”

So strong and smart, right?

I have always believed that women in our country have overcome many obstacles, cultural, social and economic, to find their own way.

I would like to tell you another story. Sunita Kamble.

She took business school courses and became a veterinarian.

she is a dalit Although she is from the untouchable caste, she artificially inseminates goats.

It's a very male-dominated profession, and it's even harder for Sunita because she comes from an untouchable caste.

But she worked very hard.

She successfully gave birth to goats in the area and became a renowned goat doctor.

Recently, she received the National Honor Award.

I went to Sunita's house to celebrate and congratulated her.

When I entered the village, there was a large cutout of Sunita.

Sunita was smiling in the photo.

I was really surprised to see the untouchables from the village making a big cut at the entrance of the village.

I was even more surprised when I went to her house. Because the upper caste leaders, i.e. the men, were sitting in her house drinking chai and water. This is very rare in India.

Higher caste leaders do not go to untouchable homes to drink chai or water.

And they wanted her to come and speak at the village assembly.

Sunita broke the centuries-old caste conditions in India.

(Applause.) Let's talk about what the younger generation is doing.

As I stand here, I am so proud to be standing here from Maswad to Vancouver.

Go Home, Sarita Bise -- She's not even 16 yet.

she is getting ready She is part of our sports program, the Champions Program.

She is preparing to represent India in field hockey.

And do you know where she's going?

She will represent the 2020 Tokyo Olympics.

(Applause.) Sarita comes from a very poor shepherd community.

I just can't be more proud of her.

There are millions of women around you like Sarita, Kerabai and Sunita.

They may be all over the world, but at first glance it may seem that they have nothing to say and nothing to share.

That's so wrong.

I am very lucky to work with these women.

They share their stories with me, they share their wisdom with me. I am lucky to be with them.

Twenty years ago, I am very proud to go to the Reserve Bank of India and set up the first Regional Women's Bank.

Today they are encouraging me to go to the National Stock Exchange to launch the first fund dedicated to small rural women entrepreneurs.

They encourage me to create the world's first microfinance women's bank.

And one of them said, "My courage is my capital."

And I say here, their courage is my capital.

And you can make it yours if you want.

thank you.

(applause)

I would like to introduce an organism called Physarum Polycephalum, which is a slime mold.

This is a type with an identity crisis, but it's not a type, so let's make that clear first.

It is one of the 700 known species of slime molds belonging to the amoeba kingdom.

It is a cell that is a single-celled organism that combines with other cells to form massive supercells to make the most of its resources.

Therefore, it is likely that slime molds have thousands or millions of nuclei inside, all sharing a cell wall and all functioning as one entity.

In their natural habitat, you might find slime molds that forage in woodlands and eat rotting plants, but you might find them in laboratories, classrooms, and even artists' studios as well.

It was about 5 years ago that I first encountered slime molds.

A microbiologist friend of mine gave me a petri dish with little yellow blobs and told me to go home and play with it.

The only instructions I was given were that it prefers dark, damp places and its favorite food is oatmeal porridge.

I am an artist who has worked with biology and scientific processes for many years, so living materials are not new to me.

I have worked with plants, bacteria, squid and fruit flies.

So I wanted to bring my new collaborators home and see what they could do.

So I took it home and checked it out.

I fed them a variety of foods.

I watched how it was networked.

It formed a connection between food sources.

I saw it leaving footprints that indicated where it had been.

And I realized that if I had just one petri dish, I would get bored and run away and find a better place to live.

Observations were documented with time-lapse photography.

Slime molds grow about one centimeter an hour, so they're not really suitable for live viewing unless you're really meditating, but we were able to observe some very interesting behavior through the timelapse.

For example, a slime mold eats a heaping pile of oats and then simultaneously sets off to explore new territories in different directions.

When it meets itself, it knows it is already there, realizes it is there, and instead retreats and grows in another direction.

I am very impressed with this feat. How something that is essentially just a sac of cellular mucus can map its territory, perceive itself, and move seemingly with intention.

I have found countless scientific studies, research papers, and journal articles, all citing great research on this one organism, and I would like to share some of them with you.

For example, a team from Hokkaido University in Japan filled a maze with slime mold.

It combined to form aggregated cells.

They introduced food, oatmeal of course, at two points, which formed a connection between them.

We withdrew from vacant lots and dead ends.

There are four routes through this maze, but the slime mold has repeatedly established the shortest and most efficient route.

That's pretty smart.

The conclusion drawn from their experiments was that slime molds possess a primitive form of intelligence.

In another study, slime molds were exposed to cold air at regular intervals.

I didn't like it. It doesn't like it cold.

I don't like it dry.

This was repeated at regular intervals, and each time the slime mold slowed down its growth accordingly.

But in the next interval, the researchers didn't give them the cold air, but the slime mold slowed down in anticipation of the cold air coming on.

I somehow sensed that the time had come for the cold air, which I didn't like, to blow.

The conclusion of their experiment was that slime molds can learn.

Third experiment: Slime molds were invited to explore an area covered with oats.

It will branch into a fan shape.

As it moves, it continues to form networks, connect, and forage for food whenever it finds a food node.

After 26 hours, a fairly robust network was established between the different oats.

This is nothing remarkable until you learn that the central Oates represent the city of Tokyo and the surrounding Oates are suburban stations.

The slime mold replicated Tokyo's transportation network--(laughter)--a complex system developed over time by condominiums, civil engineering, and city planning.

The work that took more than 100 years was completed in just one day in the case of the slime mold.

The conclusion of their experiment was that slime molds could form efficient networks and solve the traveling salesman problem.

It's a biological computer.

As such, it is mathematically modeled and algorithmically analyzed.

It is sonified, replicated and simulated.

Teams of researchers around the world are deciphering its biological principles, understanding its computational rules, and applying that learning to the fields of electronics, programming and robotics.

So the question is, how does this work?

No central nervous system.

It has no brain, but can perform actions associated with brain functions.

You can learn, remember, solve problems and make decisions.

So where is that intelligence?

This is a microscope video that I took. The magnification is about 100x and the speed is about 20x. Inside slime molds there is a rhythmic pulsating flow, a vein-like structure that carries cellular matter, nutrients and chemical information into the cell, first in one direction and then back in another.

And this continuous, synchronized oscillation within the cell allows the cell to form a highly complex understanding of its environment without the need for large control centers.

Here is that intelligence.

Therefore, academic researchers at universities are not the only ones interested in this creature.

A few years ago I founded SliMoCo, a slime mold collective.

This is an online, open and democratic network for slime mold researchers and enthusiasts to share their knowledge and experiments across disciplines and disciplines.

Membership in the Slime Mold Collective is self-selected.

As slime mold found oats, people found groups.

And not just scientists, computer scientists, and researchers, but artists like me, architects, designers, writers, activists, all sorts of people.

A very interesting and eclectic member.

Let me give you just a few examples. An artist who paints with fluorescent Phisalum. A collaborative team combining biological and electronic design and 3D printing technology in a workshop. Another artist uses slime molds as a way to engage communities and map a region.

Here, the slime mold is used directly as a biological tool, but metaphorically as a symbol of how to talk about social cohesion, communication and cooperation.

Other public activities include a number of slime mold workshops, which are creative ways of working with slime molds.

So people are invited to come and learn what amazing things slime molds can do, and they design their own petri dish experiments, environments in which slime molds can move so that their properties can be tested.

Everyone is invited to bring home a new pet and post their results to the Slime Mold Collective.

And this collective has allowed me to collaborate with a variety of interesting people.

I am working with filmmakers on a feature-length slime mold documentary, and I would like to emphasize the feature-length. It is currently in the final stages of editing and will be released to cinema screens soon.

(Laughs) And thanks to that, I was able to conduct the world's first human slime mold experiment.

This is part of an exhibition held in Rotterdam last year.

We invited people to become slime molds for 30 minutes.

So we basically tied people together into giant cells and encouraged them to follow the slime mold rules.

You should communicate through vibration rather than speaking.

You must operate as one entity, one collective cell, there is no ego, and your motivation to move and explore your environment is to seek food.

So when a group of strangers wearing “Be Slime Mold” T-shirts and tied up with yellow ropes wandered through the museum park, chaos ensued.

When they met the trees, they had to re-form their connection and re-form as mass cells by not speaking.

This is in many ways a silly experiment.

This is not hypothetical.

We are not trying to prove or demonstrate anything.

But what it did offer us was a way to engage the wider public with ideas of intelligence, agency, and autonomy, and provide a playful platform for discussing subsequent events.

The most exciting part of the experiment was the conversation that followed.

A completely spontaneous symposium was held in the park.

People talked about human psychology and how hard it is to let go of individuality and ego.

Others have talked about bacterial communication.

Each person brought their own interpretation, but the conclusion drawn from this experiment was that people in Rotterdam are very cooperative, especially when given beer.

We didn't just give them oats.

We gave them beer too.

However, they were not as efficient as slime molds. Slime molds are a fascinating subject for me.

It is biologically fascinating and computationally interesting, but it is also a symbol and a way of addressing concepts of community, collective action and cooperation.

Much of my work is based on scientific research, so this is an homage to maze experiments, but in a different way.

And slime mold is also my crafting material.

Co-producer of photography, prints, animations and interactive events.

Slime mold doesn't choose to work with me, but to be precise, it's a collaboration of sorts.

By understanding how things work, you can predict certain behaviors, but you cannot control them.

Slime Mold has the final say in the creative process.

And after all, it has its own internal aesthetic.

These branching patterns we see can be found across all forms and scales in nature, from deltas to lightning strikes, from our own blood vessels to neural networks.

There are obviously important rules at work in this simple yet complex creature, and whatever our professional perspectives and methods of inquiry, there is much to be learned from observing and engaging with this beautiful, brainless mass.

I'll give you polycephalum.

thank you.

(applause)

(music) This is a human test, a test to see if you are human.

Please raise your hand if this applies to you.

Do you agree? yes?

Let's get started.

Have you ever eaten boogers since childhood?

(laughs) It's okay, it's safe here.

Have you ever let out a small shriek when you remember something embarrassing?

Have you ever deliberately put the first letter of your text in lowercase to appear sad or disappointed?

(Laughter) Okay.

Have you ever ended text with a period as a sign of aggression? period.

Have you ever laughed or smiled when someone said something terrible to you and wondered why you reacted that way for the rest of the day?

yes.

Have you nearly lost your ticket thousands of times while walking from check-in to the gate?

yes.

Have you ever put on your pants and only later realized that your loose socks were crushed against your thighs?

(laughs) Good.

Have you ever been locked out of your account because you tried to guess someone else's password too many times?

Hmm.

Have you ever had that nagging feeling that one day you'll be exposed as a fraudster?

Yes, it's safe here.

Have you ever wished you were just naturally good at what you didn't discover?

Hmm.

Have you ever broken something in real life and found yourself looking for an undo button?

Ever misplaced your TED badge and immediately started imagining what a three-day Vancouver vacation would be like?

Have you ever wondered how someone you thought was so ordinary could suddenly become so beautiful?

Have you ever stared at your phone with an idiot laugh while texting someone?

Have you ever texted that person afterwards with the phrase, "I'm staring at my phone laughing like an idiot"?

Have you ever been tempted to look at someone else's phone and then gave in?

Have you ever had a conversation with yourself and suddenly realized you were someone you really hated?

(Laughter) Have you ever felt like your phone was about to break up in the middle of an argument when your cell phone battery died?

Have you ever thought that tackling a problem together was useless? Because it could have been easier, or it should have happened naturally.

Have you ever noticed that in the long run it rarely happens naturally?

Have you ever woken up feeling happy and suddenly had horrible memories of someone leaving you?

Have you ever lost the ability to imagine a future where there are no people left in your life?

Have you ever looked back on that event with Autumn's sad smile and the realization that the future will happen regardless?

congratulation.

The test is now complete.

you are all human.

(applause)

This is me

Today I would like to talk about the structure of polypeptides.

(Laughs) Regarding “LOST,” people often ask me, “What on earth is that island?”

It's usually followed by "No, seriously, what the hell is that island?"

Why are there so many mysteries?

And I was thinking about what to talk about at TED.

When I spoke to a kind TED representative, he said, "Listen, what should I talk about?"

He said, "Never mind. Just think deeply."

(Laughter.) And I took great comfort in that.

If you are here, thank you.

I was trying to think of what to say. good question.

Why do I get so involved in mysteries?

And then I started thinking about why I was doing what I was doing, and I started thinking about my grandfather.

He died in 1986. he was a wonderful person.

One of the things that made him great was that he founded an electronics company after World War II.

He started selling surplus parts and kits to schools.

So he had an incredible curiosity.

When I was a kid, I saw him come up to me with radios and phones and everything.

And he opened them up, unscrewed them, and revealed the inner workings - which I'm sure many of us take for granted.

But it's a great gift to give a child.

It's about exposing this to show how it works, why it works, and what it is.

In many ways he was the ultimate deconstructor.

And my grandfather was the one who got me into all sorts of weird crafts, not just taking things apart, but printing and letterpress.

I am obsessed with silkscreen, bookbinding and box making.

When I was a kid, I was always taking things apart like boxes.

And last night I took apart the Kleenex box at the hotel.

I was just watching. And I tell you — (laughter) that's beautiful. I swear to God

Livs is here and I met him at a book fair many years ago. He makes pop-up books.

And I'm obsessed with paper engineering.

Alignment marks for notching, printing, gluing, and ink.

My grandfather was the one who got me into all these things.

He also provided me with tools.

He was a great encourager and kind of sponsor to make things.

And when I was 10, he gave me a Super 8 camera.

Back in 1976, it was kind of insane that a 10-year-old could use a camera.

And you know, he was very generous. I couldn't believe it.

He didn't do it without manipulation.

So I called him and said, 'Listen, Grandpa, I really need this camera.

you don't know This is what I want to make a movie.

I'm going to get invited to TED one day--" (Laughter) And, you know, my grandmother was awesome.

Because it felt like she would answer the phone.

She'll say, "Better than medicine, Harry.

she was great.

So, with her help, I found myself getting something like this, and suddenly, you know, when I was 14, I got a synthesizer.

He humored me about my obsession with other things, like magic.

The problem is going to a magic store called Lou Tannes Magic in New York City.

It was a wonderful magic store.

It was a crappy little building in Midtown, but you got on the elevator and it opened and there was this little little magic shop.

You will be in a magic shop. And it was a magical place.

So I got all these magic tricks. here. I will show you.

That's good, but I can't move anymore.

Now, the rest of the work should be like this.

It's like, "Oh wow, look at my computer over there!"

(Laughter) So one of the things I bought at the magic store was this. Tannen Mystery Magic Box.

The premise behind Mystery Magic Box is: $15 buys $50 worth of magic.

It's savings.

(Laughter) Well, I bought this decades ago, no kidding.

Looking at this, you can see that it is unopened.

But I'm stuck with this forever.

Now when I was looking at this, it was on my shelf in my office as usual, and I wondered why I hadn't opened it.

And why did I keep it?

I don't keep everything, but for some reason I haven't opened this box.

And for some reason, it felt like there was a key to this thing in speaking at TED about things I hadn't talked about before and bored people elsewhere.

So I thought maybe there was something to this.

And then there was this giant question mark.

Why can't I open my own textbook?

Then I realized I hadn't opened it because it represented something important to me.

It represents my grandfather.

Can I cry at TED?

Because—no, I'm not going to cry.

(Laughter) But -- (Laughter) The problem is that it represents an infinite number of possibilities.

it represents hope. It represents possibilities.

And what I love about this box, and what I've found that whatever I do, is that I find myself drawn to that sense of possibility, that possibility.

And I realized that mystery is the catalyst of the imagination.

It's not such a groundbreaking idea now, but that's when I started to think that mystery might be more important than knowledge.

So I started thinking about 'Lost' and what we're doing. And, oh my God, I realized that there are mystery boxes all over my activity.

In the production of Lost, my co-creator Damon Lindelof and I were basically tasked with making the series, and we had very little time.

It took eleven and a half weeks to write, cast, staff, shoot, cut, post, and submit the two-hour pilot.

I didn't have much time.

And that sense of possibility, what could this be?

I didn't have time to develop it.

I'm sure you all know someone who can tell you what you can't do and what you should change.

I didn't have time for that, but that's kind of amazing.

So we did this show. Here's a small clip from the pilot for those who haven't seen it yet or don't know. Here are some of the things we did.

(engine roar) (video) Claire: Help!

Jack: Get him out of here! Keep him away from the engine!

(engines roar) C: Help me! Labor pains are coming!

J: How many months pregnant are you?

C: It's only been eight months.

J: So how far do they come?

Child: I don't know. I think it just happened.

Man: Hi! Hey! Hey, get out of there -- JJ Abrams: Ten years ago, if you wanted to do that, you had to kill the stuntman.

(Laughs) It's going to be harder.

(Laughter) Amazingly, we were able to do this.

And part of it was the amazing availability of technology, we knew we could do anything.

we could have written it. We couldn't have painted it the same way.

So part of what's great about me is in the creative process, and technology is incredibly inspiring to me.

Did you notice that blank page is a magic box?

It needs to be filled with something great.

I used to have a script of Ordinary People and I was flipping through it.

That romance was amazing to me. It will inspire me.

I wanted to fill the pages with the same kind of spirit, thoughts and feelings as the script.

As you know, I love Apple computers.

I'm crazy.

So Apple computers, PowerBooks, this computer is a challenge for me.

It boils down to, "Are you going to write something worthy of me?"

I feel so, I can't help it.

(Laughter) And I'm often like, 'I'm going out today.

When it comes to its content, I look at the story and wonder what the story could be other than a mystery box.

I have a fundamental question. On television, the first act is called a teaser.

It's literally a teaser. That's a big question.

That's why you're drawn in. Then I have another question.

And so it goes on. Look at "Star Wars".

who is that? I do not understand. Mystery Box! There he meets Luke Skywalker.

When he gets the droid, it shows a holographic image.

You know it's a message. She wants to find Obi-Wan Kenobi.

he is her only hope. But who is Obi-Wan Kenobi?

Mystery Box! There he meets Ben Kenobi.

Ben Kenobi is Obi-Wan Kenobi. Oh my God! That's what keeps us -- (Laughter) Haven't you seen it?

(laughs) It's big! Anyway -- there's something about the Mystery Box that I was forced to do.

Then there is the mystery, the withholding of information, in terms of imagination.

Doing it on purpose is much more appealing.

Whether it's like the shark in Jaws or not, if Spielberg's mechanical shark, Bruce, was moving, it wouldn't have been so scary. You've seen it too much

In "Alien", the figure of the alien was not drawn at all. It's horrible.

Even in the romantic comedy-like movie The Graduate, they were on a date, in the car, and noisy, so they topped it off.

I can't hear anything they say!

I can't even hear a word! But the most romantic date ever.

So for me, there it is. And finally, an idea that extends the paradigm a little bit, the mystery box idea.

That is, what you think you are getting and what you are actually getting.

And that's true of many movies and stories.

Take "E.T." for example -- "E.T." What is this incredible movie about?

it's not. "E.T." about divorce.

"E.T." is a story about a heartbroken, divorced family, and ultimately this kid who can't find his way.

"Die Hard", right? A crazy, wonderful, fun action-adventure movie set in buildings.

It's about a man on the brink of divorce.

He shows up in LA with his tail between his legs.

There are great scenes. It may not be the most amazingly dramatic scene in history, but it's a pretty good one.

It takes half an hour to invest in a character to get to what you expect.

When you watch a movie like "Jaws," are the scenes you'd expect to see on the screen?

These are the kinds of scenes you remember and expect from "Jaws."

and she is eaten. there's a shark

(Woman screams) The whole point of Jaws is really the story of a man in his place in the world, grappling with sorts of things—his masculinity, his family, how he's going to get by in this new town.

This is one of my favorite scenes, and one that doesn't always come to mind when you think of Jaws. But it's a great sight.

(Video) Father: Come on.

Son: why?

Father: I need it.

JJA: Come on. "Why? Because I need it"?

(laughs) Come on! So you think about "Jaws" -- it's, you know, the investment in the character, what's really in the box, you know?

That's why when people make sequels or rip off genre movies, they're ripping off the wrong thing.

Don't steal sharks and monsters.

As you know, if you ripped something off, you ripped off the character.

Strip away what's important.

In other words, look into yourself and understand what's inside you.

So there it is. Then there is distribution.

When I go to the theater, I get so excited to see something.

The moment when the lights go down is often the best moment.

And you are filled with that wonderful, excited anticipation.

And then the movie is there, it starts playing, and then something happens, and you're like, 'Oh...' and then 'Hmm...' often.

If it's a great movie, you'll be with it because you're willing to dedicate yourself to it.

Whether it's a TV, an iPod, a computer, a cell phone, for me -- funny enough, I'm -- as I said, I'm an Apple fanatic -- one day about a year or so ago, as I always do, I signed on online in the morning to watch Steve Jobs' keynote.

Then he showed up and introduced the Video iPod. What was on the giant iPod behind him?

"lost"! I had no idea!

The inspiration I got from technology now takes advantage of what I do to sell technology. It's nuts!

(Laughter) I was going to mention a few more, but I'll leave it at that.

I'll tell you one more thing that has nothing to do with you.

this is online. Six years ago they did this.

This was done online by people with experience in visual effects.

But the point is, they were doing something with the mystery boxes they had - everyone has them now.

What I realized was what my grandfather did for me when I was a kid, and now it's accessible to everyone.

My grandfather doesn't have to be there, but it would have been nice.

But I must say -- this is a guy doing something with a Quadra 950 computer -- the resolution is a bit low -- using Infinity software, which was discontinued 15 years ago.

He's doing something as good as I have from Hollywood.

I think the most incredible kind of mystery is the question of what happens next.

Because we are democratized now.

The things I was lucky enough to want when I was a kid are now everywhere.

And I feel there are great opportunities there.

And it gets very exciting to think of the filmmakers out there that would have been silenced, you know, the people that were silenced in the past.

In classes, lectures, etc., I used to say to people who wanted to write, "Go ahead, write! Do your own thing."

Free, no permission required.

But now I can say, "Let's make a movie!" Nothing is stopping you from going out and getting technology.

You can lease, rent, or buy off-the-shelf something as good or as good as what "regular people" use.

Communities do not function optimally when only the elite have control.

And I feel like this is a great opportunity to see what else is out there.

ILM has worked. It was unbelievable.

There are some sequences in this movie that are like some of the moments that we are going to show you.

There is.

(Explosion) Obviously I'm obsessed with big crazy explosions.

My favorite visual effect in this movie is the one I'm about to show you.

This is the scene where the character played by Tom wakes up.

he is sleepy he's mad

And the man wakes up, sticks a gun in his nose, and shoots this little capsule into his brain to kill him later, like bad guys do.

(Video) Brownway: Good morning.

JJA: Alright then.

When we shot that scene, the actor who had the gun, British actor Eddie Marsan, was a sweetheart and a great guy. He picked up a gun and kept sticking it in Tom's nose, which hurt Tom's nose.

And I learned this early in my career: Don't hurt Tom's nose.

(laughs) There are three things I don't want to do.

Second, don't hurt Tom's nose.

Eddie has this gun - and he's this sweet Englishman.

It's like, "This has to look good."

And then I realized that something had to be done because it wasn't working.

Then I remembered what I would have done if I had used the Super 8 camera that my grandfather had sat me in that room, and realized that the hand didn't have to be Eddie Marsan's.

It could be Tom's.

And Tom will know how hard to push the gun.

He didn't hurt himself.

We put it in Eddie's sleeve and the hand you see is Tom's hand, not Eddie's. So Tom is doing two things.

(laughter) And he didn't ask for more money.

So here, here. Look again.

there he is he is awake

JJA: Tom's hand. Tom's hand. Tom's hand.

So...

(Applause.) Thank you.

(Applause) I mean, you don't need the best technology to do what works in movies.

And the mystery box in honor of my grandfather remains closed.

thank you.

(applause)

I would like to share with you a new model of higher education. This model, once scaled up, can enhance the collective intelligence of millions of creative and driven individuals who may be left behind.

Look at the world

Pick a spot and focus there.

There will be people who pursue higher education.

Let's take a look at some of them.

Patrick.

Patrick was born in Liberia into a family of 20 children.

During the civil war, he and his family were forced to flee to Nigeria.

There, despite the circumstances, he graduated from high school with near-perfect grades.

He wanted to continue his higher education, but his family was living on the poverty line, so he was soon sent to South Africa to work and send money to support his family.

Patrick never gave up on his dream of getting a higher education.

Late at night after work, he surfed the Internet looking for ways to study.

Meet Debbie.

Debbie is from Florida.

Her parents never went to college, and neither did her siblings.

Debbie works her whole life, pays taxes, supports herself every month, and is proud of her American dream. This dream is not complete without higher education.

However, Debbie has no savings for higher education.

She can't pay her tuition.

She couldn't quit her job either.

Bad encounter.

Wael is from Syria.

He has experienced firsthand the misery, the horrors and the failures inflicted on his country.

He is a big believer in education.

He knew that if he could find the opportunity to get a higher education—an opportunity to stay ahead of the rest—he would have a better chance of survival in a world turned upside down.

Just as the higher education system fails millions of potential students: millions who graduate from high school, millions who qualify for higher education, millions who want to study but cannot access it for various reasons, so did Patrick, Debbie and Wael.

First, there is the financial aspect.

College is expensive. we all know that.

In most parts of the world, it is impossible for the average citizen to obtain higher education.

This is probably the biggest problem facing our society.

Higher education has ceased to be a right for all and has become a privilege for the few.

Second: cultural.

Students who qualify for higher education can afford it and want to study, but they can't because it's not decent and it's not the place for women.

This is the story of millions of women in Africa, for example, who are prevented from pursuing higher education because of cultural barriers.

And here is the third reason. UNESCO says 100 million students will be out of higher education by 2025 simply because there aren't enough seats to meet demand.

They take a placement test and pass, but still can't get access because there are no vacancies.

These are the reasons why I founded People's University, a non-profit, tuition-free, degree-granting university, to provide and create alternatives for those who have no other choice. It is an affordable, scalable alternative that disrupts the current education system and opens the gates to higher education for all eligible students, regardless of income, place of residence, or societal evaluation.

Patrick, Debbie and Wael are just three of the 1,700 students who have been accepted from 143 countries.

(Applause.) Thank you.

(Applause.) We didn't have to reinvent the wheel.

We looked into what wasn't working and used the amazing power of the internet to get around it.

We set out to build a model that would almost completely reduce the cost of higher education.

And that's how we did it.

First, bricks and mortar cost money.

Universities have costs that virtual universities do not.

You don't have to pass these costs on to your students.

they don't exist.

You don't have to worry about capacity either.

There is no limit on the number of seats in the virtual university.

In reality, no one has to stand in the back of the auditorium.

Textbooks are also something that students don't need to buy.

By taking advantage of open educational resources and the generosity of professors who make their materials available for free access, students no longer need to buy textbooks.

All our materials are free.

Even the most expensive professors on a university's balance sheet are free to students.

More than 3,000 people, including presidents, vice-chancellors, professors and academic advisors from leading universities such as New York University, Yale University, Berkeley University, and Oxford University, attended to help students.

Finally, our belief in peer-to-peer learning.

We use this sound teaching model to encourage students from all over the world to interact and learn together, and to reduce the time professors spend on class assignments.

If the Internet has made us a global village, this model can develop future leadership.

See how we do it.

We only offer two programs: Business Administration and Computer Science. These two programs are the most in demand around the world and are the two most likely to help students find employment.

Once accepted, students are placed in small classrooms of 20-30 students to ensure that students with special needs are accommodated.

Plus, every nine weeks you'll meet new peers, brand new students from all over the world.

Each week, students go to class to find lecture notes, reading assignments, homework assignments, and discussion questions that are the core of our learning for the week.

Every week, all students are required to contribute to class discussions and comment on other students' contributions.

In this way, we open our students' minds and bring about positive changes in their attitudes towards other cultures.

By the end of each week, students will take a quiz, submit their homework, be assessed and graded by other students under the supervision of the instructor, and move on to the next week.

Take the final exam by the end of the course to get a grade and move on to the next course.

We open the gates of higher education to all qualified students.

All students are welcome to study with us as long as they have a high school diploma, sufficient English and an internet connection.

No audio or video is used.

No broadband required.

Students can study with us from anywhere in the world with an internet connection.

Our tuition is free.

All we ask students to pay is the cost of the exam, which is $100 per exam.

A full-time undergraduate student who takes 40 courses pays $1,000 annually, or $4,000 for the entire degree.

And for those who can't afford even this, we offer various scholarships.

Our mission is to ensure that no one is left behind financially.

With 5,000 students in 2016, the model is financially sustainable.

Five years ago it was a vision.

Today it is a reality.

Last month we got the final academic backing for this model.

People's University is now fully accredited.

(Applause.) Thank you.

(Applause.) With this certification, it's time to scale.

We have demonstrated that our model works.

I encourage universities, and more importantly governments of developing countries, to replicate this model to ensure that the gates of higher education are wide open.

A new era is coming. It's time to see the model of higher education as we know it destroyed from the privilege of the few to a basic right that is affordable and accessible to all.

thank you.

(applause)

One of the most humiliating things you can say about someone is that they choked.

And do I know that feeling?

As a child, I was an avid athlete.

My main sport was soccer and I was a goalkeeper, the highest and lowest position on the field.

As a goalkeeper, you can save great shots and earn glory in this special jersey, but you'll also feel sorrow when the shot goes into the goal.

When you're the goalkeeper, all eyes are on you, and with that comes pressure.

I distinctly remember a game from high school.

I was playing for the California State team that was part of the Olympic development program.

I had a great game...

Until I realized that the national coach was standing right behind me.

That's when everything changed.

In a matter of seconds, I went from playing at the top of my ability to dropping to the bottom.

Just knowing that I was being evaluated changed my performance and changed the way I thought about the mental side of performance forever.

Suddenly the ball seemed to go into slow motion and I was glued to my every move.

The next shot shook my body, but fortunately it didn't go into the goal.

My next shot wasn't so lucky and hit the net.

my team lost. The representative director left.

I suffocated under the weight of that evaluative gaze.

Almost everyone does this sort of thing from time to time. Opportunities abound, whether it's taking a test, giving a talk, pitching a client, or a specialized form of torture I call a job interview.

(Laughter.) But the question is why.

Why is it that pressure sometimes prevents us from reaching our potential?

It's especially disconcerting for athletes who spend a lot of time physically honing their skills.

But what about their hearts?

Not much.

This is also true outside the stadium.

Even when you're taking a speaking test, it's easy to feel like you're ready, that you're at your best, but you perform your worst when it matters most.

They rarely practice in situations where they will actually perform, and as a result, they may fail to perform when the attention is focused.

The question, of course, is why is that so?

And my experience on the playing field, and in other important aspects of life, pushed me into the field of cognitive science.

I wanted to know how we could reach our limitless potential.

I wanted to understand how we could use our knowledge of the mind and brain to devise psychological tools to help us perform at our best.

So why does it happen?

Why is it that pressure sometimes prevents us from performing at our best?

It may not come as much of a surprise that stressful situations make us worry.

We worry about situations, consequences, and what others think of us.

What is surprising, however, is that we often get in the way of ourselves because our worries make us so focused.

Yes, we pay too much attention to what we do.

When we worry about doing our best, we often try to control aspects of what we do that are best left on autopilot or out of our conscious minds, and as a result fail.

Consider a situation where you are limping down a flight of stairs.

What if you were asked to think about what you were doing with your knees while you were doing it?

There is a good chance it will fall off your face.

We humans can't focus on too many things at once. So talking on your cell phone while driving is not a good idea.

And when we're under pressure and worried about whether we'll perform at our best, we sometimes try to control the parts of what we're doing that we consciously don't have control over.

As a result, we end up screwed.

My research team and I are studying this phenomenon of overattentiveness and analytically call it paralysis.

One study asked college football players to dribble a soccer ball and pay attention to aspects of their performance that they would otherwise not pay attention to.

I asked them to pay attention to which side of their foot was touching the ball.

I found that forcing them to pay attention to the incremental details of what they were doing slowed down performance and was more error prone.

Under pressure, we care about performing at our best, and as a result, we try to control our behavior to enforce our best performance.

As a result, they actually fail.

In basketball, the term "unconscious" is used to describe shooters who are incapable of making mistakes.

And San Antonio Spurs star Tim Duncan said, "When you have to stop and think, that's when you fail."

In dance, the great choreographer George Balanchine often advised his dancers to "Don't think, just do it."

When we're under pressure, when we want to do our best, ironically, we often try to control what we're doing in ways that lead to underperformance.

What should I do?

Knowing that you have this attention overload, how do you ensure peak performance?

Many of them are associated with the prefrontal cortex. The prefrontal cortex is the front part of your brain that is located above your eyes and typically helps you focus in a positive way.

We often get stuck in the wrong things.

So how do you remove the hook?

Simple things like singing a song or paying attention to your little toe, like pro golfer Jack Nicklaus was rumored to do, can help distract your mind from those annoying details.

It's also true that practicing under the conditions that allow us to perform - closing the gap between practice and competition - helps us get used to the feeling that everyone is watching us.

This is also true outside the stadium.

It might come with some pressure, whether it's preparing for an exam or a big talk (laughs), but it's really important to get used to the kind of situation you're performing in.

When you take a test, close your book and practice drawing from your memory in a timed situation. Also, when I give a lecture, I practice in front of other people.

If you can't find someone to listen, practice in front of a video camera or mirror.

Our ability to get used to what it feels like can make the difference between us suffocating or growing.

We've also come up with a few ways to get rid of the pesky worries and self-doubt that creep in during stressful situations.

Researchers have shown that simply writing down your thoughts and worries before a stressful event can help keep them out of your mind and less likely to come to mind in the moment.

It's like waking up in the middle of the night and being so worried about what you have to do the next day, trying to think about all the things you have to accomplish, writing it down and then going back to sleep.

Keeping a journal or jotting down your thoughts on paper will reduce the chances of them getting distracted by thoughts in the moment.

As a result, you'll be able to perform at your best when it matters most.

So far, we've talked about what happens when you set limits for yourself, and some tips you can use to reach your full potential.

But it's important to remember that it's not just our own existence that sets limits or slows down performance. Our environment influences whether we suffocate or grow.

Our parents, teachers, coaches, and bosses all influence whether we do our best when it matters most.

Let's take mathematics as an example.

Yes, I said, math.

Whether it's taking a test or calculating tip for dinner in front of smart friends, many people profess to feel suffocated or insecure about doing math.

And talking about doing poorly or choking in math is quite socially acceptable.

I don't hear highly educated people walking around and talking about the fact, or bragging about the fact that they're not readers, but I always hear people bragging about how they're not math experts.

And unfortunately, in the United States, this trend is more pronounced among girls and women than among boys and men.

My research team and I set out to understand where this fear of mathematics came from, and actually used functional magnetic resonance imaging to take a peek inside the brains of people worried about mathematics.

We have shown that mathematics phobia correlates with specific visceral sensations, such as pain, that are justifiable for feeling anxious.

In fact, when a math-worried person is just getting ready to take a math test, even though they haven't even taken it, they're just preparing, areas of the brain known to be involved in the neuralgic response are active.

It's true for some people that math is a pain.

But where does this mathematics anxiety come from?

Math anxiety is known to be contagious.

When adults worry about math, the children around them also start to worry.

In first grade, being in a classroom with a teacher who is worried about your math skills reduces your learning throughout the grade.

And it's been found to be more common in girls than in boys.

Children this age tend to imitate adults of the same sex, and at least in the United States, more than 90 percent of elementary school teachers are women.

Of course, it's not just what happens in the classroom.

Social media plays a big role here too.

It wasn't that long ago that you could buy a Teen Talk Barbie that would pull a code and say things like, "Do you have enough clothes?"

"Mathematics class is hard."

And just a few years ago, big retailers were pitching young girls T-shirts that said, "I'm too beautiful to do math," or "I'm too beautiful to do my homework, so my brother will do it for me."

And don't forget your parents.

Oh my parents.

We found that when parents were concerned about their math skills and helped their children with their math homework, they learned less math throughout the grade.

As one parent puts it, "1st grade math homework is either a one-cup homework or a three-cup night."

(Laughter) When adults feel insecure about their math skills, it's passed on to children, and they either suffocate or thrive.

But just as we can set limits on others, we can also remove them.

My research team and I have shown that helping parents engage in fun math activities with their children, such as bedtime math, a fun story problem that you can do with your child at night, instead of bedtime stories or bedtime reading, not only improves children's attitudes toward math, but also improves math performance across grades.

Our environment matters.

From classrooms to parents to media, it can make a huge difference in whether we suffocate or grow.

Fast forward from a high school soccer game to freshman year in college.

I belonged to the chemistry course of science, but I didn't belong to that category.

Even though I studied for my first midterm and thought I was ready, I blew up the exam.

I literally got the worst grade in a class of 400 students.

I was convinced that I would never make it into science and that I might drop out of college altogether.

But then I changed the way I studied.

Instead of studying alone, I started studying with a group of friends. At the end of the study session, we closed the book and started competing for the correct answer.

We have learned to practice under stress.

Had you peered into my brain during my first midterm, I probably would have seen the same neuralgic reactions as the math-challenged people I study.

Perhaps stressful learning situations had it too.

But when I got to the finals, my mind went quiet and I actually got the best grade in my entire class.

It wasn't just learning material. It was learning how to overcome my limitations when it mattered most.

What goes on in our heads really matters, and knowing this helps us learn how to prepare ourselves and others for success on the playing field as well as in the boardroom and classrooms.

thank you.

(applause)

Look at this diagram.

do you know what that is?

I am a molecular biologist by training and have seen many diagrams of this kind.

These are usually called model diagrams, diagrams that show how a cellular or molecular process might occur.

This particular diagram shows a process called clathrin-mediated endocytosis.

This is the process by which molecules are trapped in air bubbles or vesicles to reach the inside of the cell from the outside and then be taken up inside the cell.

However, there is a problem with this diagram, mainly in the parts not shown in the diagram.

From many experiments and different scientists, we know a lot about what these molecules look like, how they move around in cells, and how all this is happening in an incredibly dynamic environment.

So I decided to work with Kraslin expert Thomas Kirchhausen to create a new kind of model figure that shows it all.

So start outside the cell.

I'm looking inside now.

Clathrin is a three-legged molecule that can self-assemble into a soccer ball-like shape.

Clathrin can deform the membrane through its connections with the membrane and form cups that form this type of bubble or vesicle, trapping some of the proteins that were outside the cell.

There are now proteins coming in that basically pick up this vesicle and separate it from the rest of the membrane. And now that clathrin has basically done its job, the proteins responsible for breaking down this clathrin cage come in. Covered in yellow and orange.

Therefore, all these proteins are basically recycled and can be used repeatedly.

These processes are too small to see directly, even with the best microscopes, so animations like this are a very powerful way to visualize hypotheses.

Here is another diagram. Here's how researchers think about how the HIV virus moves in and out of cells.

Again, this is a gross oversimplification and does not begin to show what we really know about these processes.

It may surprise you to learn that these simple diagrams are the only way most biologists visualize molecular hypotheses.

why?

Because it's very difficult to make a video of the process that you think is actually happening.

I spent months learning 3D animation software in Hollywood, and months on each animation, but most researchers don't have that kind of time.

However, the payoff can be huge.

Molecular animation is unique in its ability to convey large amounts of information to a wide audience with great precision.

And I'm currently working on a new project called 'Science of HIV'. The project will animate the entire life cycle of the HIV virus with as much precision and molecular detail as possible.

This animation features data collected over decades from thousands of researchers about what this virus is, how it infects cells in the body, and how therapeutics are helping fight infections.

Over the years, we've found animation to be very useful not only for communicating ideas, but also for exploring hypotheses.

Biologists still mostly use paper and pencil to visualize the process of their research, but with the data we currently have, that's no longer enough.

The animation creation process acts as a catalyst for researchers to crystallize and refine their ideas.

One of the researchers I worked with studying the molecular mechanisms of neurodegenerative diseases came up with an experiment that was directly related to the animation she and I worked on. In this way animation can feed back into the research process.

I believe animation can change biology.

It can change the way we communicate with each other, explore data, and teach students.

But to make that change, we need more researchers creating animations. To that end, I assembled a team of biologists, animators, and programmers to create new free and open-source software (we call it Molecular Flipbook) that was made exclusively for biologists to create molecular animations.

Our tests show that it takes a biologist who has never touched animation software before to create his first hypothetical molecular animation in just 15 minutes.

We are also building an online database where anyone can view, download and post their own animations.

We are very excited to announce that a beta version of our molecular animation software toolkit is available for download today.

We're really excited to see what biologists create with it, and what new insights it will give us once we finally have the ability to animate our own model figures.

thank you.

(applause)

This year Germany is celebrating the 25th anniversary of the peaceful revolution in East Germany.

In 1989, the communist regime was transferred, the Berlin Wall fell, and a year later the German Democratic Republic in the east, East Germany, was united with the Federal Republic of Germany in the west to create today's Germany.

Among other things, Germany inherited the archives of the East German secret police known as the Stasi.

Only two years after the dissolution, the documents were made available to the public, and historians like myself began studying these documents to learn more about how the East German Surveillance State worked.

You've probably seen the movie "The Lives of Others".

I would like to talk about how the Stasi actually functioned in an era when the words "surveillance" and "eavesdropping" were on the front pages of the newspapers, as the film made the Stasi known worldwide.

First, let's take a quick look at the history of the Stasi. This is very important for understanding the Stasi self-concept.

Its origin is in Russia.

In 1917, the Russian communists established the Emergency Committee to Combat Counter-Revolution and Sabotage, abbreviated Cheka.

It was headed by Felix Dzerzhinski.

The Cheka was a tool for communists to establish their regime by terrorizing the population and executing their enemies.

It later developed into the famous KGB.

Cheka was the idol of the Stasi officers.

They called themselves Chekists and even the emblems were very similar, as seen here.

In fact, the Russian secret police were the founders and leaders of the Stasi.

When the Red Army occupied East Germany in 1945, it quickly expanded into East Germany and soon began training German communists to establish its own secret police.

By the way, in this hall where we are now, in 1946 the East German ruling party was founded.

Five years later the Stasi was founded and the dirty work of repression was taken over step by step by the Stasi.

For example, the central prison for political prisoners established by the Russians was requisitioned by the Stasi and used until the end of communism.

You can see it here.

In the beginning, all important steps were taken in the presence of Russians.

However, Germans are known to be very capable, so the Stasi grew rapidly and by 1953 already had more employees than the Gestapo, the secret police of Nazi Germany.

That number has doubled every decade.

In 1989, over 90,000 employees worked at the Stasi.

This meant that one employee was responsible for 180 residents, which was quite unique in the world.

At the top of this gigantic device was a man named Erich Mielke.

He ruled the Ministry of State Security for over 30 years.

He was a methodical official who had killed two police officers not far from here in the past, but he actually privatized the Stasi.

But what was so exceptional about the Stasi?

First and foremost, it has increased its immense power by consolidating different functions into one organization.

First of all, the Stasi was an intelligence agency.

As you can see in the picture here, every conceivable means was used, including informants and wire taps, to covertly obtain information.

And it operated not only in East Germany, but all over the world.

Second, the Stasi was a secret police.

They can stop people on the streets and arrest them in their own prisons.

Third, the Stasi worked as a kind of prosecutor.

The government had the right to initiate preliminary investigations and question people formally.

Last but not least, the Stasi had its own army.

More than 11,000 soldiers served in the so-called Guards regiment.

It was established to suppress protests and riots.

Due to this concentration of power, the Stasi was called a state within a state.

But let's take a closer look at the Stasi tools.

Note that the web and smartphones had not yet been invented at that time.

Of course, the Stasi used all sorts of technical equipment to survey people.

Phones were tapped, including those of Western German Chancellors, and apartments were often tapped.

Every day, 90,000 letters were opened by these machines.

The Stasi also used specially trained agents and covert cameras to track tens of thousands of people and record their every move.

In this photo you can see me as a young man right in front of this building we are in, taken by a Stasi agent.

The Stasi also collected human scents.

The sample was kept in a sealed bottle discovered after the peaceful revolution.

All these operations were handled by highly specialized departments.

There was a complete separation between the person tapping the phone and the person controlling the letter, and for good reason. Because when an intelligence officer leaves the Stasi, the knowledge is very little.

Compare with Snowden, for example.

But vertical specialization was also important to prevent any kind of empathy for the observed.

The agent who tracked me did not know who I was or why I was being investigated.

In fact, I smuggled banned books from West Germany into East Germany.

But even more typical for the Stasi was the use of human intelligence, those who secretly reported to the Stasi.

For the Minister of National Security, these so-called informal workers were the most important tools.

Since 1975, nearly 200,000 people, more than 1 percent of the population, have always cooperated with the Stasi.

In a sense, the Minister was right. Technological devices can only record what people do, but operatives and spies can also report what people are doing and thinking.

As such, the Stasi amassed a large number of informants.

The system of how they were recruited and how they were trained was a so-called highly sophisticated one.

The Stasi had its own university not far from here, where the methods were studied and taught to officers.

These guidelines detail all the steps you must take if you wish to persuade humanity to betray your brethren.

Sometimes it is said that informants were pressured to become informants, but that is seldom true. Because a forced informant is a bad informant.

Only people willing to give you the information you need are effective whistleblowers.

Political beliefs and material gain were the main reasons people joined the Stasi.

The officers also tried to build a personal bond with their informant, but let's be honest, the Stasi example shows that winning over someone to betray others isn't that hard.

Some of the top East German dissidents also cooperated with the Stasi, for example Ibrahim Boehme.

In 1989, he nearly became the first freely elected Chancellor of East Germany until it was revealed that he was the leader and informant of the peaceful revolution.

The spy network was really wide.

Almost every institution, even churches and West Germany, had a lot of them.

I remember saying to a leading Stasi officer, "If you had sent me an informant, I would have recognized him without a doubt."

His answer was, "We didn't send anyone.

We took those who were around you. ”

And in fact, two of my best friends reported me to the Stasi.

Not only in my case, the informant was very friendly.

For example, in the case of Bella Lengsfeld, another major dissident, it was her husband who was spying on her.

A famous writer was betrayed by his brother.

This reminds me of George Orwell's novel 1984. There, the informant was the only person who apparently could be trusted.

But why did the Stasi collect all this information in its archives?

The main purpose was to control society.

In almost every speech, the Stasi decreed that it should be made clear who was who, who was thinking what.

He didn't want to wait until someone tried to act defiantly against the regime.

He wanted to know in advance what people were thinking and planning.

East Germans, of course, knew they were surrounded by informers, the most important means of oppressing people in a dictatorship, in a totalitarian regime that created a state of distrust and pervasive fear.

That is why many East Germans did not want to fight the communist regime.

If so, the Stasi often used a truly diabolical method.

It's called Zersetzung and is described in a separate guideline.

The word originally meant "biodegradable" and is therefore difficult to translate.

But actually this is a very accurate description.

Its purpose was to covertly destroy people's self-confidence, for example by damaging reputations, orchestrating professional failures, and destroying personal relationships.

Think of it this way, East Germany was a very modern dictatorship.

The Stasi did not seek to arrest all dissidents.

It preferred to paralyze them, and it was able to do so because it had access to so many personal details and so many institutions.

Restraining someone was used only as a last resort.

For this reason, the Stasi owned 17 remanded prisons, one in each district.

Here the Stasi also developed very modern methods of detention.

Investigators generally did not torture prisoners.

Instead, he used a sophisticated psychological pressure system centered around strict isolation.

Few prisoners resisted without testifying.

If you have the chance, visit Berlin's Old Stasi Prison and take a guided tour where a former political prisoner explains how it worked.

We need to answer one more question. If the Stasi was so well organized, why did the communist regime fall?

First, in 1989, the East German leadership was unsure what to do with the growing public protests.

The socialist homeland of the Soviet Union was particularly disturbed by its more liberal policies.

In addition, the regime relied on loans from Western countries.

Therefore, no orders were given to the Stasi to suppress the rebellion.

Second, communist ideology leaves no room for criticism.

Instead, the leadership clung to the belief that socialism was the perfect institution, and of course the Stasi needed to confirm that.

As a result, despite having all the information, the regime was unable to analyze the real problem and thus was unable to resolve it.

In the end, the Stasi died from the structure they were tasked with protecting.

The end of the Stasi was tragic. Because these officers were kept busy with only one thing during the peaceful revolution. It was to destroy the documents they had spent decades creating.

Fortunately, they had been stopped by human rights activists.

That's why we're using these files today to give you a better understanding of how the surveillance state works.

thank you.

(Applause) Bruno Giussani: Thank you. thank you very much.

So Hubertus, since last week's Der Spiegel is here, I'd like to ask you some questions.

"The NSA next to me." My neighbor, the NSA.

And you talked about my neighbor, a spy and informant from East Germany.

So is there a direct connection between these two stories, or not?

How do you react as a historian to this?

Hubertus Knabe: I think there are some aspects worth mentioning.

First, I think there is a difference in why we collect this data.

Are you doing it to protect the public from terrorist attacks, or are you doing it to suppress the public?

So it makes a fundamental difference.

But on the other hand, we must also recognize that even in a democracy these tools can be abused and that we really have to be aware to prevent it, and that intelligence agencies respect the rules we set.

The third point is, perhaps, that we can be really happy living in a democratic country. Because there is no doubt that Russia and China are doing the same. But nobody can do it, so nobody talks about it.

(Applause) BG: When this story first came out, last July, you filed a criminal complaint in a German court. why?

HK: Yeah, I did it because I think the second point I mentioned, especially in a democracy, is that rules are for everyone.

They are made for everyone, so it is unacceptable for any institution not to respect the rules.

German criminal law states that it is not permissible to wiretap another person without the permission of a judge.

Luckily, this is written in the German Criminal Code, so if it's not respected, I think an investigation is needed. It took a very long time for German prosecutors to start this. I started only in the case of Angela Merkel, and not in the case of all other people living in Germany.

BG: It's not a surprise to me, because — (applause) — the story you told.

From the outside, I live outside Germany, but I expected Germans to react more strongly soon.

And instead, the only real response came when it became clear that Chancellor Angela Merkel had been wiretapped. Why?

HK: I think this is a good sign because people feel safe in this democracy.

They are not afraid of being arrested, and no one should fear that the secret police will conspicuously arrest them if they leave this hall after the conference.

I think that's a good sign.

People aren't really scared.

But, of course, I believe that each agency has a responsibility to prevent illegal activity, whether in Germany or elsewhere.

BG: On a personal note, this is the last question.

There was a debate in Germany about the asylum grant of Mr. Edward Snowden.

Do you agree or disagree?

HK: Oh, that's a tough question, but if you ask me and answer honestly, I'll give him asylum. Because what he did was really brave and I think he destroyed his whole life, his family and everything.

So I think we should do something for these people. Especially if you look at the history of Germany, so many people had to flee and sought asylum in other countries, but they were not accepted. So giving him asylum would be a good sign.

(Applause) BG: Thank you, Mr. Hubertus.

When I agreed to do this, I wasn't sure if I was expected to speak or sing.

But when I was told that the theme was language, I knew I had to say something.

i have a problem

It's not the worst thing in the world.

I'm fine.

It's not burning

I know other people in the world face much worse situations, but for me language and music go hand in hand in this one thing.

And the problem is, I have a stutter.

It may seem strange considering I spend most of my life on stage.

You may think that I am comfortable in public and I am comfortable talking to you here.

But the truth is, I've lived, up until this point, in a deadly fear of public speaking.

Singing in public is something else entirely. (Laughter) But we'll get to that in a moment.

I have never spoken so clearly before.

I think it's because I've lived my life hoping that when I grow up I won't have that kind of thing.

I lived with the idea that when I grew up, I would be able to speak French, learn how to manage money, stop stuttering, be able to speak in public, become prime minister, and do anything.

(Laughter) So I can talk about it now because I got to this point. So I'm 28 years old.

I'm sure I've grown up now.

(Laughter) And I'm an adult woman with a speech impediment who lives her life as a performer.

So maybe I should come clean about it.

There are some interesting aspects to stuttering.

The worst thing for me is meeting someone who stutters.

(Laughter) This happened to me in Hamburg, when I met the guy, he said 'hello m-m-m my name is Joe' and I said 'oh hello m-m-m my name is Meg'.

Imagine my horror when I realized he thought I was making fun of him.

(Laughter) People think I'm drunk all the time.

(Laughter) If I forget my name before I say it, people will think I forgot the name.

This is very strange because proper nouns are the worst.

If you're trying to use the word "Wednesday" in a sentence and the word stutters, you can change the word to something like "tomorrow" or "the day after Tuesday."

Clunky, but still okay. Over time, I developed this loophole method that uses speech to trick the brain by changing content at the last minute.

However, a person's name cannot be changed.

(Laughter) Back when I used to sing a lot of jazz, I used to work with a pianist named Steve.

As you've probably noticed, S and T, together or independently, are my kryptonites.

But I had to introduce the band on this Rolling Vamp and found myself often stuck on 'St' as I approached Steve.

And it was a little awkward and uncomfortable and totally killed the atmosphere.

So after a few times of this sort of thing, Steve happily 'Sev' and we got through it that way. (Laughter) I've been in a lot of therapy, but a common treatment is to use a technique called smooth speech, where you sing almost everything you say.

Putting it all together in a kindergarten-teacher-song-like way, it sounds very calm, like you've taken a lot of Valium and everything has calmed down. (Laughter) It's not really me.

and i am using it. that's right.

I use this when I have to appear at a panel show, have a radio interview, and when saving airtime is a top priority.

(Laughter) That's how I get through it at work.

But as an artist who feels his work is based solely on a platform of honesty and authenticity, it often feels like cheating.

That's why before I sing, I wanted to tell you what singing means to me.

It's not just about making good sounds, it's about making good songs.

It's more than feeling known or understood.

I don't just want you to feel what I feel.

It's not a myth or mythologizing yourself against you.

Somehow, a miraculous synaptic function in the human brain makes it impossible to stutter when singing.

And when I was younger, it was a very effective therapy for me to sing, so I often did it.

That's why I am here today.

(Applause.) Thank you.

Singing is a comforting relief for me.

It is only at this time that I feel fluent.

Only then is what comes out of my mouth totally what I intended.

(Laughter) So, I know this is a TED talk, but I'm going to sing at TED.

This is a song I wrote last year.

thank you very much. thank you.

(Applause) (Piano) ♪I'll be beautiful ♪♪But my nose ♪♪A little too big ♪♪For my face ♪♪And I'll be a dreamer ♪♪But my dreams ♪♪A little too big ♪♪In this space ♪♪And I'll be an angel ♪♪But my halo ♪♪Looks pale in the glow ♪♪Your grace ♪♪And I'll be a joker ♪♪But that card looks ridiculous when you play ♪♪Your ace ♪♪I want to know ♪♪ Are there stars in hell? ♪ ♪ And I want to know ♪ ♪ When you make me lose everything I know ♪ But all I can think of is ♪ ♪ Idling around town ♪ ♪ Will I look pretty in the rain? ♪ ♪ And I wonder why someone ♪ ♪ So adorable ♪ ♪ Makes me feel ugly ♪ ♪ So embarrassing ♪ ♪ And I want to know ♪ ♪ Are there stars in hell? ♪ ♪ And I want to know ♪ ♪ know if you can say ♪ ♪ that you let me lose everything I know ♪ ♪ that I can't choose to let go or let it go ♪ thank you. (applause)

You probably don't know me, but I'm one of the .01 percent you hear or read about, and by any reasonable definition, I'm a plutocrat.

And tonight, what I want to do is speak directly to other plutocrats, my people. Because I feel like it's time for all of us to have a chit-chat.

Like most plutocrats, I am a proud and unapologetic financier.

I have founded, co-founded or funded over 30 companies in a variety of industries.

I was the first investor in Amazon.com from outside my family.

I co-founded a company called aQuantive and sold it to Microsoft for $6.4 billion.

My friend and I run a bank.

I'm going to say this — (laughter) — can't you believe it?

I say this to show that my life is the same as most plutocrats.

I have a broad view of capitalism and business, and in return have lived a life most of you can't even imagine. Multiple homes, yachts, own planes, etc.

But let's be honest, I'm not the smartest person you've ever met.

Admittedly I'm not the hardest working person.

I was a mediocre student.

I'm not technical at all.

I can't write a single word of code.

Truly, my success is the result of great luck: birth, circumstances, timing.

But I'm actually pretty good at some things.

First, I have an unusually high risk tolerance, and second, I have a good sense of what the future holds and a good intuition. And we believe that intuition about the future is the essence of good entrepreneurship.

So what am I thinking about our future today?

Because while plutocrats like us live beyond our greedy dreams, the remaining 99 percent of our compatriots are falling further and further behind.

In 1980, the top 1 percent of Americans shared about 8 percent of the national [income], while the bottom 50 percent of Americans shared 18 percent.

Today, 30 years later, the top 1 percent share more than 20 percent of the national income, while the bottom 50 percent of Americans share 12-13.

If this trend continues, over the next 30 years the top 1 percent will share more than 30 percent of the national income, while the bottom 50 percent of Americans will share just 6 percent.

As you know, the problem is not that there is inequality.

A high functioning capitalist democracy requires some degree of inequality.

The problem is that inequality is currently at historically high levels and is getting worse by the day.

And if wealth, power, and income continue to concentrate at the top, our society will transform from a capitalist democracy into a neo-feudal tenancy society, like 18th-century France.

It was pre-revolutionary France and a mob with a pitchfork.

So I send a message to my fellow plutocrats and millionaires and those who live in the gate bubble world. "Wake up".

get up It doesn't last long.

Because if we don't do something to correct the apparent economic inequalities in society, the rake will come at us. Free and open societies cannot sustain this kind of growing economic inequality for long.

It never happened. No example.

You show a highly unequal society, but I show a police state or a riot.

If we don't deal with this, the rake will come upon us.

The question is not "when" but "when".

And when they pounce on anyone, especially plutocrats like us, it's going to be terrifying.

I know it must sound like a liberal do-gooder when I say it.

it's not. I'm not making a moral argument that economic inequality is bad.

What I am arguing is that increasing economic inequality is stupid and ultimately self-defeating.

Rising inequality not only increases the risk of rakes, but it is also terrifying for business.

So the model for us rich people has to be Henry Ford.

Ford famously introduced $5 a day, double the prevailing wage at the time, and he not only made factories more productive, but also turned poor exploited autoworkers into a prosperous middle class who could buy the products they made.

Ford intuited the truth as we know it today: the economy is best understood as an ecosystem, characterized by the same kind of feedback loops found in natural ecosystems: feedback loops between customers and businesses.

Raising wages increases demand, which increases employment, which increases wages, which increases demand and profits. A virtuous circle of increasing prosperity is precisely what the economic recovery is lacking today.

That is why we need to do away with the trickle-down policies that dominate both parties and embrace what I call middle-out economics.

Middle-out economics rejects the neoclassical economics view that economies are efficient, linear, and mechanical, tending toward equilibrium and equity, and instead embraces the 21st-century view that economies are complex, adaptive, and ecological, tending away from equilibrium and toward inequality, not at all efficient, but effective if properly managed.

From this 21st century perspective, it becomes clear that capitalism does not work by allocating existing resources [efficiently].

It works by [efficiently] creating new solutions to human problems.

The genius of capitalism is that it is an evolutionary solution-finding system.

You are rewarded for solving other people's problems.

The difference between poor and rich societies is clearly the degree to which the society has produced solutions for its citizens in the form of products.

The sum of the solutions we have in society is our prosperity, and this explains why companies like Google, Amazon, Microsoft, Apple and the entrepreneurs who founded them have contributed so much to our nation's prosperity.

This 21st century perspective also reveals that what we think of as economic growth is best understood as the speed at which we solve problems.

But that proportion depends entirely on how many problem-solvers we have—diverse and competent problem-solvers—that is, how many of our compatriots are actively participating, both as entrepreneurs who can provide solutions and as customers who consume them.

But maximizing this participation does not happen by chance.

It doesn't happen by itself.

It takes effort and investment, which is why all highly prosperous capitalist democracies are characterized by huge investments in the middle class and the infrastructure they depend on.

We plutocrats need to forget this trickle-down economics, the idea that if we do well, others will do better.

it's not true. How is that possible?

I earn 1,000 times the average wage, but I don't buy things for 1,000 times.

I actually bought two pairs of these pants. This is what my partner Mike calls manager pants.

I could have bought 2,000 pairs, but what should I do? (laughs) How many haircuts can I have?

How often can I go out to eat?

No matter how wealthy a few plutocrats get, we cannot drive a great national economy.

Only the wealthy middle class can afford it.

My plutocratic friends might say there is nothing to do.

Henry Ford lived in another era.

Maybe you can't.

Maybe we can do something.

On June 19, 2013, Bloomberg published an article I wrote titled "Capitalists Call for $15 Minimum Wage."

One of my biggest fans, the good people at Forbes magazine, called this "Nick Hanauer's almost insane proposition."

But just 350 days after that article was published, Seattle Mayor Ed Murray signed an ordinance raising Seattle's minimum wage to $15 an hour. That's more than double the typical federal wage of $7.25.

A sane person might wonder how this happened.

It happened because our group reminded the middle class that they are the source of growth and prosperity in a capitalist economy.

We were reminded that when workers have more money, businesses have more customers and need more employees.

We reminded that when businesses pay workers a living wage, taxpayers are relieved of the burden of funding poverty programs such as food stamps, medical assistance and rent assistance those workers need.

We reminded them that low-wage workers are terrible taxpayers, and that raising the minimum wage for all businesses would make all businesses profitable and at the same time allow all businesses to compete.

Now, not surprisingly, the most common reaction is to raise the minimum wage, at the expense of jobs. right?

Politicians repeat that trickle-down idea all the time, saying things like, "What do you think will happen if you raise the price of employment? You'll make less money."

are you sure

Because there is conflicting evidence.

Since 1980, CEO wages in our country have risen from about 30 to 500 times the median.

It is raising the price of employment.

Still, to my knowledge, I haven't seen a company that outsources, automates, and exports the CEO's job to China.

In fact, the company seems to be hiring more CEOs and senior managers than ever before.

So do technology workers and financial services workers, who earn many times the average wage, but as we hire more and more of them, it is clear that we can raise the price of employment and get more benefits.

I know most people think the $15 minimum wage is an insane and dangerous economic experiment.

we disagree.

We believe Seattle's $15 minimum wage is actually a logical continuation of economic policy.

It's allowing our city to kick your city's ass.

Because Washington already has the highest minimum wage of any state in the US.

We pay every worker $9.32, which is nearly 30% more than the federal minimum of $7.25, but importantly 427% more than the federal tipped minimum of $2.13.

If trickle-down thinking is correct, there should be mass unemployment in Washington state.

Seattle should slide into the ocean.

Still, Seattle is the fastest growing metropolis in the country.

Washington creates more small business jobs than any other major state in the country.

Restaurant business in Seattle? Boom boom.

why? Because the basic law of capitalism is that when workers have more money, firms have more customers and need more workers.

If a restaurant pays even its employees enough to afford to eat at the restaurant, that's not a bad thing for the restaurant business.

No matter what some restaurateurs say, it's a good thing.

Is it more complicated than I understand?

of course.

Lots of dynamics at work.

But could you stop arguing that unemployment would skyrocket and the economy would collapse if low-wage workers earned a little more?

There is no proof of that.

The most insidious aspect of trickle-down economics is not the claim that everyone will be better off if the rich get richer.

Opponents of raising the minimum wage say it hurts the economy when the poor get richer.

This is nonsense.

So can you stop this rhetoric that rich people like me and plutocratic friends made our country?

We plutocrats know, even if we don't want to admit it publicly, that if we weren't born here in the United States, but somewhere else, we might be just guys selling fruit barefoot by the side of a dirt road.

Other places, even very poor places, are not without good entrepreneurs.

But that's all the entrepreneurial customers can buy.

Here is the idea of ​​a new kind of economics, a new kind of politics, which I call the new capitalism.

Capitalism is no better than any other option, but let's acknowledge that it works better the more people are involved, both as entrepreneurs and as customers.

Let's reduce the size of government. But not by reducing poverty programs, but by ensuring that workers receive enough wages that they don't actually need those programs.

Let us invest enough in the middle class so that we can make our economy fairer and more inclusive, fairer and more truly competitive, and produce more solutions to the human problems that are the true drivers of growth and prosperity.

Capitalism, if properly managed, is the greatest social technology ever invented to create prosperity in human societies, but capitalism is inexorably prone to inequality, concentration and collapse because of the fundamental multiplicative dynamics of complex systems.

The job of democracy is to maximize the inclusion of the majority in order to create prosperity, not to allow the few to accumulate money.

Governments do create prosperity and growth by creating the conditions in which both entrepreneurs and their customers can thrive.

Balancing the power of capitalists like me and workers is not bad for capitalism.

It is essential for that.

Programs such as reasonable minimum wages, affordable health care, paid sick leave, and progressive taxation necessary to pay for critical infrastructure needed by the middle class, such as education and research and development, are essential tools that smart capitalists should employ to foster growth. Because no one benefits from it like we do.

Many economists would have you believe that their field is an objective science.

I disagree, but I think it's equally a tool humans use to enforce and encode social and moral preferences and prejudices about status and power. That's why plutocrats like me needed to find a compelling story to tell others about why our relative position is morally right and good for everyone. For example, our tax cuts will generate growth, but investing in you will inflate our debt and bankrupt our great nation. that we matter. that you are not.

For thousands of years these stories were called God's Rights.

Today we have trickle-down economics.

How obviously selfish all this is.

We plutocrats need to understand that the United States made us, not the other way around. That the prosperity of the middle class is the source, not the result, of the prosperity of the capitalist economy.

And even in the worst of circumstances, we must never forget that we are selling fruit barefoot by the side of a dirt road.

Plutocrats, I think it may be time for us to recommit to our country and to a new kind of capitalism that is more inclusive and more effective: one that will ensure that the American economy remains the most dynamic and prosperous in the world.

Let's protect ourselves, our children and their future.

Or we could do nothing, hide in gated communities and private schools, enjoy planes and yachts, and wait for the rake to come out.

thank you.

(applause)

We live in a world where data collection happens 24 hours a day, 7 days a week.

This data is typically collected by what are now called front desk specialists.

These could be the retail clerk at your favorite department store, the cashier at the grocery store, the registration specialist at the hospital, or even the person who last sold you a movie ticket.

Ask unobtrusive questions like, "Can you tell me your zip code?"

Or, "Would you like to use your savings card today?"

All of these provide data.

However, the conversation gets a little more complicated when you have to ask more difficult questions.

let's talk

Once upon a time there was a woman named Miss Margaret.

Miss Margaret has worked as a front desk specialist for almost 20 years.

And all that time, she never, never really asked her patient's gender, race, or ethnicity.

Because now Miss Margaret has the ability to look at you.

yes.

And she can tell if you're a boy or a girl, black or white, American or non-American.

And in her mind, those were the only categories.

So imagine that big day when her cheeky boss invited her to this “change everything” meeting and told her that all patients needed to self-certify.

She gave herself 6 genders, 8 races and over 100 ethnicities.

Well, Miss Margaret was appalled.

I mean, very offended.

So she made a trip to HR to see if she was eligible for early retirement.

And she ended her rant by saying that her cocky boss invited her to this meeting that "changes everything" and she didn't bring, didn't bring, didn't even bring food, food, food, food.

(Laughter) (Applause) (Cheers) You know you have to bring food to the meeting.

(laughs) Anyway.

(Laughter) This was a medical example, but of course all companies collect data in some way.

True story: I was going to transfer money by wire.

And the customer service representative asked if I was born in the US.

Well, I hesitated to answer her question, and before she realized why I hesitated, she started throwing the company she worked for under the bus.

She said, "Girl, I know it's silly, but they're asking us these questions."

(Laughter) The way she presented it to me made me think, "Miss, why?"

why are they asking you this question?

Are they deporting people? ”

(Laughter.) But then I had to look to the other side of myself, being a professional speaker and poet.

Who understood that there is a little Miss Margaret here and there.

People who were good people and probably good employees lacked the ability to ask the right questions, which unfortunately made her look worse, and worse, the business even worse than she looked.

Because she had no idea who I was.

So literally I was going to give a TED talk and I could have been the woman using her as an example.

Imagine.

(Applause.) And unfortunately, people end up refusing to answer the question. Because I feel like you're going to use that information to discriminate against yourself, all because of the way you've presented the information.

And at that point, we get bad data.

And we all know what bad data does.

Bad data wastes time, money, and resources.

Unfortunately, bad data is even more costly. Because we have health inequalities, we have social determinants of health, we have infant mortality. All of this depends on the data you collect. If the data is bad, those problems still exist.

And there are still people who are unhappy and disadvantaged because the data we are using is old, not good at all, or has nothing.

Now, wouldn't it be great if people like Miss Margaret and the customer service representative at the wiring site were given the gift of compassionate data collection?

Could you explain what you mean by the word "grace"?

I wrote an acrostic poem.

G: Engage and inform front desk professionals R: Role relevance after becoming A: Be responsible for data accuracy during implementation C: Provide compassionate care in all encounters E: Provide the necessary education to inform people why data collection is so important.

(Applause) Now, I'm an artist.

So what happens to me is that when I make something artistically, the trainer within me also awakens.

So what I did is I started to develop that acrostic poem into a full workout entitled "I'm G.R.A.C.E.D."

Because when I was a front desk specialist, when I went to the capital department to start work, I thought, "So that's why they asked us to ask that question?"

It all became a bright light for me and I realized that I had asked and told people about calling me the wrong gender, calling me the wrong race, calling me the wrong ethnicity, the environment had become hostile, people were offended, and I was frustrated because I was not receiving benefits.

I remember training with the computer, but unfortunately that training did not prepare me to defuse the situation.

I wasn't ready to have a teaching moment when I questioned the question.

I looked at my computer and thought, "So what if this happens?"

And the computer will say...

Computers can't talk to you, so nothing.

(Laughter.) So the importance of having someone out there who is trained to tell you what to do in those situations.

So when I created the "I'm G.R.A.C.E.D." training, I created it not only with that experience in my heart, but with that belief I had in my heart.

Because I wanted the instructional design to be a safe space for people to have an open dialogue.

I wanted to talk about prejudices, the unconscious and the conscious, and what we are doing.

Because I've found that when I ask people "why", their perspective changes, their attitude changes.

We now know that the data we have at the front desk translates into research that closes inequalities and finds cures.

I now know that teaching transitional change, rather than shocking people to effect change, is a better way to make change happen.

We found that people were more likely to share information when they were treated with respect by knowledgeable staff.

I understand that you don't have to be a statistician to understand the power and purpose of data, but you do need to treat people with respect and compassionate care.

Now I know that if you have benefited, it is your responsibility to empower others.

But most importantly, I now know that when humans are taught to communicate with other humans, it should be communicated by humans.

(Applause.) So when you go to work and schedule a meeting that "changes everything" -- (laughter) think of Miss Margaret.

And don't forget food, food, food, food.

thank you.

(Applause) (Cheers) Thank you.

(applause)

As a kid, I loved stories told with data and numbers.

I remember being annoyed when my own parents used numbers to lie to me as a kid.

"Talisia, if I've told you once, I've told you a thousand times."

No, Dad, you've told me only 17 times, and 2 times it's not my fault. (Laughter) I think that's one of the reasons I got my PhD. in statistics.

I always wanted to know, what are people trying to hide with numbers?

As a statistician, I want people to be able to see the data and make their own decisions.

Donald and I were pregnant with our third child at approximately 41 1/2 weeks. Some of you might call this "unplanned".

Statisticians call this within the 95% confidence interval.

(Laughter) And at this point in the process, I had to come in every few days to stress test the baby. This is just a routine to test if your baby is under any kind of undue stress.

And seeing an actual doctor is rare, if at all, just someone who happens to be working at the hospital that day.

So I went for a stress test, and after 20 minutes the doctor came out and said, "Your baby is under stress and needs to be induced."

So how do I, as a statistician, answer?

Show me the data!

So he said that the baby's heart rate recording started at 18 minutes, the baby's heart rate was in the normal zone, and then for 2 minutes it was in what I think was my heart rate zone.

At 41 weeks pregnant, it's hard to stay still on my back for 20 minutes, so I was moving around a bit.

Maybe it was off. ”

He said, "Well, we don't want to miss our chance."

I said okay.

I said, "What if I had this same data at 36 weeks?"

Will your decisions guide you? ”

"Well, I'd like to wait until at least 38 weeks, but you're almost 42. There's no reason to leave the baby inside. Let's get the room ready."

I said, "Well then, why don't we try again?

You can collect more data.

I'm going to try to stay really still for 20 minutes.

You can average the two to see what that means. (Laughter.) And he said, "Ma'am, I just don't want you to have a miscarriage."

Now we are three.

Then I said, "You double the chance of a miscarriage after your due date. Get a room."

oh. So how do I, as a statistician, answer?

Show me the data!

Hey, you talk about chance, I've been doing chance all day, tell me all about chance

Let's talk about opportunities. (Laughter) Let's talk about opportunities.

So I say, 'Okay, that's great.

Will it go from a 30% chance to a 60% chance?

Where are we with this miscarriage problem?

And he said, "It's not perfect, but it doubles, and we really want the best for the baby."

Don't be afraid to try it from another angle.

I said, "Out of 1,000 full-term pregnancies, how many will miscarry just before their due date?"

Then he looks at me, he looks at Donald, and he leaves, about 1 in 1,000.

I said, "So, out of those 1,000 women, how many miscarry right after their due date?"

"Maybe two." (Laughter) I said, "Okay, so my chances are going to be 0.1 percent to 0.2 percent."

Well, at this point, the data that triggers are needed don't convince us. So let's talk about how induction leads to increased caesarean section rates. I would like to avoid that if possible.

And I said, "I don't think my due date is accurate."

(Laughter) So he was really taken aback and he looked kind of confused so I said, 'In case you don't know, my due date was calculated assuming a standard 28-day cycle, and my cycle range could be 27 days or even 38 days, and I'm collecting data to prove it.

(Laughter) So I ended up leaving the hospital that day without being induced.

In fact we had to sign a waiver to leave the hospital.

And I'm not advising you to ignore your doctor. Because even our first child, we were induced at 38 weeks. I had low cervical fluid.

I am not against medical intervention.

But what made you leave with such confidence that day?

Well, we had data that told a different story.

We have been collecting data for 6 years.

I had this temperature data, but it told a different story.

In fact, you can probably estimate conception fairly accurately.

Yes, that's the story you want to tell at your child's wedding reception. (laughs) I remember it like it was yesterday.

My temperature was 97.8 degrees when I looked into your father's eyes. (Laughter) Oh yeah. Another 22 years and we continue to tell that story.

But having collected data, we set out with confidence.

So what does that data look like?

This is a typical graph of a woman's waking temperature during her cycle.

That is, from the beginning of one menstrual cycle to the beginning of the next.

You can see that the temperature is not random.

Clearly, there is a pattern of low temperatures at the beginning of the cycle, followed by this increase, and an increase in body temperature at the end of the cycle.

So what is going on here?

What does that data tell us?

Ladies and Gentlemen, at the beginning of the menstrual cycle the hormone estrogen predominates, and that estrogen causes a suppression of body temperature.

And when you ovulate, your body releases the egg and progesterone takes over, facilitating pregnancy.

And your body heats up in anticipation of accepting this new little fertilized egg.

So why is the temperature soaring like this?

Now think about when a bird sits on an egg.

why is she sitting on them?

She wants to keep them warm, protected and warm.

Ladies, this is exactly what our bodies are doing every month. Your body heats up in hopes of keeping your new little life warm.

And if nothing happens and you're not pregnant, the estrogen will turn back on and the cycle will start all over again.

However, when you actually get pregnant, your body temperature actually changes even more and can stay elevated for the entire nine months.

This is why you see pregnant women with high temperatures and just sweating.

This is a chart made about 3-4 years ago.

We were really excited about this chart.

You can see the change from the low temperature level, about 5 days is the time it takes for the egg to implant through the fallopian tube, after which you can see the temperature start to rise slightly.

And in fact, there was a second temperature change, and a pregnancy test confirmed that I was pregnant with my first child, and I was very excited.

The spots were visible until a few days later, after which I noticed a lot of blood. In fact, we had a miscarriage early on.

If I hadn't taken my temperature, I really would have thought my period was late that month. However, we did have data indicating that we actually miscarried this baby. This data revealed a truly unfortunate event in our lives, but it was information we could consult with our doctors about.

So, if I had fertility issues or anything, I had data to show. See, we got pregnant, our body temperature changed, and somehow we lost this baby.

What can we do to prevent this problem?

And it's not just about temperature and fertility. We can learn a lot using data about our bodies.

For example, did you know that taking your temperature can tell you a lot about your thyroid status?

So the thyroid works a lot like the thermostat in your home.

There is an optimum temperature in your home. Set the thermostat.

When the house gets too cold, the thermostat kicks in and tells you that you need to blow heat into your surroundings.

Alternatively, if it's too hot, the thermostat will tell you to "Turn on the air conditioner and let it cool down."

That's exactly what the thyroid gland does in the body.

The thyroid gland tries to maintain an optimal temperature for the body.

If it's too cold, your thyroid tells you you need to warm up.

If it's too hot, your thyroid will lower your body temperature.

But what if your thyroid isn't working as well?

Declining function is manifested in body temperature, which tends to be lower than normal or very unstable.

By collecting this data, you can learn information about your thyroid.

So what this means is that if you go to the doctor with a thyroid problem, the doctor will actually test the amount of thyroid-stimulating hormone in your blood.

are you OK. But the problem with this test is that it doesn't tell you how active the hormones are in your body.

So even though hormones are abundantly present, they may not be actively working to regulate body temperature.

Therefore, just taking your temperature every day can give you information about your thyroid status.

So what if you don't want to take your temperature every day?

I recommend doing so, but there are many other things you can do.

You can measure your blood pressure, you can also measure your weight. Well, who looks forward to weighing themselves every day? (Laughter) At the beginning of our marriage, Donald suffered from a stuffy nose, and he was on a lot of medication to try and get rid of the stuffy nose, but it didn't work.

So that night he came and woke me up and said, "Honey, I can't breathe through my nose."

And I rolled over and looked and said, "So can you breathe out through your mouth?"

(Laughter.) And he said, "Yes, but I can't breathe through my nose!"

So, like any good wife, I take him to the emergency room at 2am.

And all I think about as I drive is that you can't die for me anymore.

We just got married, people will think I killed you! (Laughter) So we went to the emergency room and the nurse saw us and he couldn't breathe through his nose so she took us to the back and the doctor said, 'What does it look like the problem is?'

Then he said, "Can't you breathe through your nose?

No, but he can exhale through his mouth. (Laughter) He stepped back and looked at the two of us and said, "Doctor, I think I know the problem.

I am having a heart attack.

Order an ECG and CAT scan immediately. ”

And we're thinking, "No, no, no." Not a heart attack. He can breathe only through his mouth. No no no no no.

So we consult this doctor again and again. Because I think this is a wrong diagnosis. And he says, "No, really, it's okay, calm down."

So I'm wondering how I can calm myself down. But I doubt he's having a heart attack.

And luckily for us, this doctor was at the end of his shift.

So this new doctor came in and found us clearly distraught with a husband who couldn't breathe through his nose. (Laughter) And he started asking us questions.

He said, "So do you both want to exercise?"

We ride our bikes and sometimes go to the gym.

(Laughter) We move around.

And he said, "What were you doing just before you came here?"

To be honest, I think I slept.

But what was Donald doing just before?

Donald then begins taking a large dose of the drugs he was taking.

He enumerates, "I took this decongestant, then this nasal spray," and suddenly the light bulb went off and he said, "Oh! Never mix this nasal decongestant with this nasal spray.

I get stuck every time. Please take this instead. ”

He will give us a prescription.

We looked at each other, looked at the doctor and said: "Why did you seem to diagnose his condition so accurately, why did the last doctor want to order an EKG and a CAT scan?"

And he looked at us and said, "If a 350-pound man walks into the emergency room and says he can't breathe, he assumes he's having a heart attack and asks questions later."

Emergency room doctors are now trained to make quick, but not always accurate, decisions.

And if we had information we could share with him about our heart health, we probably would have gotten a better diagnosis from the start.

Consider the following graph showing systolic blood pressure readings from October 2010 to July 2012.

You can see that these measurements start in the pre-hypertensive/hypertensive zone but transition to the normal zone over about a year and a half.

This corresponds to the heart rate of a healthy 16 year old.

What story does this data tell?

Clearly, it's the data of someone who has undergone a dramatic change, and fortunately for us, that person happens to be here today.

So the 350-pound guy who walked into the emergency room with me is now a sexier, healthier 225-pound guy, and that's his blood pressure record.

So during that year and a half, Donald's diet changed, our exercise habits changed, and his heart rate and blood pressure responded to the changes made to his body.

So what is the message you want to convey on your way home today?

Just take ownership of your data and take daily measurements about yourself, just like we did, and you'll become an expert on your body.

you will be the authority

It's not difficult.

You don't have to have a Ph.D. Become your own expert in statistics.

You don't have to have a medical degree to become an expert on your own body.

A doctor is an expert about the population, but an expert about yourself.

So two people working together, two professionals working together, can make a better decision than the doctor alone.

Now that you understand the power of information gained through the collection of personal data, I would like you to stand and raise your right hand.

(laughs) Yes, please wake up.

We ask that you take ownership of your data.

And today, I hereby award a TEDx Associate Degree in Elementary Statistics with an Emphasis on Time-Dependent Data Analysis, with all the rights and privileges that come with it.

So how should you, as a newly hired statistician, always react the next time you visit the doctor's office?

Audience: Show me the data! Talithia Williams: I can't hear you!

Audience: Show me the data!

TW: Again!

Audience: Show me the data!

TW: Show me the data.

thank you.

(applause)

We are seen as a receptacle for failed social policies.

We cannot define who comes to us or how long they stay.

We embrace those for whom nothing else worked, those who slipped through all other social safety nets.

They cannot be contained, so we must.

that is our job. Contain them and control them.

Over the years, as a prison system, as a nation, as a society, we've done very well in that regard, but we're not going to be happy with that.

Today we imprison more people per capita than any other country in the world.

There are more black men in prison today than there were in slavery in 1850.

We house the parents of nearly 3 million children in our community, making us the largest mental health provider in the country, a new mental hospital.

Locking someone up is no small thing.

Nevertheless, we are called the Department of Corrections.

Today I would like to talk about the change in the way of thinking about correction.

I believe that changing the way we think will create new possibilities and new futures, and prisons need a different future.

I have spent my entire career in orthodontics for over 30 years.

I followed my father into this field.

He was a Vietnam Veteran. The fix suited him.

He was strong, steady and disciplined.

I didn't really care about that, so I'm sure he was worried about me.

Ultimately, I decided that if I was going to prison, I'd rather be on the right side of the bars, so I decided to take a tour of McNeil Island Prison, where my father worked.

Well, this was the early 80's and prisons were nothing like you see on TV or in the movies.

In many ways it was even worse.

I entered a five-story cell.

There were eight men in the cell.

There were 550 men in that residential unit.

In case you were wondering, they shared one toilet in that tiny lot.

Hundreds of men burst out of their cells as the police put the keys in the lockbox.

Hundreds of men burst out of their cells.

I left as soon as I could.

Eventually I came back and started working there as an executive.

My job was to manage one of those cell blocks and control hundreds of them.

When I went to work at the reception center, I could actually hear the sounds of inmates rampaging from the parking lot, shaking cell doors, screaming, and tearing cells apart.

When you take hundreds of unstable people and lock them up, what you get is chaos.

Containment and control, that was our job.

One way to do this more effectively was with a new type of housing unit called the centralized management unit (IMU), the modern equivalent of a "hole."

We placed the inmates in cells behind solid steel doors with handcuffed openings so that they could be restrained and fed.

guess what?

It's quiet.

The turmoil has subsided among the general population.

The place has become safer because the most violent or disorderly inmates can now be quarantined.

But isolation is not good.

Depriving people of social contact makes their condition worse.

It was hard for them and for us to kick them out of the IMU.

Locking people up, even in prison, is not easy.

My next assignment was at one of the deepest prisons in the state that houses more violent or disorderly inmates.

By then, the industry had come a long way, and various tools and techniques existed to manage disruptive behavior.

We had bean bag guns, pepper spray, plexiglass shields, flashbangs and an emergency response team.

We met violence with strength and chaos with chaos.

We were very good at putting out fires.

While there, I met two experienced correctional officers, an anthropologist and a sociologist who were also researchers.

One day one of them said to me, "You are very good at putting out fires.

Have you thought about how to prevent it? ”

I was patient with them and explained my heavy-handed approach to making prisons safer.

They were patient with me.

Some new ideas came out of these conversations and we started doing some small experiments.

It started by training officers in teams rather than sending them to state training schools one or two at a time.

Instead of 4 weeks of training, we gave them 10 weeks of training.

We then experimented with an apprenticeship model that paired new staff with veteran staff.

We both got better at our jobs.

Second, we added verbal de-escalation skills to our ongoing training, making it part of our ongoing use of force.

It was the use of non-force.

And then I did something even more extreme.

We trained our inmates in the same skills.

We've changed our skill set to not only respond to violence, but reduce it.

Third, we tried a new type of design when expanding the facility.

Now, the biggest and most controversial component of this design was of course the toilet.

There was no restroom.

That may not sound like much to you here now, but at the time it was huge.

No one had ever heard of a cell without a toilet.

We all thought it was dangerous and crazy.

The eight people in the cell also had toilets.

That little detail changed the way we work.

Inmates and staff began to interact more frequently and openly, building rapport.

Easier to spot conflicts and intervene before they escalate.

This unit was cleaner, quieter, safer and more humane.

This was more effective in keeping the peace than any intimidation technique I had seen.

Interacting changes the behavior of both police officers and inmates.

We changed our environment, we changed our behavior.

Now, in case I didn't learn this lesson, they next put me in headquarters, where I went head-on with the system change.

Now politics and politicians, bills and laws, courts and litigation, domestic politics, and many others are working against systemic change.

System changes are difficult, time consuming, and often do not get you where you want to go.

Changing the prison system is no easy task.

So what I did was I looked back on my experiences and remembered that I had a cold when I came into contact with criminals.

As the environment changed, so did the behavior.

These were not major system changes.

These were small changes, and these changes created new possibilities.

So then I was reappointed as the warden of a small prison.

And at the same time, I was working on my degree at Evergreen State University.

I interacted with many people who were different from me, who had different ideas and had different backgrounds.

One of them was a rainforest ecologist.

She looked at my little prison and what she saw was a laboratory.

We talked and discovered how prisons and inmates can actually contribute to the advancement of science by helping them complete projects they could not complete alone, such as re-breeding endangered species such as frogs, butterflies and endangered grassland plants.

At the same time, we also found ways to make our operations more efficient by adding solar power, rainwater harvesting, organic gardening, and recycling.

This effort has led to a number of projects that have had a significant system-wide impact, not just in our system, but in other state systems as well, where small experiments have led to big changes in science and communities.

The way you think about work changes the way you work.

This project made my work even more interesting and exciting.

I was excited. Staff were excited.

The officers were thrilled. The inmates were thrilled.

they were inspired.

Everyone wanted to participate in this.

They contributed, they made a difference, they thought it was meaningful and important.

However, let me clarify what is going on here.

Inmates are highly adaptable.

It has to be.

They often know more about our own system than the people running it.

And they're here for a reason.

I don't see it as my job to punish or forgive them, but I do believe they can live a decent and meaningful life, even in prison.

That's the question. Can inmates live decent and meaningful lives, and if so, what difference does it make?

So I took the question back to the very bottom, where some of the most violent criminals are housed.

Remember, the IMU is for punishment.

You don't get the perks of programming there.

We thought so.

But then I started to realize that if there were any inmates who needed programming, it was certain inmates.

In fact, it required intensive programming.

So we changed our mindset 180 degrees and started exploring new possibilities.

What we found was a new kind of chair.

Place the chair in the classroom instead of using it for punishment.

Of course, we haven't forgotten our administrative responsibilities, but now that inmates can safely interact face-to-face with other inmates and staff, administration is no longer an issue, allowing everyone to focus on other things, such as learning. behavior has changed.

We changed the way we think, we changed the possible. This gives me hope.

Now, I can't say that any of these things work.

What I can say, however, is that it works.

Our prisons are becoming safer for both staff and inmates, and when prisons are safe, we can focus our energies on doing more than just managing them.

Reducing recidivism may be our ultimate goal, but it is not the only goal.

Let's be honest, we need more people and institutions working together to prevent crime.

I fear that relying solely on prisons to reduce crime will never be achieved.

But in prison, we can do things we never thought we could do.

Prisons are a source of innovation and sustainability, regenerating endangered species and restoring the environment.

Inmates can also become scientists, beekeepers, and dog rescuers.

Prisons can be a source of meaningful work and opportunities for staff and inmates who live there.

We can contain, control and provide a humane environment.

These are not contradictory properties.

We can't wait 10, 20 years to decide if this is worth doing.

Our strategy is no big system change.

Our strategy is to make hundreds of small changes in days or months instead of years.

We need more little pilots who learn as they go, pilots who change the realm of possibility.

We need new and better ways to measure engagement, interaction and impact on a safe environment.

We need more opportunities to participate and contribute to our community and yours.

Prisons must be safe, yes they are safe, yes.

we can do that.

Prisons should provide a humane environment in which people can participate, contribute and learn to live meaningful lives.

we are learning how.

That's why I expect it.

We don't have to stick to old ideas about prisons.

you can define it. we can produce it.

And if we do it thoughtfully and with humanity, prisons can be more than buckets of failed social policies.

Perhaps at last we will earn the title of Department of Corrections.

thank you.

(applause)

In his 1968 speech reflecting on the civil rights movement, Dr. Martin Luther King Jr. said, "In the end, we will remember the silence of our friends, not the words of our enemies."

As a teacher, I have taken this message to heart.

Every day we see around us the consequences of silence in the form of discrimination, violence, genocide and war.

In the classroom, I encourage my students to explore the silences of their lives through poetry.

We work together to fill those spaces, recognize them, name them, and understand that they don't have to be a source of shame.

In an effort to create a culture in the classroom where students feel safe sharing their silent intimacy, I post four core principles on a board in front of class for all students to sign at the beginning of the school year. Reading critically, writing consciously, speaking clearly, speaking truthfully.

And I found myself thinking a lot about the last point. Be honest.

And I realized that if I asked my students to speak up, they had to speak their truth and be honest about when they were unable to do so.

So I tell them that I was raised as a child in a Catholic family in New Orleans and have always been taught that the most meaningful thing a person can do during Lent is to give up something, to sacrifice one's usual indulgence, to prove to God that you understand His divinity.

I quit sodas, McDonald's, French fries, French kisses and everything in between.

But one year I stopped talking.

I thought the most valuable thing I could sacrifice was my own voice, but I felt like I didn't realize I gave it up so long ago.

I spent a lot of my life telling people what they wanted to hear instead of what they needed, telling myself I was never meant to be anyone's conscience. Because I still need to understand that I am my own conscience. So sometimes I said nothing, soothing my ignorance with silence, not realizing that verification didn't need words to back it up.

When Christian was beaten for being gay, I put my hands in my pockets and walked with my head down as if I hadn't noticed.

I couldn't use my locker for weeks. Because when I saw the bolt on the key and the homeless man in the corner looked up at me with his eyes up for affirmation that it was just worth looking at, it reminded me of the bolt I held to my lips.

I was more concerned about touching the Apple screen than actually feeding him.

When a woman at a fundraiser celebration said, "I'm so proud of you.

It must be very difficult to teach those poor, unintelligent children," I bit my lip. Because apparently she needed her money more than her students needed dignity.

We spend so much time listening to people and pay little attention to what they don't say.

Silence is the residue of fear.

It's like guillotining your own shortcomings with your tongue.

It is the receding air from the chest as the lungs feel unsafe.

Silence is the Rwandan genocide. Silence is Katrina.

It's the sound you hear when you don't have enough body bags left.

It is the sound after the rope has already been tied.

I'm burning. is a chain. it's a privilege. it's a pain.

You don't have time to pick a battle when the battle has already chosen you.

I do not allow myself to be indecisive in silence.

I tell Christian that he is a lion, a sanctuary of courage and brilliance.

I ask the homeless man his name and how his day was. Because whatever a human wants to be can be human.

I tell the woman that my students can talk about transcendentalism like their last name was Thoreau, and that just because you've seen an episode of "The Wire" doesn't mean you know anything about my children.

So this year, instead of giving up on anything, I'm going to live each day as if there's a mic under my tongue, a stage behind my inhibitions.

After all, who needs a soapbox when all they need is their own voice?

thank you.

(applause)

We are going to go diving in the deep sea, and anyone who has had the wonderful opportunity to do so knows that for about two-and-a-half hours on the way, the world is completely positively pitch black.

And we once saw outside the window the most mysterious animal that cannot be described in words. It's a world of flashing lights, bioluminescence, like fireflies.

Dr. Edith Widder -- she is now with the Marine Research and Conservation Society -- was able to come up with a camera that could capture some of these incredible animals, and that's what you see on screen here.

That's all bioluminescence. As I said earlier, like fireflies.

(Laughter) I'm a geologist by training.

As you know, some of the bioluminescence is used to avoid being eaten, and some is used to lure prey, but from an artistic standpoint, it's all absolutely amazing.

And there's a lot going on inside - fish with glowing, pulsating eyes.

Some colors are hypnotically designed with lovely patterns.

And finally, this windmill design, one of my favorites.

All dives are really great.

It's an unknown world, and today we've only explored about 3 percent of what's in the ocean.

We have already discovered the world's highest mountains, the world's deepest canyons, underwater lakes and underwater waterfalls. Many of which I have shared with you from the stage.

And places that were thought to be completely devoid of life are now found to have more life, greater diversity and density than rainforests. This tells us how little we know about this planet.

But now I want to jump in the shallows and see some undoubtedly amazing creatures.

Cephalopods -- head and feet.

(laughs) This is an octopus.

This is research by Dr. Roger Hanlon of the Marine Biology Institute, and it's fascinating how cephalopods can sense their surroundings, see light, and observe patterns with their amazing eyes.

This is an octopus that migrates across the reef, finds a place to settle, curls up, and disappears into the background.

It's a big deal.

In the next bit you will see some squid.

Now, when a male fights, he turns white if he is really aggressive.

And these two men are fighting.

They do it by bouncing their butts, which is an interesting concept.

Now this is male on the left and female on the right. The male manages to split his body color so that the female always sees only the softer and gentler squid inside him.

(Laughter) Let's look at it again. Notice the colors. The right side is white and the left side is brown.

He took a step back, split to avoid the other males, and came up on the other side - Bingo!

Now, I've been told it's not just a male squid phenomenon, but I'm not sure.

(laughs) Squid. i love squid

This is a giant squid from Australia.

And there he is, his droopy little eyes here.

But they can also do some pretty amazing things.

Here we see an individual backing into a crevice and observe its tentacles. He just pulls in tentacles and makes them look like algae.

It quickly disappears into the background.

positively great.

Two men are fighting here.

Again, cephalopods are smart enough. They know they shouldn't hurt each other.

But notice the patterns they can do on their skin.

That's amazing.

Sometimes when they move they may not want to be seen by predators.

This guy can make himself look like a rock and can see his surroundings and use the waves and shadows to actually glide over the bottom so he can't be seen.

His movements just blend into the background, a moving rock trick.

I'm still exploring deep water, but I've learned a lot from shallow water.

And for good reason. The shallows are full of predators. There is a barracuda here. Octopuses and cephalopods need a good understanding of how to use their surroundings to hide.

In the next scene you will see a wonderful coral bottom.

And if you don't use camouflage and you can't use your skin to change color or texture, you'll find octopuses stand out quite easily there.

In the foreground are algae and octopus.

Now, as Roger frightened him, he flew off in a cloud of ink, and when he landed, the octopus said, "Oh, I've been seen.

The best thing is to get as big as possible."

That big brown makes his eyeballs so big.

So he's bluffing. Let's do it the other way around.

When he first showed it to me, I thought he was joking.

I thought it was all graphics. So here it's the other way around.

They are truly amazing animals that can change color and texture to suit their surroundings.

1 2 3。

(Applause.) And now he's gone, and so have I. I'm really thankful to you.

I am an American teacher and civics practitioner.

Now, if you are asleep, please wake up. (Laughter.) Why does the very word "citizen" have such drowsy, even narcolepsy-like effects on us?

I think it's because the word itself means something extremely noble, extremely important, and extremely boring.

Well, I think it's up to people like us, people who attend rallies like this in person or online, to make citizens sexy again, just like they did during the American Revolution, just like they did during the civil rights movement, in any way possible.

And I believe the way to make civics attractive again is to be clear about power teachings.

I think the way to do it is at the city level.

This is what I want to talk about today. I would like to start by defining some terms, then explain the scale of the problem I think we face, and then suggest how I think cities can be central to the solution.

So let's start with some definitions.

By “citizen” here we simply mean pro-social, problem-solving technology in self-governing communities.

Civics is the art of civil rights, or what Bill Gates Sr. simply called a lifetime manifestation, and it involves three things. It is a foundation of values, an understanding of the systems that make the world work, and a set of skills that enable us to pursue our goals and enable others to participate in their pursuit.

And that brings me to my definition of power. Simply put, it is the ability to get others to do what you want them to do to you.

That sounds threatening, right?

We don't like to talk about power.

we find it scary. We feel it is somehow evil.

We feel uncomfortable with that name.

In democratic cultures and myths, power belongs to the people.

period. End of story.

No further inquiries are needed or welcomed.

Power has negative moral values.

It sounds essentially Machiavellian.

It seems inherently evil.

But in reality, power, like fire and physics, is neither inherently good nor evil.

That's exactly right.

And power determines how all forms of government operate, whether democracy or dictatorship.

And the problem we face today, especially here in America, but all over the world, is that too many people are totally illiterate when it comes to power. What is power, who has power, how it works and how it flows, what parts of power are visible and what are not, why some people have power and why it is complicated.

And as a result of this illiteracy, the few who understand how power works in civic life, who understand how a bill becomes law, of course, but also how friendship becomes a subsidy, how prejudice becomes policy, and how a slogan becomes a movement, wield disproportionate influence and are happy to fill the void created by the ignorance of the majority.

That is why it is so fundamental to us now to take hold of this concept of power and democratize it.

One of the things that is so exciting and challenging about this moment is the concentration of knowledge, understanding and influence that results from this pervasive illiteracy of power.

I mean, think about it. How can friendship become a subsidy?

A high-ranking government official decides to leave government and become a lobbyist for his own good, seamlessly executing on turning his relationships into capital for his new master.

How does prejudice become policy?

Involuntarily, for example, in the same way that Stop and Frisk became a bureaucratic numbers game over time.

How does a slogan become a movement?

It went viral, for example, how the Tea Party was able to take the "Don't Step on Me" flag from the American Revolutionary War, or conversely, how a gang of activists were able to take the magazine headline "Occupy Wall Street" and turn it into a global meme and movement.

But the problem is that most people don't want or want to see this reality.

Much of this ignorance, civic illiteracy, is intentional.

For example, some millennials think the business as a whole is just sleazy.

They don't want anything to do with politics.

They would rather opt out and participate in volunteer work.

Some technologists believe that solving power imbalances and abuses simply requires more data and greater transparency.

Some on the left believe that power resides only in corporations, while others on the right believe that power resides only in governments, each side blinded by selective anger.

There are innocent people who believe that only good things happen, and there are cynical people who believe that only bad things happen. Lucky and unhappy people alike see their destiny as simply what they deserve, rather than as a prearranged, markedly modifiable outcome of the distribution of inherited power.

The result of this creeping fatalism in public life is a depressingly low level of civic knowledge, civic participation, participation and awareness in us, especially in America today.

Virtually the entire political work is subcontracted to a group of specialists: funders, advocates, messagers, investigators.

The rest of us are meant to feel like amateurs in a duck sense.

We lose motivation to learn more about how things work.

Start opting out.

Now, this problem, this challenge, is the problem that we have to face now, and when there is this kind of indifference, this willful ignorance, I believe it is both a cause and a consequence of the concentration of opportunities for wealth and influence that I have just described, this deep civil inequality.

This is why, in this day and age, it is so important to rethink civics as a teaching of power.

It has probably never been more important in your life.

If you don't learn power, you won't wake up, and if you don't wake up, you'll be left behind.

Now, part of the art of practicing power means waking up and speaking out, but it also means having an arena where you can practice making plausible decisions.

Civics all come down to a simple question of who decides. And it has to be done in a certain place, the arena.

And this brings me to my third point today. It is simply that there is no better place to exercise power in modern times than the city.

Think about the city you live in, where you are from.

Think about common life problems in your city.

It can be small things like where to put street lights, medium things like which libraries should open longer or shorter hours, or big things like turning a dilapidated waterfront into a highway or a greenway, or requiring all businesses in town to pay a living wage.

Think about the change you want in your city, then think about how you want it to happen and how you can make it happen.

Create an inventory of all forms of power that are influencing the situation in your city. Ideas, information, misinformation, the threat of force, the power of norms, as well as money and people.

All these forms of force are at work.

Now consider how to activate or neutralize these various forms of power.

This is not a Game of Thrones empire level question set.

These are questions that play out all over the planet.

Here's a quick rundown of two stories from recent headlines.

In Boulder, Colorado, voters just recently approved a process to replace a private power company, literally Excel, with a public power company that forgoes profits and is far more climate-friendly.

Well, Excel fought back, and Excel introduced voting measures that undermined or reversed this municipalization.

So the Boulder civic activists pushing for this literally have to fight power to fight for power.

The University of Alabama in Tuscaloosa has a somewhat intimidating organization on campus called The Machine, largely derived from white sororities and fraternities on campus, and for decades The Machine has dominated student union elections.

Now, recently, The Machine has begun to get involved in real city affairs, scheming to elect a former Machine member and business-leaning graduate to the Tuscaloosa City Board of Education.

Now, like I said, these are just two examples, pretty much randomly drawn from the headlines.

Thousands more people are just like you every day.

And while you may love or hate the boulder and Tuscaloosa efforts I describe here, I cannot help but admire the power literacy and skill of the players who participated.

It is impossible not to consider and recognize their command over the fundamental questions of civil power: what purpose, what strategy, what tactics, what the terrain is, who is the enemy and who is the friend.

Now I want you to think back about that problem in your city, that opportunity, that challenge, and what you want to fix or create in your city. And ask yourself if you can control these basic questions of power.

Were you able to effectively practice what you knew?

This is both a challenge and an opportunity for us.

We are now living in a time when, in spite of, or perhaps because of, globalization, all citizenships are more resonating and powerfully local than ever before.

In fact, modern power is pouring into cities faster and faster.

Here in the United States, the central government is entangled in partisan ties.

Citizens' imagination, innovation and creativity are now emerging from the local ecosystem and radiating outward. This great innovation, the wave of localism that is now arriving, can be seen in how people eat, work, share, buy, move and live their lives. This is not precious bigotism. This is not an escape to closedness.

This is an emergency.

Localism of our time is strongly networked.

Consider, for example, strategies to make cities more bike-friendly are rapidly spreading from Copenhagen to New York to Austin to Boston to Seattle.

Consider a participatory budgeting experiment in which the public has the opportunity to allocate city funds and determine allocations.

These experiments have spread from Porto Alegre, Brazil, to here in New York City, to the boroughs of Chicago.

Migrant workers from Rome to Los Angeles and many cities in between are now organizing strikes to remind those living in their cities what a day without immigration would be like.

Across China, members of the New Civic Movement have begun working and organizing to combat official corruption and corruption, drawing the ire of officials but also attracting the attention of anti-corruption activists around the world.

In Seattle, where I'm from, we're part of a global city working together to achieve the Kyoto Protocol's carbon reduction goals in total disregard for governments and central governments.

All these peoples unite to form a vast web of power archipelago that allows us to avoid the breakdown of rule and monopolies.

And our challenge now is to accelerate this effort.

Our mission now is to get more people involved in this activity.

That's why my organization, Citizen University, embarked on a project to create a curriculum for everyone in civic power.

And this curriculum begins with the three elements I just described: values, systems, and skills.

And what I want to do is help create this curriculum that includes the stories, experiences, and challenges that each of you lives and faces to create a powerful collective.

In particular, we encourage you to try out the simple exercises drawn from the early framework of this curriculum.

I want you to write a story. Write a story from the future of your city. Set a date, 1 year, 5 years, 10 years, 1 generation and write it as a case study looking back. Reflect on the change you wanted for your city, reflect on the cause you were championing, and explain how the change and the cause actually came to fruition.

Describe the compatriot values ​​you have activated and the moral sense of purpose you have been able to evoke.

Describe in detail all the ways you were involved in government, market, social institutions, faith groups, and media systems.

Catalog all the skills you had to deploy, how you negotiated, how you argued, how you framed problems, how you navigated diversity in conflict, all the skills that allowed you to engage people and overcome resistance.

What you do when you write that story is discover how to read power, and discover how to write power in the process.

So share what you write, do what you write, and share what you do.

Literally share the stories you create on the Citizen University Facebook page.

But beyond that, it is in the conversations we are having now at concurrent gatherings around the world on this subject that we think about how we can be powerful teachers and students.

Then together we can make citizens sexy again.

Together we can democratize democracy and make democracy safe again for amateurs.

Together we can build an amazing network of cities that will be the most powerful collective laboratory for autonomy the planet has ever seen.

we have the power to do that.

thank you very much.

(applause)

TED is 30 years old.

The World Wide Web celebrates its 25th birthday this month.

So I have a question.

Let's talk about travel, mainly about the future.

Let's talk about the states.

Let's talk about what kind of web we want.

25 years ago I worked at CERN.

After about a year, we finally got permission to do it, basically as a side project.

I wrote the code.

I was probably the first user.

There was a lot of concern that people wouldn't pick it up because it was too complicated.

A lot of persuasion, great collaboration with other people, and little by little it worked.

it took off. It was very cool.

And indeed, a few years later, in 2000, 5% of the world's population was using the World Wide Web.

Seven years later, in 2007, it was 17%.

In 2008, we founded the World Wide Web Foundation to study and care about that number.

And now we're in 2014, 40% of the world uses the World Wide Web, and that number continues to grow.

clearly increasing.

I would like you to think about both sides of that.

So the first question here at TED is how do we get the other 60 percent on board as quickly as possible?

A lot of important things. It will obviously be mobile related.

But I want you to think about 40 percent as well. Because if you're sitting there yourself, living a web-enabled life, and not remembering things anymore and just looking them up, it might feel successful, and we can all sit there.

But in reality, yes, it worked, there's a lot of it, there's a Khan Academy to shout out to, there's Wikipedia, there's a ton of free e-books to read online, there's a lot of great stuff for education, and there's a lot of stuff in the field.

Online commerce has completely turned the mechanics of commerce upside down in some cases, making available types of commerce that were previously completely unavailable.

Commerce is almost universally affected.

Governments are not universally affected, but they are very much affected, and on a nice day, a lot of open data, a lot of e-government, and a lot more visible stuff happening on the web.

There are also many less noticeable ones.

Health care, late at night when you're worried about what type of cancer your loved one has, or when you're talking over the internet with a very important person in another country.

There is no such thing, there is no such thing in the world, and in fact you gain some degree of privacy.

Therefore, when I use the web, no part of the web, no part of my dealings with the web, can assume that it is just a transparent, neutral medium.

We can talk to you about this matter without worrying about what we know is actually happening right now and the fact that the surveillance is not only done, but by people who could misuse the data.

In fact, what we've found is that you need to worry about whether the whole underlying infrastructure is actually of the quality you want, rather than just using the web.

We greatly enjoy the fact that we have this wonderful freedom of speech.

We can tweet and oh so many people can see our tweets, but unless we can't, in fact Twitter is blocked from that country or in some way the way we try to represent ourselves exposes information about our own condition, the state of the country in which we live, but that information is not available to others.

Therefore, we must protest and ensure that censorship is reduced and the web is open where there is censorship.

We love the fact that the web is open.

It allows us to speak. Anyone can talk to anyone.

It doesn't matter who we are.

And we join these big social networking companies that are effectively built as silos, so it's much easier to talk to someone in the same social network than it is to talk to someone in another social network. So sometimes we actually limit ourselves.

Also, if you've read about filter bubbles, you know that the filter bubble phenomenon is that we love using machines to help us find things we like.

So we love to immerse ourselves in things that make us click, so the machine automatically feeds us what we like, and we get this rose-tinted spectacle world called Filter Bubbles.

Here are some of the things that could threaten our social web.

What kind of web do you want?

I want something unfragmented in many parts, as some countries have suggested they should in the face of recent scrutiny.

For example, we want the web to be a really good foundation for democracy.

I want a web where healthcare is available in privacy and where scientists have a wealth of medical and clinical data available for research.

I want a web where the remaining 60 percent can join as soon as possible.

What I want is a web that is a strong foundation for innovation, a web that can be built to respond quickly when something bad happens or disaster strikes.

This is only part of what I want from a larger list, but it's obviously longer.

I have your list.

Taking this 25th anniversary as an opportunity, we would like to think about what kind of web we are aiming for.

You can find some links by visiting webat25.org.

There are many sites where people are starting to put together the Magna Carta, the bill of rights for the web.

What about then?

What if I decide that these are becoming, in a way, basic rights, the right to communicate with whoever I want?

What goes on that Magna Carta list?

Crowdsource Magna Carta for the web.

Let's do it this year.

Use the energy of the 25th anniversary to crowdsource Magna Carta on the web. (Applause.) Thank you. Also, do you have any requests?

fight for me have understood? thank you.

(applause)

When my first children's book was published in 2001, I went back to my elementary school to talk to my students about becoming a writer and illustrator. When I was setting up the slide projector in the cafetorium, I looked across the room and there she was. I was a lunch lady.

She was still at school and busy preparing lunch for the day.

So I approached her to say hello and said, "Hi Genie! How are you?"

She looked at me, knew she recognized me, but couldn't quite pinpoint my location, looked at me, and said, "Stephen Klossochka?"

And although I was surprised that she knew I was a crosochka, Stephen was an uncle twenty years older than me, and she was his lunch lady when he was a kid.

And she started telling me about her grandchildren, which surprised me.

My lunch lady has grandchildren and children, and quit school at the end of the day?

I thought she lived in the cafeteria with a spoon.

I had never thought of that before.

Well, that chance encounter sparked my imagination and I created the graphic novel series Lunch Lady. The series is a cartoon series in which The Lunch Lady battles evil cyborg stand-ins, school bus monsters, and mutant musletts using fish stick nunchucks, and at the end of every book, she catches the bad guys in a hairnet and declares, "Justice will be served!"

(Laughter) (Applause) And it was amazing. Because this series has been such a welcome addition to my children's reading lives, they have sent me the most wonderful letters, cards and artwork.

During my visits to the schools, I noticed that the school lunch staff were involved in the program in a very meaningful way.

And all the ladies at lunch told me the same thing. "Thank you for creating superheroes like us."

Because lunch aunties haven't been treated very kindly in popular culture for a long time.

But it meant the most to Genie.

When this book first came out, I invited her to a book launch party and presented her with artwork and a few books in front of everyone there, everyone she had fed over the years.

And then, two years after this picture was taken, she passed away and I attended her wake and nothing prepared me for what I saw there. Because next to her coffin was this painting. And her husband said it meant a lot to her that I recognized her efforts and justified her actions.

And that inspired me to create a day where I could recreate that feeling in cafeterias across the country. It's School Lunch Hero Day, a day when kids can create creative projects for lunch staff.

I partner with the School Nutrition Association, and did you know that over 30 million children participate in school feeding programs every day?

This equates to up to over 5 billion meals each school year.

And the heroic tale goes far beyond just the kid who added a few chicken nuggets to his lunch tray.

We have Brenda teacher in California. She closely monitors all students who call her phone and reports any problems to the guidance counselor.

Realizing that 67 percent of students depended on the school lunch every day and would go without it during the summer, school lunch women in Kentucky converted a school bus into a mobile school feeding unit that traveled around the neighborhood feeding 500 children a day during the summer.

And the kids made a great project.

I knew they would.

The children made hamburger cards out of construction paper.

They took a picture of the lunch lady's head, pasted it on my cartoon lunch lady, pinned it to a milk carton and gave her flowers.

And they made their own comics with real lunch women and cartoon lunch women in the lead roles.

We also made thank you pizzas where all the kids signed different toppings on construction paper pizzas.

For me, what really touched me about the reaction of the women at the school lunch was that one woman said to me: "Until this day, being at this school felt like the end of the world.

I didn't think anyone here had noticed us. ”

Another woman told me: “The takeaway from this is that what you do matters.”

And, of course, her actions matter.

What they all do is important.

They feed their children every day and their bellies must be full before they can learn. These women and men are working on the front lines to build an educated society.

So, without waiting for School Lunch Hero Day, I urge you to say thank you to your school lunch staff. I also want you to remember how powerful words of gratitude are.

Gratitude can change your life.

It changes the lives of those who receive it, and it changes the lives of those who express it.

thank you.

(applause)

These are simple objects: watches, keys, combs, glasses.

These are what the Bosnian genocide victims took with them on their final journey.

We are all familiar with these mundane, everyday objects.

The fact that some of the victims were carrying personal items such as toothpaste and toothbrushes is a clear sign that they had no idea what was about to happen to them.

Usually they were said to be exchanged for prisoners of war.

These items have been recovered from numerous mass graves across my homeland, and as we speak, twenty years after the war, forensics are still exhuming bodies from newly discovered mass graves.

And it is probably the largest ever discovered.

During the four-year conflict that devastated the Bosnian state in the early 90s, about 30,000 people, mostly civilians, were estimated to be missing or dead, and another 100,000 died in combat.

Most of them were killed either early in the war or towards the end of hostilities when UN safe zones like Srebrenica fell into Serb hands.

The International Criminal Court has handed down a number of judgments for crimes against humanity and genocide.

Genocide is the systematic and deliberate destruction of a racial, political, religious, or ethnic group.

It is as much about killing people as it is about genocide.

It is also about destroying their property, their cultural heritage, and ultimately the very notion that they once existed.

Genocide does not simply mean killing. It's about denied identities.

There will always be traces, but there is no such thing as a perfect crime.

The remains of perished people are more durable and ever-present than their fragile bodies and selective, fading memories about them.

These items have been recovered from numerous mass graves, and the main purpose of this collection of items is the unique process of identifying people who have disappeared in the killings, the first acts of genocide committed on European soil since the Holocaust.

Not a single body should remain undiscovered or unidentified.

These items, which the victim carried with them on their way to execution, are to be carefully cleaned, analyzed, cataloged, and stored once recovered.

Thousands of artifacts are packed in white plastic bags similar to those found in the CSI.

These objects are used as forensic tools in the visual identification of victims, but also as invaluable forensic evidence in ongoing war crimes trials.

Survivors are occasionally called upon to physically identify these items, but physically viewing is a very difficult, inefficient, and painful process.

When forensic scientists, doctors, and lawyers finish working with these objects, they become story orphans.

Believe it or not, many of them are destroyed or simply shelved, out of sight, and forgotten.

A few years ago, I decided to photograph all the finds in order to create a visual archive for survivors to easily browse.

As a storyteller, I want to give back to the community.

I like to go beyond raising awareness.

And in this case, someone will recognize these items, or at least their photo will remain a permanent, impartial and accurate reminder of what happened.

Pictures mean empathy, and the familiarity of these items warrants empathy.

In this case, I am just a tool, a forensic scientist, and the result is a photograph that is as close to documentation as possible.

Once all the missing are identified, all that remains are the rotting bodies in the graves and these everyday items.

In their simplicity, these items are the final proof of the victim's identity and the last lasting reminder that these people once existed.

thank you very much.

(applause)

Today I would like to talk about a project that changed the way I approach and practice architecture: the Fez River Rehabilitation Project.

My hometown of Fez, Morocco, has one of the largest walled medieval cities in the world, called the Medina, nestled in a river valley.

The entire city is listed as a UNESCO World Heritage Site.

Since the 1950s, as the Medina's population has grown, basic urban infrastructure such as green squares and sewers have changed rapidly and come under great strain.

One of the biggest casualties of this situation was the Fez River, which bisects the Medina in the middle and has for centuries been considered the very soul of the city.

In fact, one can witness the existence of an extensive water network of this river throughout the city, in places such as private properties and public fountains.

Unfortunately, since 1952, the river has been gradually covered with concrete slabs due to pollution of the river.

This process of erasure combined with the destruction of many houses along the banks of the river to allow the machine access to the Medina's narrow pedestrian network.

Vacant lots in these cities quickly turned into illegal parking lots and garbage dumps.

Actually, the condition of the river before entering the medina is quite healthy.

And pollution is devastating, mainly from untreated sewage and chemical dumping from crafts such as tanners.

At some point, I couldn't stand the desecration of an important part of my city, the river, and decided to take action, especially after hearing that the city had received a subsidy to divert and treat sewage.

Thanks to clean water, excavation of rivers suddenly became possible. Due to luck and a lot of hard work, my partner Takako Tajima and I were commissioned by the city to work with a team of engineers to excavate the river.

But we were sneaky and suggested even more. It is to transform the riverbanks into pedestrian walkways, then connect these walkways again to the urban structure, and finally transform the urban spaces along the riverbanks into public spaces that are lacking in the medina of Fez.

Here's a quick introduction to two of these public spaces.

The first is Rcif Plaza. This is actually directly above the river, as indicated by the dotted line.

The square was once a chaotic traffic hub that really undermined the urban cohesion of the Medina, which has the largest pedestrian network in the world.

And just beyond the historic bridge you can see here, right next to the square, you'll find that the river looked like a river of garbage.

Instead, we proposed making the square entirely pedestrian, covered with a reclaimed leather canopy and connected to the river bank.

The second intervention site was also an urban clearing along the river bank, formerly an illegal parking lot, and we proposed turning it into the first playground in the medina.

The playground is built using recycled tires and combines a built wetland that not only purifies the river water but also retains water when flooding occurs.

As the project progressed and won several design awards, new stakeholders stepped in to change the project's goals and design.

The only way to advance the main goal of the project was to do something very unusual that architects don't normally do.

We had to put our design egos and authorship on the back burner and focus primarily on being activists and integrating all stakeholder agendas and focusing on the main goal of the project: digging the river, treating its waters, and providing a public space for all.

In fact, we are so lucky that many of those goals have been achieved or are being achieved.

For example, you can see it here at Rcif Plaza.

This is how it was about 6 years ago.

This is how I feel today.

Although still under construction, it is actually used frequently by locals.

Finally, when the project is complete, the RCIF Plaza will look like this.

This is a river, covered and used as a garbage dump.

And after many years of work, a river with clean water appeared.

And finally, when the project is completed, you can see the river here.

So, certainly, the rehabilitation of Fez will continue to change and adapt to the socio-political situation of the city. But we strongly believe that by rethinking the role and subjectivity of the architect, we have set the core ideas of the project in motion. It is about transforming the river from sewage into a public space accessible to all, thereby ensuring that the city of Fez remains a living city for its inhabitants rather than a mummified legacy.

thank you very much.

(applause)

In Kenya, 1984 is known as the Year of the Cup, or the Year of the Rumbling.

Gorogoro is a cup that weighs two kilograms of commercially available cornflowers, which are used to make ugali, a polenta-like cake that is eaten with vegetables.

Both corn and vegetables are grown on most farms in Kenya, so most families can eat on their own farms.

A single gurg can feed an average family three meals a day, and in 1984 the entire harvest could fit in one gurg.

It is one of the worst droughts ever remembered.

Well today I am insuring farmers against droughts like the year of the cup, and more specifically against rains.

I come from a missionary family that built a hospital in Indonesia, and my father built a mental hospital in Tanzania.

This is me at 5 years old in front of that hospital.

I don't think they expected me to grow up and sell insurance. (Laughter) So let me tell you how it happened.

In 2008, I was working for the Rwanda Ministry of Agriculture and my boss had just been promoted to Minister.

She launched an ambitious plan to start a green revolution in her country, and before we knew it we were importing tons of fertilizer and seeds and teaching farmers how to use the fertilizers and plants.

A few weeks later the International Monetary Fund visited us and asked my minister. “Minister, it is great that you want to help farmers achieve food security, but what if it doesn't rain?”

My pastor replied proudly and a little defiantly, "I'm going to pray for rain."

That ended the discussion.

As we were driving back to the ministry, she turned to me and said, "Rose, you've always been interested in finance.

Go find insurance. ”

Six years later, last year I was fortunate enough to be part of a team insuring more than 185,000 farmers in Kenya and Rwanda against drought.

They owned an average of 0.5 acres of land and paid an average premium of €2.

It's microinsurance.

Currently, traditional insurance relies on farm visits, so premiums of €2-3 will not work.

Farmers here in Germany are visited at the beginning, in the middle, at the end of the season and again in case of losses to estimate the damage.

For smallholder farmers in Central Africa, making these visits is simply a no-brainer.

So we rely on technology and data instead.

This satellite measures the presence or absence of clouds. please think about it. With clouds there may be some rain, but without clouds there can be no rain.

These images show the start of rains in Kenya this season.

You can see that the clouds will come in and disappear around March 6th, and the clouds will come in full swing around March 11th.

And that cloud was the beginning of the rain this year.

The satellite covers all of Africa and dates back to 1984. This is important. This is because knowing how many droughts have occurred in a location in the last 30 years allows us to estimate the likelihood of future droughts fairly accurately. That means we can put a price tag on the risk of drought.

Data alone is not enough.

We devise agricultural algorithms that tell crops how much and when they need rain.

For example, corn planting requires two days of rain for the farmer to plant, and then one rain every two weeks for the crop to germinate properly.

After that, the crop needs rain every three weeks to form leaves, but during flowering, it needs rain more often, about once every 10 days, for the crop to form cobs.

At the end of the season, you don't want it to rain. This is because rain can damage crops.

It's hard to devise such coverage, but the real challenge turned out to be selling insurance.

We set a modest goal of having 500 farmers insured after the first season.

After several months of intensive marketing, we have contracted a total of 185 farmers.

I was disappointed and embarrassed.

Everyone kept telling me that farmers wanted insurance, but our major customers simply didn't buy insurance.

They wait and see what happens, they don't trust insurance companies, they say, 'I've been doing this for years.

Why should I buy insurance now? ”

Microcredit is a way of providing small loans to the poor, pioneered by Nobel Peace Prize winner Muhammad Yunus for his work at Grameen Bank.

After all, selling microcredit is not the same as selling insurance.

To get credit, the farmer needs to get the trust of the bank, and if he succeeds, the bank will advance him the money.

That's an attractive proposition.

For insurance, the farmer has to trust the insurance company and has to pay the insurance company money in advance.

It's a completely different value proposition.

As of 2012, only 4.4% of Africans had insurance, half of them concentrated in one country, South Africa.

For several years we tried to sell insurance directly to farmers, but the marketing costs were very high and the success rate was very limited.

And I realized that many organizations are working with farmers, such as seed companies, microfinance institutions, mobile phone companies, and government agencies.

They all gave loans to farmers, and just before the loans were completed, farmers often said, "But what if it doesn't rain?"

How do you expect to pay off my debt? ”

Many of these organizations took the risk themselves, just hoping the worst didn't happen that year.

However, most organizations restricted their growth in the agricultural sector.

They couldn't take this kind of risk.

Interesting things can happen when these organizations become our customers and combine credit and insurance.

Let me tell you one more thing.

It started raining in western Kenya in early February 2012, but the rain started early. Farmers are encouraged because when it starts raining early, it usually means the season is getting better.

So they borrowed and planted.

Three weeks later, not a single drop of rain fell, and the crops that had sprouted withered and withered.

We insured a loan from a microfinance institution that was providing loans to about 6,000 farmers in the area, called them and said:

I have you

At the end of the season, we will give you €200,000. ”

They said, 'Great, but it's slow.

Can you give me the money now?

Then these farmers can plant again and get another harvest this season. ”

So we persuaded our insurance partners to replant the trees in late April of the same year.

We took our replanting idea to a seed company and convinced them to quote insurance on every bag of seed. I filled every bag with a card with a number on it. When the farmer opens the card, it will text you the number. That number actually helps locate the farmer and assign it to a satellite pixel.

Satellites will then measure rainfall for the next three weeks and replace the seeds if there is no rain.

First one — (applause) — wait a minute, I'm not there!

One of the first beneficiaries of this reforestation guarantee was Bosco Mwini.

We visited his farm later that August and wished we could have seen his smile as he showed us the harvest. Because it warmed my heart and made me understand why selling insurance is a good thing.

But as you know, he insisted on photographing the entire harvest, so I had to zoom out quite a bit.

His harvest that season was secured by insurance and today we believe that African farmers have all the tools to put them in control of their destiny.

No more drinking cups for years.

Instead, we look forward, at least somehow, to a year of insurance, or a year of bountiful harvests.

thank you.

(applause)

Oliver is a very dashing, handsome, charming, but rather erratic man who has completely stolen my heart.

(laughter) He's a Bernese Mountain Dog and my ex-husband and I adopted him and after about 6 months we realized he was a mess.

He had paralyzing separation anxiety and we couldn't leave him alone.

Once, he jumped from the 3rd floor of our apartment.

he ate the dough He ate recyclables.

He hunted nonexistent flies.

He was suffering from hallucinations.

He was diagnosed with canine obsessive-compulsive disorder, but that's really just the tip of the iceberg.

However, just like humans, it can take half a year before you realize that your loved one is in trouble.

(Laughter) And most of us don't take our date to the bar we met, return the friend who introduced us, or sign up for Match.com again.

(Laughter) We love them anyway and stick with it, and that's what I did with my dog.

And I was studying biology.

I have a Ph.D. I have a PhD in History of Science from MIT, and if you had asked me 10 years ago if my beloved dog, or dogs in general, had feelings, I would have said yes, but I don't know if I would have said that the dog had an anxiety disorder and could be put on Prozac and turned to a therapist.

But then I fell in love, realized I could do it, and actually tried to help my dog ​​overcome his panic and anxiety, and it changed my life.

It opened up my world.

And indeed, I have spent the last seven years researching mental illness in other animals.

Could they be as mentally ill as humans? If so, what does that mean for us?

And what I've discovered is that I believe they can suffer from mental illness, and actually trying to find out and identify their mental illness often helps us be a better friend to them and also helps us understand ourselves better.

Now let's talk a little bit about diagnosis.

Many of us believe that we cannot know what other animals are thinking, and that is true, but just because anyone in a relationship, or at least this is my case, asking the person they are with, a parent, or a child how they are feeling does not mean they can tell you.

They may not have the words to describe what they are feeling, or they may not know.

It's actually a very recent phenomenon that we feel like we have to talk to someone to understand our emotional pain.

Until the early 20th century, physicians often diagnosed psychiatric distress in patients based solely on observation.

It also turns out that thinking about mental illness in other animals isn't really all that unreasonable.

Most of the mental disorders in the United States are fear and anxiety disorders, and when you think about it, fear and anxiety are actually very helpful animal emotions.

Normally, we feel fear and anxiety in dangerous situations, but once we feel them, we tend to stay away from them.

The problem is that we start to feel fear and anxiety in unnecessary situations.

Mood disorders can actually be just the unfortunate downside of being emotional animals, and obsessive-compulsive disorder is often a manifestation of the really healthy animal disposition of keeping yourself clean and well-groomed.

If you compulsively do something like washing your hands or feet too much, or perform a ritual so extreme that you can't sit on a bowl without doing that ritual, this tilts into the realm of mental illness.

For humans, we have the Diagnostic and Statistical Manual, which is basically the current consensus atlas of mental illness.

Other animals have YouTube.

(Laughter) This is just one example where I searched for "OCD dog," but I encourage you to look at "OCD cat."

You will be shocked by what you see.

Here are just a few examples.

This is an example of shadow chasing.

I know, and it's funny and cute in a way.

The problem, however, is that dogs can develop such obsessions that last all day.

Therefore, they do not go for walks, hang out with friends, or eat.

They become obsessively obsessed with chasing their tails.

Here is an example of a cat named Gizmo.

He looks like he's stakeout, but he's doing it for hours and hours a day.

He just sits there and keeps moving his legs towards the screen.

This is another example of what is considered stereotypic behavior.

This is Auckland Zoo's sun bear named Tintin.

Those who happen to stumble upon this scene may think that Tin Tin is just playing with sticks, but Tin Tin does this all day. If you were to pay close attention and watch all 30 minutes of this clip, you'd see him doing the exact same thing in the exact same order and spinning the stick exactly the same way each time.

Other common behaviors, especially in captive animals, include pacing stereotypes and shaking stereotypes. In fact, humans do this too, swaying and moving left and right within us.

Many of us do this, but sometimes it's also an effort to calm ourselves down, and I think other animals often do the same.

But it's not the only stereotyped behavior that other animals do.

I'm Gigi. She is a gorilla who lives at Boston's Franklin Park Zoo.

She actually has a psychiatrist at Harvard and has been treated for mood disorders, among other things.

Many animals develop mood disorders.

This horse is just one example, but many creatures exhibit self-destructive behavior.

They chew things or do other things that calm them down, even if it's self-defeating, which might be thought of as similar to how some humans cut themselves.

pluck.

It turns out that fur, feathers, and skin can make them compulsively pluck, and some parrots are actually being studied to better understand trichotillomania, or compulsive plucking in humans, that currently affects 20 million Americans.

Laboratory rats also pluck their own hair.

In them it is called hairdressing.

Dog veterans who have served in conflicts in Iraq and Afghanistan are returning with what they believe to be canine PTSD, and are struggling to return to civilian life after returning from deployment.

You may be too scared to approach a bearded man or jump into a car.

However, I would like to be careful and clear.

I don't think PTSD in dogs is the same as PTSD in humans.

But I also don't think my PTSD is the same as yours, nor do I think my anxiety and sadness are the same as yours.

we are all different.

Also, we all have very different sensitivities.

So two dogs raised in the same household and exposed to exactly the same things might develop a debilitating phobia of, say, a motorbike or a phobia of the beeping sound of a microwave oven, while the other dog is perfectly fine.

So one thing people ask me quite often is this just an example of humans driving other animals crazy?

Or are mental illnesses in animals just the result of abuse and cruelty?

And it turns out it's actually much more complicated than that.

So one of the great things that happened to me was that I recently published a book on this. Now every day when I open my email, go to a book club, or go to a cocktail party, people tell me stories about animals they've met.

And recently, I gave a reading in California, and after the talk, a woman raised her hand and said, "Dr. Brightman, I think my cat has PTSD."

And I said, "So why? Tell me a little bit about it."

So Pin is her cat. She was a guardian and lived with an elderly man who died one day after having a heart attack while vacuuming.

A week later, Pin was found next to his owner's body in his apartment, vacuumed the entire time.

For many months after that incident, perhaps two years later, she was so scared she couldn't be in the house when someone was cleaning.

She was literally a scared cat.

She was hiding in the closet.

An insecure and insecure cat, but thanks to the loving support of her family and a lot of time and patience, now, three years later, she is actually a happy and confident cat.

Another trauma and recovery story I came across was actually a few years ago.

I was in Thailand for research.

I met a monkey named Boon Lua. When Boonlua was a baby, he was attacked by a pack of dogs and had both his legs and one arm ripped off, and Boonlua was dragged to a monastery where the monks housed him.

They called a veterinarian to treat his wounds.

In the end, Bunrua ended up in an elephant facility. The keepers decided to protect him and found out what he liked. It turned out to be mintmentos, beetles and eggs.

However, they didn't want to put him in the company of other monkeys because they were worried that monkeys would be lonely because they are social and thought that they couldn't protect themselves or even play with just one arm.

So they gave him a rabbit, and Boonlua soon became another monkey.

He was very happy to be with this rabbit.

They groomed each other, got along well, and the rabbit gave birth to a rabbit, and Bunrua was even happier than before, which in a way gave him a reason to get up in the morning, and in fact it gave him a reason to wake up in the morning, and in fact it gave him a reason to wake up so much that he decided not to sleep.

He became very protective of these rabbits, stopped sleeping and kind of nodded while trying to take care of them.

In fact, he was so protective and affectionate with these babies that eventually the shelter had to separate them from him.

There, after they were taken away, the shelter staff worried he was going into depression and gave him another rabbit friend to avoid it.

(Laughter) My official opinion is that he doesn't look depressed.

(Laughter) So one of the things I want you to feel is that you should really feel empowered to make some assumptions about the creatures you know so well.

So if you think about your dog or cat, or the one-armed monkey you happen to know, that they might be traumatized or depressed, you're probably right.

This is highly anthropomorphic, the assignment of human characteristics to non-human animals and objects.

But I don't think that is the problem.

I don't think it can't be personified.

It's not like you can take a human brain out of your head and put it in a jar and use it to think another animal's thoughts.

We are animals that always question another animal's emotional experiences.

Then it becomes a choice of how to anthropomorphize well.

Or are you bad at personification?

And poor anthropomorphism is common.

(Laughter) It could be dressing up as a corgi for a wedding or getting too close to an exotic wildlife believing you have a spiritual connection.

There are many things.

But I believe that well's anthropomorphism is based on embracing an animal's similarities to other species and using it to make informed assumptions about the minds and experiences of other animals. In fact, there is an entire industry that is based in some way on the personification of the well, and that is the psychopharmaceutical industry.

One in five Americans is currently taking a psychiatric medication, ranging from antidepressants and anti-anxiety drugs to antipsychotics.

It turns out that we owe this entire arsenal of psychotropic drugs to other animals.

These drugs were first tested in non-human animals to test not only toxicity but also behavioral effects.

The very popular antipsychotic Thorazine first relaxed rats before relaxing people.

In the 1950s, cats selected as mean cats were given the anxiolytic librium to turn them into peaceful cats.

And even antidepressants were first tested in rabbits.

But today, we are not only giving other animals these drugs as subjects, but we are giving them as patients, in both ethical and less ethical ways.

SeaWorld administers anxiolytics to mother killer whales when their pups are abducted.

Many zoo gorillas are treated with antipsychotics and anxiolytics.

But dogs like Oliver I have are put on antidepressants and some anti-anxiety medications to keep them from jumping off buildings and into driveways.

In fact, a recent study published in the journal Science found that even crayfish respond to anti-anxiety drugs.

This made them braver, less cowardly, and more inclined to explore their surroundings.

The number of animals taking these drugs is difficult to know, but the animal pharmaceutical industry is huge and growing, projected to reach $9.25 billion by 2015 from $7 billion in 2011.

Some animals take these drugs indefinitely.

Some bonobos in the Milwaukee zoo saved prescriptions for Paxil and took them until they started distributing them to other bonobos.

(Laughter.) (Applause.) But there are many interventions outside of psychotropics that help other creatures.

And this is where I really think veterinary medicine can teach human medicine something. So, for example, if you take a compulsively tail-chasing dog to a veterinarian behaviorist, their first action won't be to reach for a prescription pad. That's for asking about your dog's life.

They want to know how often your dog goes outside.

They want to know how much your dog is exercising.

They want to know how long they spend interacting with other dogs and other humans.

They want to talk about what treatments you have tried on the animal, mostly behavioral therapy.

These are often the most effective, especially when combined with psychotropic drugs.

But I believe that the most helpful thing, especially for social animals, is spending time with other social animals.

In many ways, I feel like I've become a service animal for my dog. I've seen parrots do it for people, people for parrots, dogs for elephants, elephants for other elephants.

I don't know about you The Internet is flooded with information about unlikely animal friendships.

I also think that a big part of Facebook is a monkey adopting a cat, or a Great Dane adopting an orphaned fawn, or a cow befriending a pig. If you had asked me about these eight or nine years ago, I would have said they were hopelessly sentimental, maybe too badly anthropomorphized, maybe staged. And all I can say now is that there is actually something to this.

This is legal. In fact, some interesting studies point to oxytocin levels. Oxytocin levels are a type of bonding hormone that is released during sex, nursing, or when you are in close proximity to someone you care about, and both humans and dogs who care about each other and enjoy each other's company experience elevated levels of oxytocin. In addition, other studies have shown elevated levels of oxytocin in other pairs of animals, for example goats and dogs who were playing with friends, and levels spiked afterward.

I have a friend who taught me that mental health is really a two-way street.

His name is Ronnie Hodge, a Vietnam Veteran.

Upon his return, he began working with genocide survivors and many others who had experienced the trauma of war.

He had PTSD and fear of heights. I was rappelling backwards over a slide from a helicopter in Vietnam. He was given a Labradoodle service dog named Gander to help him with his PTSD and fear of heights.

This was actually the day they met for the first time, which is amazing, but since then they have spent a lot of time together visiting other veterans who are suffering from similar problems.

But what's really interesting to me about Ronnie and Gander's relationship is that after a few months, Gander actually developed a fear of heights. This is probably because he was watching Ronnie very carefully.

But what's so great about this is that he's still a great service dog. Because now that they are both at such great heights, Ronnie is so worried about Gander's health that he forgets that he himself is afraid of heights.

I've spent a lot of time on these stories, digging through archives, literally years on this research, and it's changed me.

I no longer see animals at the species level.

I see them as individuals, as creatures with their own weather systems that guide their behavior and inform how they react to the world.

And I truly believe that it has made me more curious and more empathetic to the animals that I share my bed with and occasionally land on my plate, as well as to the people I know who suffer from anxiety, phobias, and whatever else. I truly believe that even though we can't know exactly what's going on in our pigs, pugs, and partners, that doesn't stop us from empathizing with them.

Perhaps the best thing we can do for our loved ones is to personify them.

Charles Darwin's father once told him that everyone could go insane at some point.

Thankfully we can find them again, but it will require each other's help.

thank you.

(applause)

Ten years ago I wrote a book entitled "Our Last Century?" question mark.

My publisher cut off the question mark. (Laughter.) The American publisher changed the title to "Our Final Hour."

Americans like instant gratification, but they also like it vice versa.

(Laughter) And my theme was this. Our Earth has existed for 45 million centuries, but this Earth is special. For the first time, we as one species have the future of our planet in our hands.

For nearly all of Earth's history, threats such as disease, earthquakes, and asteroids have come from nature, but now the worst dangers come from us.

And now it's not just the nuclear threat. In our interconnected world, network failures can cause global cascades. Air travel could spread a pandemic around the world in a matter of days. And social media can literally spread panic and rumors at the speed of light.

We worry too much about improbable plane crashes, carcinogens in food, low radiation doses and other small hazards, but we and our political leaders are in denial about catastrophic scenarios.

Thankfully the worst has yet to happen.

Granted, probably not.

But when a disaster is potentially catastrophic, even if it's unlikely, it's worth paying a significant premium to protect against it, much like we buy fire insurance for our homes.

And as science brings more power and promise, so does its downside.

We are becoming more and more vulnerable.

Within decades, millions of people will have the ability to exploit rapidly advancing biotechnology in the same way that they abuse cybertechnology today.

In a TED Talk, Freeman Dyson predicted that children will routinely design and create new organisms in the same way his generation played with chemistry sets.

Well, this may be on the edge of sci-fi, but even if it were part of his scenario, our ecosystem, and even our species, wouldn't survive long unscathed.

For example, some environmental extremists think that much fewer humans would be better for Earth and for Gaia.

What if those people mastered the technology of synthetic biology, which will become ubiquitous by 2050?

And by that time, other sci-fi nightmares may have turned into reality. Foolish robots run amok, and networks that have developed their own minds threaten us all.

So can regulation prevent such risks?

We must try, but these companies are so competitive, so globalized, so driven by commercial pressures, that whatever the regulations say, they will be done somewhere else.

It's like drug laws. We try to regulate it, but we can't.

And the global village will have its village fools and they will have global reach.

So, as I said in my book, we will have a rocky road through this century.

A setback may occur in our society. In fact, there is a 50% chance of a serious setback.

But can you think of an event that could be even worse, wiping out all life?

When the new particle accelerator went live, some people anxiously asked if it could destroy the Earth, or worse, tear apart the fabric of space.

Luckily, I was able to give them some reassurance.

I and others have pointed out that nature has already performed the same experiment hundreds of millions of times with cosmic ray impacts.

But scientists should certainly be wary of experiments that create conditions unprecedented in nature.

Biologists must avoid the release of potentially destructive genetically engineered pathogens.

By the way, our particular aversion to truly existential disaster risk rests on philosophical and ethical questions. It is: Consider two scenarios.

In Scenario A, 90% of humanity will become extinct.

Scenario B wipes 100%.

How much worse is B than A?

Some say 10% worse.

Corpse count increases by 10 percent.

But I would argue that B is incomparably worse.

As an astronomer, I can't believe mankind is the end of the story.

Since it takes five billion years for the sun to flare up and the universe may last forever, human post-evolution may last as long, if not longer, than the Darwinian process that led us here on Earth and far beyond.

And indeed, future evolution will occur much faster, on technological rather than natural selection timescales.

Therefore, given these immense risks, we should not accept the risk of losing this immense potential through human extinction, even if it is one in a billion.

Some of the assumed scenarios are certainly sci-fi, but others are disturbingly real.

An important maxim that the unfamiliar and the improbable are not the same. In fact, that's why we at the University of Cambridge are setting up a center to study ways to reduce these survival risks.

It seems worthwhile even for a few people to think about these potential disasters.

And we need all the help we can get from others. Because we are custodians of a vast universe, a precious pale blue dot of a planet 50 million centuries away.

So let's not put that future in jeopardy.

Finally, I would like to end by quoting the great scientist Peter Medhawar.

I say, "The bells that ring for mankind are like the bells of the cows in the Alps.

They are attached to our own necks, so if they don't produce a tonal and melodious sound, it must be our fault. ”

thank you very much.

(applause)

Talking about empowerment is strange. Because when we talk about empowerment, it's stories that affect us the most.

So, I would like to start by talking about everyday life.

What is it really like to be a young woman in India?

Well, I have spent the last 27 years of my life in India, living in 3 small towns and 2 major cities, and have had some experiences.

When I was seven years old, the tutor who came to my house to teach math sexually abused me.

He put his hand up my skirt.

He put his hand up my skirt and said he knew how to make me feel good.

When I was 17, a high school boy circulated an email detailing all of the sexually aggressive acts he might do to me because I didn't pay him attention.

At 19, I helped a friend whose parents forced her to marry an older man escape an abusive marriage.

When I was 21, my friend and I were walking down the street one afternoon when a man pulled down his pants and masturbated in front of us.

I asked people for help, but no one came.

When I was 25, I was hit by two guys on motorcycles one evening as I was walking home.

I spent two nights in the hospital recovering from trauma and injuries.

So, all my life, I have seen women in my family, friends, and colleagues going through these experiences, but they rarely talk about it.

Simply put, life in India is not easy.

But I'm not going to talk about this horror today.

I will tell you about an interesting learning path that this fear has led me to.

Well, one night in December 2012, something happened that changed my life.

So a young girl, a 23-year-old student, boarded a bus in Delhi with her male friend.

There were six men on the bus. A young man you encounter every day in India, the horrifying events that followed have been broadcast many times in the Indian and international media.

The girl was repeatedly raped, forced through with blunt sticks, beaten, bitten and left to die.

Her friend was gagged, attacked and knocked unconscious.

She died on December 29th.

And just as most of us here are preparing to welcome the New Year, India has plunged into darkness.

For the first time in Indian history, men and women living in Indian cities have awakened to the horrifying truth about the true state of women in this country.

Now, like so many other young women, I was really terrified.

I couldn't believe that something like this could happen in the capital.

I was angry, frustrated, but most of all, I felt utterly, utterly helpless.

But what are you actually doing?

Some blog, some ignore, some join protests.

I did it all. In fact, that was what everyone was doing two years ago.

So the media was filled with articles about all sorts of horrible deeds an Indian man could do.

They were likened to animals, sexually repressed beasts.

Indeed, the event was so foreign and unthinkable in the minds of Indians that the reaction of the Indian media, public and politicians proved one point: "No one knew what to do."

And no one wanted to take responsibility for it.

In fact, these were insensitive comments made by celebrities in the media against sexual violence against women in general.

So the first photo was made by a member of Congress, the second by a spiritual leader, and the third was actually the defendant's lawyer when the girl died fighting for her life.

Well, as a woman who sees this every day, I'm tired.

So, as a writer and gender activist, I've written extensively about women, but I realized something different this time. Because a part of me realized that I was also part of that young woman and decided I wanted to change this.

So I did something spontaneous and hastily.

I logged on to a citizen journalism platform called iReport and recorded a video talking about what the scene in Bangalore was like.

I talked about how I was feeling, the realities and the frustrations of living in India.

Within hours, the blog was widely shared and flooded with comments and thoughts from around the world.

At that moment, a few things came to mind.

One, for many young women like me, technology has always been around.

Second, like me, most young women rarely use the word to express their opinion.

Third, I realized for the first time that my voice is important.

So, in the months that followed, I covered a series of events in Bangalore that had no room for mainstream news.

In Cubbon Park, a large park in Bangalore, I gathered with over 100 other people when a group of young men came forward to wear skirts to prove that clothing does not induce rape.

When I reported on these events, I felt like I was responsible and had a channel to release all the emotions inside me.

I attended a procession through City Hall where students held placards that read, "Kill, Hang."

"You wouldn't do that to your own mother or sister."

I went to candle vigils where people gathered to openly discuss the issue of sexual violence and wrote a number of blogs in response to how alarming the situation in India was at the time.

[“I have had sisters and cousins ​​and now live in cities and abroad, but they don’t talk to me or complain about their day-to-day hardships as you say”] Now, the response confused me.

While supportive comments flooded in from all over the world, malicious comments were also received.

So some called me a hypocrite.

Some called me a victim, a rape apologist.

Some even said I had political motives.

But this one comment somewhat explains what we are discussing here today.

But it soon became clear that this was not all.

As much as I felt empowered by the new freedom this citizen journalism channel gave me, I also found myself in an unfamiliar situation.

Around August of last year, I logged on to Facebook and was browsing through my news feed when I noticed a link my friend had shared.

i clicked the link. So I went back to the report uploaded by an American woman named Michaela Cross.

The title of the report is 'India: Stories You Never Wanted to Hear'.

And in this report, she recounts her first-hand story of facing sexual harassment in India.

She writes, "There is no way to prepare for those eyes that look so rightfully at my body every day without changing their expression whether I meet them or not.

As I walked into the fruit and tailor shops, I was met with sharp eyes that cut off parts of my body. ”

She called India a paradise for travelers and a hell for women.

She said she was stalked, molested and masturbated.

Well, later that night, the report went viral.

It was aired on news channels around the world.

everyone was arguing about it.

With over 1 million views and 1,000 comments and shares, I realized I was witnessing something similar.

The media was caught in a vicious circle of opinion and riots, with no results.

So that night, as I sat thinking about how to answer, I found myself full of doubts.

You see, as a writer, as an observer, as an Indian, I felt bewildered and distrustful, as an activist, as a rights advocate, but as a citizen journalist, I suddenly felt very vulnerable.

I mean, she was a young woman just like me using the channel to talk about her experiences, but it still made me feel uneasy.

As you know, no one tells you that true empowerment comes from giving yourself permission to think and act.

Empowerment often sounds like an ideal, a great outcome.

When we talk about empowerment, we often talk about giving people access to resources and giving them access to tools.

But the point is that empowerment is an emotion.

It's a feeling.

The first step to empowerment is to give yourself the key authority of independent will, and it is the most difficult step for women around the world, no matter who they are or where they come from.

We fear our own voice. Because it means acknowledging your own voice. But that is what gives us the power to change the environment.

Now that I was faced with different realities, I didn't know what it meant to me and I didn't know what to make of it.

I was afraid to judge because I didn't know what would happen if I didn't share the same opinion as this girl.

I didn't know what it meant to me to challenge other people's truths.

But still, it was simple.

I had to make a decision: should I speak up or keep quiet?

So, after much consideration, I recorded a video blog in response and tried to explain to Mikaela that there are different sides to India and that things would be fine, expressing my regret for what she faced.

And a few days later, I was invited to an on-air talk with her and reached out to this girl who I had never met for the first time and who felt so close even though she was so far away.

Since the report came to light, more young people have started discussing sexual harassment on campus than ever before, and Michaela's university gave her the help she needed.

The university is also taking steps to train students to have the necessary skills to face challenges such as harassment, and for the first time I felt I was not alone.

You know, if there's one thing I've learned over the years as a practicing citizen journalist, it's that our society is fatally lacking in actively finding ways to make our voices heard.

We don't realize that when we stand up, we're not just standing up as individuals, we're standing up for our communities, our friends, our peers.

Most of us say women are denied rights, but in reality, women often deny themselves these rights.

A recent survey in India found that 95% of women working in IT, aviation, hospitality and call centers said it was not safe to go home alone after work late at night or in the evening.

In my hometown of Bangalore, the figure is 85%.

If the recent gang rapes in Badaung and the acid attacks in Orissa and Aligarh continue in rural India, we need to act now.

Don't get me wrong. The challenges women will face in telling their stories are real, but we need to start working to not just blindly pursue media, but to pursue and identify media that participate in the system.

Today, more than ever women in India are standing up and questioning the government, and this is a testament to their courage.

The number of women reporting harassment has increased sixfold, and the government passed the Penal Code (Amendment) Act in 2013 to protect women from sexual assault.

As I end this talk, I know many of us in this room have secrets, but I just want to say, let's speak up.

Fight shame and talk about it.

Whether it's a platform, a community, a loved one, or someone you choose, speak up.

In fact, the solution to this problem starts with us.

thank you.

(applause)

So in 1781, an English composer, engineer, and astronomer named William Herschel noticed that there are celestial bodies that, like other stars, do not move.

And Herschel's realization that something was wrong, that something was not quite right was the discovery of the planet, the planet Uranus. The name, which has entertained countless generations of children, is the planet that has doubled the size of our known solar system overnight.

Just last month, NASA announced the discovery of 517 new planets in orbit around nearby stars, nearly doubling the number of planets we know in the galaxy overnight.

Astronomy is therefore constantly being transformed by this data-gathering power, with data almost doubling every year, and within the next 20 years we may reach the point of discovering, for the first time ever, the majority of the galaxies in the universe.

But as we enter this era of big data, we are beginning to realize that there is a difference between more data being simply better and more data being different can change the questions we want to ask. The difference isn't the amount of data we collect, but whether those data open new windows into our universe, whether they change the way we see the sky.

So what will be the next window into our universe?

What will be the next chapter in astronomy?

Now, let's take a look at some of the tools and technologies we plan to develop over the next decade. We also explain how these technologies, combined with intelligent use of data, have the potential to transform astronomy once again by opening a window into our universe, a window into time.

Why have time? Well, time is both about origin and about evolution.

The origin of our solar system, how did our solar system come into being, is it unusual or special in some way?

About the evolution of our universe.

Why does our universe continue to expand? What is the mysterious dark energy that causes it to expand?

Before that, I would like to explain how technology changes the way we see the sky.

So imagine sitting in the mountains of northern Chile looking out at the Pacific Ocean to the west, hours before sunrise.

This is the view of the night sky, and the Milky Way just looms over the horizon, making it a very beautiful sight.

But it's also a static view, and in many ways the idea that this is our universe—eternal and unchanging.

But the universe is never static.

It changes constantly on timescales from seconds to billions of years.

Galaxies merge and collide at hundreds of thousands of miles per hour.

Stars are born, die and explode within these extravagant exhibits.

In fact, if you were able to return to the calm skies above Chile and move forward in time to see how the sky will change next year, the pulse you're seeing is a supernova, the last remnants of a dying star exploding, brightening, then disappearing from view. Because each of these supernovae is five billion times brighter than the Sun, we can see them very far, but only for a short time.

Somewhere in our universe, 10 supernovae explode every second.

If we could hear it, it would pop like a bag of popcorn.

Now, when a supernova fades, it's not just the brightness that changes.

Our skies are in constant motion.

This swarm of objects you are streaming across the sky are asteroids orbiting the Sun. These changes and movements, and the dynamics of the system, allow us to build models of the universe, predict its future, and explain its past.

But the telescopes we've used in the last decade were not designed to capture data on this scale.

Hubble Space Telescope: For the past 25 years, it has produced the most detailed view of the distant universe, but using Hubble to create an image of the sky would require 13 million individual images, and it would take about 120 years to do it once.

This drives us to new technologies and new telescopes. Not just telescopes that faint to view the distant universe, but telescopes that widen wide to capture the sky as quickly as possible, the Large Synoptic Survey Telescope, or telescopes like the LSST, are perhaps one of the most fascinating experiments in astronomy history, and the most boring name ever, but in fact, if you want to, it's proof that you shouldn't let any scientist or engineer, even your child, name anything. (Laughter) We're building LSST.

We expect to start capturing data by the end of this decade.

One image from LSST is equivalent to 3,000 images from the Hubble Space Telescope, each of which covers 3.5 degrees of the sky and 7 times the width of the full moon.

Now, how do we capture an image at this scale?

We build the biggest digital cameras ever made using the same technology that goes into your cell phone camera or the ones you can buy on the high street. But it's about the size of a Volkswagen Beetle, 5.5 feet in diameter, with 3 billion pixels per image.

Therefore, to see just one LSST image at full resolution would require about 1,500 high-definition television screens.

And because the camera takes a picture of the sky, taking a new picture every 20 seconds and constantly scanning the sky, you get a whole new view of the sky above Chile every three nights.

During the telescope's mission, it will detect 40 billion stars and galaxies, and for the first time it will detect more objects in space than humans on Earth.

Now, you can talk about this in terms of terabytes, petabytes, billions of objects, but the way you see how much data this camera is sending out is like playing all the TED talks ever recorded at the same time, 24 hours a day, 7 days a week, for 10 years.

And working with this data means searching through all the talks for all the new ideas and new concepts, looking at each part of the video and seeing how one frame changed from the next.

This changes the way we do science, the way we do astronomy, software and algorithms need to mine this data, and software is as important to science as the telescopes and cameras we build.

Now, while there are thousands of discoveries to be made from this project, I would like to share with you two of the ideas about origin and evolution that could change with access to data on this scale.

In the last five years, NASA has discovered over 1,000 planetary systems around nearby stars, but the systems we're discovering aren't very similar to our own solar system. And one of the questions we face is, are we just not looking hard enough, or was there something special or unusual about the way our solar system formed?

And if we want to answer that question, we need to know and understand the details of the history of the solar system, and those details matter.

Now, looking back at the sky, the asteroids that were drifting across the sky are like remnants of our solar system.

The position of the asteroids is a fingerprint of the early days when Neptune and Jupiter orbited much closer to the Sun, scattering asteroids in their wake as these giant planets moved through the solar system.

So studying asteroids is like doing forensics, doing forensics to the solar system, but to do this you need distance and you get distance from motion and you get motion because you have access to time.

So what does this tell us?

If you look at the small yellow asteroids flying across the screen, these are the fastest moving asteroids. Because they are the closest to us and the closest to the Earth.

These are asteroids that one day we might send spacecraft to mine for minerals, but they are also asteroids that might one day impact Earth, like the extinction of the dinosaurs 60 million years ago, or when an asteroid wiped out about 1,000 square miles of Siberian forests just at the beginning of the last century, or even just last year when an asteroid burned up over Russia releasing the energy of a mini-nuclear bomb.

Therefore, studying the forensics of the solar system can not only learn about the past, but also predict the future, including ours.

At a distance, you can see asteroids in their natural habitat as they orbit the Sun.

So all the dots you can see in this visualization are real asteroids.

Its trajectory is calculated from its movement across the sky.

The colors reflect the composition of these asteroids, dry and stony in the center and water-rich and pristine towards the edges, water-rich asteroids that may have seeded the oceans and oceans seen on our planet when they previously hit Earth.

Not only is the LSST far-reaching, but it can also be faint, so we'll be able to see asteroids far beyond the inner Solar System, beyond the orbits of Neptune and Mars, and even comets and asteroids that can be nearly light-years away from the Sun.

And as we increase the detail in this picture by a factor of 10 to 100, we'll be able to answer questions such as: Is there evidence for planets outside the orbit of Neptune? Can we find an asteroid hitting Earth long before it's in danger? Maybe our Sun formed alone or in a cluster of stars? A solar system like ours seems very unusual.

Now, distance and change in our universe — distance equals time, and change in the sky.

Every time you look away, or an object moves a foot away, you're looking back about a billionth of a second. This idea and concept of going back in time has revolutionized the way we think about the universe, not once but many times.

The first was in 1929, when an astronomer named Edwin Hubble showed that the universe was expanding, leading to the idea of ​​the Big Bang.

And the observations were simple, just 24 galaxies and hand-drawn drawings.

But even the idea that the farther away a galaxy is, the faster it recedes, was enough to give rise to modern cosmology.

Seventy years later, a second revolution occurred. Two groups of astronomers have shown that the universe isn't just expanding, it's accelerating. It was like throwing a ball up in the air and discovering that the higher it goes, the faster it goes away.

And they showed this by measuring the brightness of the supernova and how the brightness of the supernova dims with distance.

And these observations were more complicated.

Because the supernova was in a galaxy 2,000 times more distant than Hubble used, new technology and new telescopes were needed.

And because supernovae only explode once every 100 years in the galaxy, it took us three years to find just 42 supernovae.

It takes three years to search tens of thousands of galaxies and find 42 supernovae.

And when we collected the data, we discovered this.

This may not look impressive, but it shows what a revolution in physics looks like. A line that predicts the brightness of a supernova 11 billion light-years away, and some points that don't fit that line perfectly.

Small changes produce big results.

Like the planet Herschel discovered, small changes make discoveries possible.

Small changes can upend our understanding of the universe.

That means 42 supernovae are just a little too faint and a little too far away, and the universe must be not just expanding, but this expansion must be accelerating, revealing the component of the universe now called dark energy, the component that drives this expansion and accounts for 68 percent of the universe's energy budget today.

So what will the next revolution look like?

So what is dark energy and why does it exist?

Each of these lines represents a different model of what dark energy looks like and characterizes it.

These are all consistent with the 42 items, but the thinking behind them is very different.

Some believe that dark energy changes over time, or that dark energy behaves differently depending on where you look in the sky.

Others make a difference or change in physics at the subatomic level.

Or they look at the big scale and change how gravity and general relativity work, or they say our universe is just one of many universes that are part of this mysterious multiverse, but all these ideas, these theories are all amazing, sure some of them are a little crazy, but they are all in line with our 42 points.

So how can we make sense of this in the next decade?

Well, let's say I hand you a set of dice and want to see if they are aligned and fair.

A single roll of the die tells you very little, but the more times you roll the die, the more data you collect and the more confidence you have in not only whether they are loaded or fair, but how much and how they were collected.

It took us three years to find just 42 supernovae because our telescope could only see a fraction of the sky.

LSST gives you a completely new view of Chile's skies every third night.

On its first night of operation, it will discover ten times as many supernovae as were used to discover dark energy.

This increases by 1,000 within the first four months. By the end of the study, 1.5 million supernovae would have occurred, each supernova being a roll of the dice, and each supernova testing which theories of dark energy agree and disagree.

Therefore, by combining these supernova data with other measures of cosmology, we hope to gradually eliminate various ideas and theories about dark energy, and hopefully around 2030, when this survey is completed, a theory of the universe, a basic theory of astrophysics, will gradually emerge.

Well, the question I posed is in many ways actually the simplest question.

We may not know the answer, but at least we know how to ask the question.

But if we examine tens of thousands of galaxies and discover 42 supernovae that upend our understanding of the universe, how many more times, when dealing with billions of galaxies, will we find 42 points that don't exactly match what we expect?

There are ideas like Herschel's discovery of planets, dark energy, quantum mechanics, general relativity, all of which were born because the data didn't quite match our expectations.

What's so interesting about the next decade of data in astronomy is that we don't even know how many answers about our origins and evolution are out there.

How many answers we don't even know what we want to hear?

thank you.

(applause)

Nine years ago my sister discovered lumps on her neck and arms and was diagnosed with cancer.

From that day on, she began to benefit from science's understanding of cancer.

Each time she went to the doctor, the doctor would measure certain molecules and give her information about how she was doing and what to do next.

New medical options become available every few years.

Everyone agreed that she was battling a biological disease.

This spring, she received a groundbreaking new treatment in clinical trials.

It had her cancer knocked back dramatically.

Who do you think you will be spending Thanksgiving with this year?

My active sister is more active than I am, and probably like many people in this room, she talks more about fatal illnesses in the past tense.

Science can change what it means to have certain diseases in our lifetime, even ten years from now.

However, it does not apply to all diseases.

My friend Robert and I were classmates in graduate school.

Robert was a clever man, but his thinking seemed to get more and more confused as the months went by.

He dropped out of school and got a job at a store...

But that too became too complicated.

Robert became terrified and withdrawn.

A year and a half later, he heard voices and began to believe people were following him.

Doctors diagnosed him with schizophrenia and gave him the best possible medication.

The drug quieted his voice somewhat, but did not restore his clarity of mind or social connections.

Robert struggled to stay connected to school, work and the world of friends.

He has drifted away and now I don't know where to find him.

I hope if he sees this he will find me.

Why does medicine do so much for my sister, and much less for millions like Robert?

the need is there.

The World Health Organization estimates that brain diseases such as schizophrenia, bipolar disorder and major depression are the biggest causes of lost lives and jobs worldwide.

Part of the reason is that these illnesses often occur early in life, in many ways the prime of life, just as people finish their education, start careers, and form relationships and families.

These diseases can lead to suicide. They often impair our ability to work to our full potential. And they are responsible for so many tragedies that are hard to measure: lost relationships and connections, lost opportunities to pursue dreams and ideas.

These diseases limit human potential in ways we cannot fathom.

We live in an era of great advances in medicine in many other ways.

My sister's story of cancer is a good example, but the same is true of heart disease.

Drugs like statins prevent millions of heart attacks and strokes.

When we look at these areas of great medical progress in our lifetime, they have a common story. Scientists have discovered the molecules that are important for disease, developed ways to detect and measure those molecules in the body, and developed ways to interfere with those molecules using other molecules—medicine.

This is a strategy that has worked time and time again.

But when it comes to the brain, that strategy is limited. Because today we still don't know enough about how the brain works.

We need to know which cells are important for each disease and which molecules within those cells are important for each disease.

That is the mission I would like to address to you today.

In my lab, we develop techniques that turn the brain into big data problems.

Before I became a biologist, I learned this lesson doing research in computers and mathematics. Anywhere we can collect the right kind of voluminous data about how a system works, we can use computers in powerful new ways to understand that system and learn how it works.

Today, big data approaches are transforming larger and larger sectors of the economy, and the same could happen in biology and medicine.

But you need the right kind of data.

I need data about what is correct.

And that often requires new technologies and ideas.

And that is the mission that inspires the scientists in my lab.

Today I would like to share two short stories from our work.

One of the fundamental obstacles we face when trying to make the brain a big data problem is that our brain is composed and built of billions of cells.

And our cells are not generalists. they are experts.

Like working humans, they specialize in thousands of different cell carriers, or cell types.

In fact, each cell type in our body could probably give a lively TED talk about how it works.

But as scientists, we don't even know how many types of cells there are today, nor what the titles of most of those talks will be.

We now know a lot of important things about cell types.

They may vary significantly in size and shape.

One reacts with a molecule that the other does not, producing a different molecule.

But science has largely arrived at these insights in an ad-hoc fashion, one cell type at a time, one molecule at a time.

We wanted to make it possible for you to learn all of this quickly and systematically.

Well, until recently, if you wanted to list all the molecules in a part of your brain or organ, you first had to grind it into a sort of cell smoothie.

But that's the problem.

As soon as the cells are crushed, only the average cell contents can be studied, not the individual cells.

Imagine trying to understand how a big city like New York works, but to understand it you have to look at some statistics about the average New York resident.

Of course, you can't learn too much. Because all the interesting, important, and exciting things are in diversity and expertise.

And the same applies to our cells.

And we wanted to be able to study the brain not as a cellular smoothie, but as a cellular fruit salad. There you can generate data about individual fruits and learn from it.

So we developed the technology to make it happen.

You are about to watch the movie.

Here, tens of thousands of individual cells are packaged into individual tiny droplets for unique molecular analysis.

When the cell lands on the droplet, it is greeted by a tiny bead that pumps in millions of DNA barcode molecules.

Each bead then delivers a different barcode sequence to a different cell.

Incorporate a DNA barcode into each cell's RNA molecule.

These are molecular transcripts made from the specific genes that they use to do their jobs.

We can then analyze the billions of sequences of these binding molecules and use the sequences to learn from which gene in which cell each molecule came.

We call this approach "Drop-seq". This is because we use droplets to isolate cells for analysis, tag them with DNA sequences, create inventories, and keep track of everything.

And now, whenever we run an experiment, we analyze tens of thousands of individual cells.

And today, the scientific field is increasingly challenged with how to learn as much as possible from these massive datasets as quickly as possible.

People used to tell us when we were developing Drop-seq.

Our view was not.

Science is at its best when everyone is generating a lot of interesting data.

So we wrote a 25-page guide that allows any scientist to build their own Drop-seq system from scratch.

And that manual has been downloaded 50,000 times from our lab's website in the last two years.

We have created software that any scientist can use to analyze data from Drop-seq experiments. The software is also free and has been downloaded 30,000 times from our website in the last two years.

And hundreds of labs have written to us about their findings using this approach.

This technique is currently being used to create human cell atlases.

This will be an atlas of all the cell types in the human body and the specific genes each cell type uses to do its job.

Now I want to talk about the second challenge we face when trying to turn the brain into a big data problem.

And the challenge is that we want to learn from the brains of hundreds of thousands of living people.

However, we do not have physical access to our brains while we are alive.

But if we can't hold the molecule, how can we discover the molecular factor?

The answer comes from the fact that the most beneficial molecules, proteins, are encoded in our DNA, and DNA has the recipe that our cells follow to make all proteins.

And these recipes vary from person to person, as do the exact sequences of proteins and how much each cell type makes from each protein.

It's all encoded in our DNA, it's all genetics, but not the genetics we learned in school.

Remember Big B, Little B?

If I inherit a Big B, will I have brown eyes?

It's easy.

Few properties are this simple.

Even eye color is formed by far more than a single pigment molecule.

And something as complex as our brain functions is shaped by the interaction of thousands of genes.

And each of these genes is meaningfully different from person to person, and each of us is a unique combination of those mutations.

It's a big data opportunity.

And today it is increasingly possible to make progress on a scale never before possible.

A record number of people are contributing to genetic research, and scientists around the world are sharing data with each other to accelerate progress.

I would like to share a short story about our recent findings about the genetics of schizophrenia.

This was made possible by 50,000 people in 30 countries who donated their DNA to schizophrenia genetic research.

It has been known for several years that the greatest impact of the human genome on schizophrenia risk comes from the part of the genome that encodes many molecules of the immune system.

However, it was not clear which gene was responsible.

Scientists in my lab have developed a new method of using computers to analyze DNA and have made some pretty amazing discoveries.

He found that a gene called "complement component 4" (called "C4" for short) exists in dozens of different forms in the genomes of different people, and that these different forms produce different amounts of C4 protein in our brains.

And he found that the more C4 protein a gene made, the higher the risk of schizophrenia.

Even today, C4 is just one of the risk factors in complex systems.

This is not the Big B, but it is an important molecular insight.

Complement proteins like C4 have long been known for their role in the immune system, functioning as a kind of molecular post-it that says "eat me".

And that post-it sticks to a lot of debris and dead cells in our bodies, inviting immune cells to eliminate them.

However, two of my colleagues found that C4 post-its also stick to synapses in the brain, prompting synaptic clearing.

The creation and destruction of synapses is now a normal part of human development and learning.

Our brains are constantly creating and deleting synapses.

However, our genetic results suggest that excretory processes may be excessive in schizophrenia.

Many pharmaceutical scientists have told me they are excited about this discovery because they have been studying complement proteins in the immune system for many years and have learned a lot about how complement proteins work.

They've even developed a molecule that interferes with complement proteins and are beginning to test it in the brain as well as the immune system.

This could pave the way for drugs that may address the root cause rather than the individual symptoms, and we are very hopeful that this years of research by many scientists will succeed.

But C4 is just one example of how data-driven scientific approaches can break new ground in centuries-old medical problems.

There are hundreds of locations in our genome that shape the risk of brain disease, and any one of them could lead to the next molecular insight on a key molecule.

And there are hundreds of cell types that use these genes in various combinations.

We and other scientists are working to generate the rest of the data we need, learn as much as we can from it, and hope to open up many more new frontiers.

Genetics and single-cell analysis are just two ways to turn the brain into a big data problem.

There are many things we can do.

Scientists in my lab are developing techniques to rapidly map synaptic connections in the brain to learn which neurons are talking to which other neurons, and how that conversation changes throughout life and disease.

And we are developing methods to test how cells with genomes from hundreds of different people respond differently to the same stimulus in a single tube.

These projects bring together people from diverse backgrounds, trainings and interests, including biology, computers, chemistry, mathematics, statistics and engineering.

But the possibilities of science bring together people with diverse interests to work together enthusiastically.

What kind of future can we create?

Consider cancer.

We have moved from an era of ignorance about what causes cancer, generally attributed to individual psychological characteristics, to a modern molecular understanding of the true biological causes of cancer.

That understanding has led to one revolutionary medical breakthrough today, and while there is still much work to be done, we already have people around us who have been cured of cancers that were considered incurable a generation ago.

And millions of cancer survivors like my sister have years of life and new opportunities for work, joy and relationships they never took for granted.

That is the future we are determined to create for mental illness, a future of true understanding, empathy and limitless possibilities.

thank you.

(applause)

Those of us who believe in Heaven have some imagination of what Heaven might be like.

And in my opinion, heaven is about satisfying curiosity.

For me, heaven is like a very comfortable cloud where you can lie on your stomach with your elbows up like you used to watch TV when you were a kid.

And you can basically watch it anywhere you want, and watch all the movies you've always wanted to see.

And there's something really comforting and effortless about the same kind of trance you sometimes feel while reading on the New York subway.

The funny thing is, in a way, I already have that kind of life.

It took me a while to figure it out, but around the age of 24, I realized I was much more comfortable with things than people, and finally decided to take this passion seriously.

And I basically live my life in a trance and I look around and everything I see is just the beginning of a long story.

One example is the exhibition "Humble Masterpieces" held at MoMA in 2004.

We were in Queens, building a big, big, big, big building in Midtown, so we were in a little, little, little wilderness.

It was one of the most enjoyable moments of my career.

But that's not all.

Typeface -- The typeface is Helvetica. This year marks the 50th anniversary.

So I start thinking -- Max Miedinger and all the Swiss designers are working together to come up with a new sans-serif typeface to go beyond Akzidenz-Grotesk -- and already the movie starts playing in my head.

And of course, with Humble Masterpieces, you can imagine the same thing multiplied by 100.

By the way, I hope that the real purpose of this exhibition will have the same effect on you.

This exhibit was meant to be a way for children to think about...

Do you know when they do their homework at home?

Instead of having a tray with two peas, I was hoping they would put it in a cupboard or my mother's handbag and put a museum-quality collection of designs on the tray.

So everyone is always proposing new sober masterpieces, and MoMA publishes a few books just for people to suggest their own sober masterpieces.

And when you do that, you usually get suggestions that are 80 percent porn and 20 percent real, but instead they were all, almost all good suggestions.

And a lot of nationalism came in.

For example, I didn't know that the Spaniards invented the mop, but the Spaniards were so proud of it that they all said "La Frego". And Italians made pizza.

And I also wanted to show you that the proposal from Kentucky is very good. There was moonshine, laundry detergent, and liquid nails.

And I keep doing it, and I just got this proposal from (laughter) Milano. This is our traffic divider, we call it a 'panettone', and it's painted. It's these beautiful concretes that are used to define every lane around Milan.

So think for yourself and send if necessary. You are always welcome.

But an exhibition like this made me understand more of what I've been thinking about for the 13 years since I came to MoMA.

I am Italian. Design is common in Italy.

Different parts of the world have different tricks.

I just recently went to Argentina and Uruguay, and while the basic way homes are built in this country is beautiful modernism that you don't see anywhere else, the contemporary art is terrible.

In Italy, and especially in Milan, contemporary art has a less important place.

But what a design.

Even if you don't go to a special luxury store, what you find in a street corner store is a sophisticated design that makes everyone think, "How sophisticated!"

Just what I found in the store.

And New York has a different kind of talent for contemporary art.

I am always amazed. 3-year-olds know who Richard Serra is and take them to the gallery.

But for some reason, design is still misunderstood as decoration.

Very interesting. When I say the word “design,” many people think of this sort of overdesigned thing. In this case, it is deliberately overdesigned, but we think of decoration and upholstery.

They imagine someone picking fabrics.

The design could of course be that, but it could also be this.

It could be a design school in Jerusalem trying to find better ways to design gas masks for people. Because, as you know, Israel deploys gas masks per person, including infants.

So designers find ways to lower the neckline so teenagers can take a sip of Coke instead of being completely strangled.

Since body distance is so important, they tried to make infant gas masks in a way that parents could hold an infant.

Then make a small tent for the baby.

No matter how cruel and how ruthless you think it is, it's great design, far from luxurious furniture, but still, it's part of the same passion field of mine.

Something I've been working on with MoMA since the beginning is trying to harness the power of MoMA because it's great working for MoMA. You really have power in terms of people tending to find out about or see your exhibition. You probably won't get that many visitors in a design museum, so that's power.

I know very well that 80 percent of my audience comes to see Picasso and Matisse, but they happen to find my show and I keep them there.

But what I'm trying to do is what the curators in my department have been doing since MoMA was founded in 1929: to look at what's going on in the world and try to use that authority to improve the situation.

There are many episodes, and indeed Eames Demetrius may also be in the audience, but in two instances, his great-grandfather, his grandfather, to be exact, I am always a little embarrassed about the relationship, the first was Charles Eames, and the second was Charles Eames and Ray Eames in two competitions. The first, in 1940, was about organic furniture, and the second, in 1948, was low-cost furniture for GIs returning from the war, after which a general competition began. furniture line.

And the design was good at a very low price.

In the fields of architecture and design, there have been many programs aimed at orienting people in the direction of better design for a better life.

So I started in '95 with an exhibition called 'Mutant Materials in Contemporary Design'.

In my opinion, it was a new stage in the design world, in that the materials could be customized by the designers themselves.

This has given me exposure to diverse design examples, such as the aerogels at Lawrence Livermore Laboratories in California. At that time they were beginning to be introduced into the civilian market.

And at the same time, the gorgeous work of Takeshi Ishiguro who created this beautiful salt and pepper container made from rice dough.

As you can see, the range is really diverse.

And, for example, in 2001, at an exhibition titled 'Workspheres', we asked various designers to come up with ideas for new types of work styles that were happening in the world at the time.

And you can see IDEO there.

It was beautiful - it was called Personal Sky.

The idea was that if you had a small room, you could project the sky above your head to create your own “Cielo in Una Stanza,” the sky inside the room. This is a very famous Italian song.

Other examples: This is Marti Guixe about working on the go and my favorite Hella Jongerius about how to work from home.

Here are some very important ideas about design. It's that designers are the biggest synthesizers in the world.

What they do best is synthesize the current state of human needs, economics, materials and sustainability issues, and in the end what they do, if it is good, is far more than the sum of its parts.

Hella Jongerius is someone who can do some really amazing and very interesting compositions.

The idea behind her work was that at the time everyone was saying their lives really had to be split up.

Instead, she said, "No, no. Work and leisure can go together."

That's right, it's particularly gorgeous. 2001 TV dinner.

There were many other exhibitions during this time, but I don't want to focus on my own.

Instead, I want to talk about how great some designers are.

I've always had a bad feeling about the word "heretic".

I came to America 13 years ago and I still have to ask, "What does that mean?"

So this morning I went to the dictionary and it said that there is a gentleman who does not brand his cows.

Therefore, he was a maverick because he did not follow everyone.

So the designer should be a maverick. Because the best way to design an object that succeeds, and an object that didn't exist before, is either to act like it never existed, or to allow people to do new things with it.

So Safe was the last exhibition I did at MoMA, which ended early last year.

It was designed with safety and protection in mind.

It's a long story because it started before 2001 and was called an emergency.

And when 9/11 happened, I was shocked and canceled the exhibition, only to slowly but surely return with the glass half full instead of half empty. It was about protection and safety.

But there were really a wide variety of things, such as a set of demining equipment and water purification straws like this.

And then... Cameron and I collaborated a bit and some of the work on his website was actually shown in the exhibition.

But the interesting thing is that we don't have to talk about design and art anymore. Design uses whatever tools are at your disposal to achieve your goals.

It's both a sense of economy and a sense of humor.

This is a beautiful project by South African Ralph Boland.

It's a lawsuit for civil disobedience.

The idea is that when there's a riot or protest and the police are approaching, if you wear it, it's like a big heart with a speaker above your heart that amplifies your heart rate and alerts the police. It's like having a flower in front of a rifle.

Also, as you can imagine, the heart rate of the entire group of people wearing the same suit would increase, which would be terrifying for the police.

So sometimes designers don't do things that work out of the box, but they do in understanding the problem.

Tony Dunn and Fiona Raby have created this series of objects about our anguish and paranoia. For example, hideout furniture made of the same wood as the floor, allowing the floor to disappear completely and hide. Even better are the huggable atomic mushrooms. Thanks to this mushroom, an article was published in the American Journal of Atomic Scientists. I don't think it has ever happened at MoMA. Or this Faraday chair, which is said to protect you from radiation.

But what's interesting about this exhibition is the discovery that the ultimate refuge is a sense of oneself, and that there are quite a few designers working on this particular subject.

This is Cindy van den Bremen, a Dutch designer who worked on this Capster series.

These are exercise equipment for Muslim women that allow them to ski, play tennis or do whatever they want without taking off their hats.

And when you do this kind of research, sometimes you come across some really beautiful design ideas.

Twan Verdonck is really young, around 27, I think. We have worked with psychologists to develop a range of sensory toys for children with psychological disabilities.

It's so beautiful.

They range from this cuddly, fluffy toy that has springs inside because autistic children like to be held tight, to dolls with mirrors that allow children to see themselves in the mirror and regain their sense of self.

Design really looks at the whole world and considers all the worlds of varying scope.

I recently attended a conference on luxury organized by the Herald Tribune in Istanbul.

And it was really interesting. Because I was the last speaker and there were people before me who were really talking about luxury. I didn't want to be the party hater, but at the same time I felt compelled to bring this narrative back to some kind of reality.

And the truth is that there are very different kinds of luxuries, some relative luxuries for those who don't have much.

I would like to emphasize this point by giving two examples of design coming from an economic sense: very clear limits.

this is cuba This is a recycled bicycle bell from a toy that makes a sound, and this is a raincoat made from rice sacks.

So they are very beautiful, but they are beautiful because they are very smart and economical.

And this is the work of brothers Fernando Campana and Humberto Campana from São Paulo. They took inspiration from the poverty and cleverness they saw around them to create furniture that now sells for huge sums of money.

But that's due to the kind of weirdness of the market itself.

Really, design takes everything into consideration. And what's interesting is that as technology advances and we become more and more wirelessly perceptive, designers want us to be hands-on instead.

Hammer on sometimes.

This is a furniture series that wants to seduce you physically.

From even this chair that leaves a mark on you if you don't sit open, to this beautiful series of objects thought to have been designed by Ana Mir of Barcelona.

From this kind of bijou made of human hair, to chocolate nipples, to toe candy that your lover sucks on your toes.

(laughs) It's so beautiful. Because for some reason this is a great moment for design.

Many years ago I heard a Viennese mathematician named Marchetti explain how innovation in the military industry, and therefore covert innovation and civil society innovation, is sort of like two opposing sine waves.

It makes sense.

In moments of war there will be great innovations and the world will have to get by without iron. Well, we had to get by without steel during World War II, and we had to get by without aluminum.

And when peace comes, all of these technologies will suddenly become available on the civilian market.

Many of you may know that the potato chip chair by Charles & Ray Eames was born from just such a case. Fiberglass was suddenly available for civilian use.

I think it's a strange moment.

The rhythm of sinusoids has changed as much as the rhythm of our lives over the past 25 years, and we no longer know what the wavelength is.

But it is clear that this is a very important time for design. Not only is technology advancing in the design world, computing technology has made open source possible, but sustainability thinking (not only sustainability in terms of CO2 emissions and footprint, but also sustainability in relationships) is part of the work of many designers.

That's why designers are increasingly working on behaviors instead of objects.

Not all, but especially good ones.

For example, I wanted to show you the work of Mathieu Lehannour, which was very nice.

He is also a young designer from France who is working on new ways to keep patients, especially children, on their medications consistently and reliably, and is currently working with a pharmaceutical company.

For example, this is a beautiful container for asthma medicine that automatically inflates when it's time to take the medicine, so the child has to go. -- Release and release the container itself.

And since this other drug is one that can be drawn onto the skin, intradermal administration allows you to happily participate in this kind of administration.

Similarly, in the work of people like Marti Guixe, they try to involve you in a way that you can actually put everything through your mouth and learn verbally from your mistakes and preferences.

The next show I'm working on, which is causing a lot of trouble for a lot of people, is about the relationship between design and science.

I'm trying to find commonalities, common grievances, common problems, common concerns, etc., rather than metaphors, which I think allows me to take this idea of ​​design as a direction a little further, as a directive rather than a prescription for form.

And I hope many of you will respond to this.

I've already emailed quite a few people.

But design and science and the possibility of visualizing different scales really work on a very small scale and make it very big and very meaningful.

thank you. (applause)

Hello children.

(laughs) I'm 71 years old.

(Applause) My husband is 76 years old.

My parents are in their late 90's and our dog Olivia is 16.

So let's talk about aging.

Let me tell you how I feel when I look at my wrinkles in the mirror and realize that a part of me has fallen off and I can't find it there.

(Laughter) Mary Oliver said in a poem, "Tell me, what are you going to do with your one precious life?"

I will live passionately.

When does aging start?

When we get Medicare, society decides when we're old, usually around age 65, but aging actually starts when we're born.

We are all aging, and each of us experiences it differently.

The mind never ages, so we all feel younger than we actually are.

I am only 17 years old.

Sophia Loren. look at her

She says everything you see is because of spaghetti.

I tried it and ended up gaining 10 pounds in the wrong place.

But posture and aging are also posture and health.

But my real mentor in this aging journey is Olga Murray.

This 60-year-old California woman started working in Nepal to help girls out of domestic bondage.

At 88, she has helped 12,000 girls and changed the culture of this country.

(Applause.) Today, it is illegal for a father to sell his daughter into slavery.

She also founded an orphanage and a nutrition clinic.

She is always happy and forever young.

What have I lost in these decades?

I'm afraid that I'm losing my independence, not only the people but also the places and the infinite energy of my youth.

Ram Dass says addiction hurts, but accepting it makes it less painful.

After a terrible stroke, his ageless soul has watched his body change and is grateful to those who have helped him.

What do I get?

Freedom: You don't have to prove anything anymore.

I am not trapped in who I was, who I want to be, or what other people expect of me.

You don't have to please men anymore, only animals.

I keep telling my superego to pull back and let me enjoy what I still have.

My body may be crumbling, but my brain has not yet.

I love my brain

I feel lighter.

I have no grudges, no ambition, no vanity, no mortal sins not worth the effort.

Letting go is great.

I should have started earlier.

I also felt softer because I was no longer afraid to be vulnerable.

I no longer see it as weakness.

And I got spiritual.

I know that death used to be close at hand.

It's next door or at my house now.

I try to live mindfully and be present in the present moment.

By the way, the Dalai Lama is a beautiful old man, but who would want to be vegetarian and single?

(Laughter) Meditation helps.

(Video) Child: Hmm. Hmm. Hmm.

Isabel Allende: Hmm. Hmm. there it is.

And it's good to start early.

It is very difficult for a conceited woman like me to grow old in this culture.

You feel good on the inside, you feel attractive, seductive and sexy.

no one else sees it. (Laughter) I can't see.

I want to be the center of attention.

I hate being inconspicuous.

(Laughter) (Applause) Grace Duman.

She has been in a wheelchair for 6 years after being in a terrible car accident.

She says there's nothing more sensual than a hot shower and every drop of water is a blessing to the senses.

She does not consider herself disabled.

In her mind, she is still surfing in the ocean.

Ethel Seiderman is a lively and beloved activist in California where I live.

She wears red patent shoes and her motto is that one scarf is better than two.

She has been widowed for nine years and is not looking for another spouse.

She says there are only so many ways you can fail, she says otherwise, but she's tried them all.

(Laughter) On the other hand, I still have erotic fantasies with Antonio Banderas — (Laughter) — and my poor husband has to put up with it.

So how do you keep your passion alive?

At 71, I can't be passionate.

I've been training for a while, but when I feel bored and bored, I cheat on it.

attitude, attitude.

How should I train? I train by saying yes to drama, comedy, tragedy, love, death, loss, whatever comes before me.

Yes to life.

And I train to try and keep love.

It doesn't always work, but you can't blame me for trying.

And, on a final note, retirement in Spanish is Jubilación.

Delight. celebration.

We paid our dues.

We have contributed to society.

Now it's our time. Great time.

Unless you are sick or extremely poor, you have options.

I chose to work with passion and an open mind.

I work on it every day.

join us?

thank you.

(Applause) June Cohen: And Isabel — IA: Thank you.

JC: First of all, I never want to be arrogant to speak for the TED community, but I would like to say that I feel like we can all agree that you are still attractive, seductive, and sexy. yes?

IA: Oh, thank you. (Applause) JC: Definitely. IA: No, makeup.

Moderator: Now, do you mind if I ask you additional questions about your erotic fantasies?

IA: Oh, of course. about what?

(laughs) Moderator: About your erotic fantasies. IA: With Antonio Banderas.

Moderator: I was wondering if there is anything else you would like to share.

IA: Well, one of them — (laughter) one of them is to put a naked Antonio Banderas on a Mexican tortilla, slather it with guacamole and salsa, roll it up, and eat it. (laughs) Thank you.

(applause)

How many times have you used the word "wow" today?

one time? 2 times? Seventeen times?

Do you remember what you were describing when you used that word?

No, I didn't think so. After all, folks, you're using the word wrong. Tonight, I want to show you how to turn 'Awesome' back into 'Awesome'.

Recently, when we were eating at an outdoor cafe, a waiter came over to our table and asked if we had eaten there before, to which we replied, "Yes, yes."

And she said "wow".

And I thought, 'Really?

Is it great that I decided to visit your restaurant again, or is it just nice?"

A colleague asked me the other day if I could save the file as a PDF, and I said, "Of course."

Seriously, what would be great if you saved something as a PDF?

Sadly, the word "great" has become so overused that it is now being replaced by words like "great" and "thank you".

Webster's dictionary thus defines the word "wonderful" as an emotion produced by terror mixed with admiration and awe: majesty.

Now, with that in mind, did Quiznos' sandwiches taste good?

How about that parking space? Was that amazing?

Or that game the other day? Was that amazing?

The answer is no, no, and no.

Sometimes the sandwiches are delicious, the parking lot is nearby, and the game is a disaster, but not everything is great.

(Laughter.) So when you use the word "wonderful" to describe the most mundane things, you rob the word of its very power.

The author says, "It's great to find money on a snowy day or in your pants."

(Laughter) Well, no, it's not. We need to raise the bar for this poor bastard. (Laughter) So if you have everything, you have nothing.

It's like drinking water from a fire hose like this idiot here.

If everything was great, there would be no dynamics, no highs and lows.

Ladies and gentlemen, here are 10 really cool ones.

Imagine having to carry everything on your back, if you will.

Wouldn't it be easier if you could roll this around and take it home?

OK, so let's invent the wheel.

Wheel, folks.

Are wheels great? say it with me

Yes, the wheels are great!

The Great Pyramid was the world's tallest man-made structure for 4,000 years.

The Pharaoh had his slaves move millions of blocks to this spot to build a large strange tombstone.

Was the Great Pyramid great?

Yes, the pyramids were great.

Grand Canyon. come.

It is about 80 million years old.

How awesome is the Grand Canyon?

Yes, it's the Grand Canyon.

Louis Daguerre invented photography in 1829, but earlier today he pulled out his smart phone and took a picture of an amazing sandwich and found out who he was — (Laughter) — wasn't that easier than exposing the image to a copper plate coated with silver iodide?

I mean, come on. Are the photos great?

Yes, photos are great.

June 6, 1944, D-Day, the Allied invasion of Normandy, the largest amphibious invasion in world history.

Was D-Day great? Yes it was great.

Have you eaten today? did you eat?

Then you can thank the bees. It's a bee. Because if the crops weren't pollinated, we wouldn't be able to grow food, and then we would all die.

That's exactly right.

But it's not like a flower can just wake up and have sex with another flower. That's great.

(laughs) Bees are amazing. are you kidding me

Moon landing! come!

Apollo 11. are you kidding?

Sixty-six years after the Wright brothers flew out of Kitty Hawk, North Carolina, Neil Armstrong was 340,000 miles away.

It's like from here to the moon.

(Laughter) That's one small step for a human being, but one giant leap for a great person.

That's exactly what it was.

Woodstock, 1969: Rolling Stone said it changed rock and roll history.

Tickets were only $24 at the time.

Now I can't even buy such a weird T-shirt.

Jimi Hendrix's "The Star-Spangled Banner" version was the most iconic.

Was Woodstock great? Yes it was great.

shark! They are at the top of the food chain.

Sharks have multiple rows of teeth in their jaws and move forward like a conveyor belt.

Some sharks can lose up to 30,000 teeth in their lifetime.

Do great things inspire fear?

Oh yeah, sharks are amazing!

The Internet was born in 1982 and quickly took over global communication. And later tonight, when all these powerpoints are up on the internet so that Siberian dudes can get drunk and watch this crap, the internet is great.

And finally, some of you can't wait to tell me how awesome my PowerPoint is.

I will be happy to save you time.

It wasn't great, but it was true. I hope you found it interesting. And of all the audiences I've ever been to, you guys are the newest ones. Thank you and good night.

(applause)

Why does the universe exist?

Why is it there — okay. have understood. (Laughter) This is a cosmic mystery. Solemnly.

Why is there a world, why are we in it, why is there something instead of nothing?

So, is this the ultimate "why" question?

So I talk about the mysteries of existence, the puzzles of existence, how we're grappling with it right now, and why you should care. And I hope you care.

The philosopher Arthur Schopenhauer said that a person who does not question the contingency of his own existence or the contingency of the world is mentally deficient.

It's a little harsh, but still. (Laughter) So this is called the most sublime and wonderful mystery, the deepest and most far-reaching question a human being can pose.

It is a great thinker who is obsessed.

Ludwig Wittgenstein, perhaps the greatest philosopher of the 20th century, was surprised that the world had to exist at all.

In Proposition 4.66 of Tractatus, he writes, "It is not the way things are in the world that is mysterious, but the way it exists."

And if you don't like hearing epigrams from philosophers, ask a scientist.

"I want to know how the quantum exists, how the universe exists, how existence exists," said John Archibald Wheeler, a teacher of Richard Feynman, one of the great 20th-century physicists and inventor of the term "black hole."

And my friend Martin Amis — sorry for a lot of swearing in this talk, but get used to it — my dear friend Martin Amis once said we were about five Einsteins away from answering the question of where the universe came from.

And there are definitely five Einsteins in the audience tonight.

Do you have Einstein? Raise your hand? no? no? no?

no Einstein? have understood.

So this question, why is there something instead of nothing, this sublime question was posed quite late in intellectual history.

It was the philosopher Leibniz who asked about it at the end of the 17th century. Leibniz was a very clever man who invented calculus independently of Isaac Newton, and this was no big mystery to Leibniz, who at about the same time asked why there is something instead of nothing.

He was or pretended to be an orthodox Christian in his metaphysical view, and said that the reason the world exists is obvious: God created it.

And God was indeed created out of nothing.

God is that strong.

He doesn't need pre-existing materials to build his world.

He is able to produce creations out of utter nothingness, nothingness.

By the way, this is what most Americans believe today.

There is no mystery of existence for them.

God made it.

So let's plug this into the equation.

Use your imagination as it mimics the visuals as there are no slides.

In other words, God + nothingness = world.

have understood? Here is the equation.

So maybe you don't believe in God.

Perhaps you are a scientific or non-scientific atheist, do not believe in God, and are not satisfied with it.

By the way, even if we have the equation God + Nothing = World, the question of why God exists already exists.

God does not exist by logic alone, unless you believe in ontological arguments. It's not a good argument, so I hope you don't believe it.

So you may wonder if God exists, I am eternal and omnipotent, but where did I come from?

(Laughter) So where did I come from?

God speaks in more formal English.

(Laughter) So one theory is that God got tired of pondering the mysteries of his existence and created the world just to distract himself.

Anyway, let's forget about God.

Take God out of the equation. We have \_\_\_\_\_\_\_\_ + nothing = the world.

Now, if you're Buddhist, you might want to stop here. Because what you have is essentially nothing = world, and by identity symmetry that means world = nothing. have understood?

And for Buddhists, the world is nothing.

It's just a big cosmic void.

And we think there's a lot of something out there, but that's because we're slaves to desire.

If we extinguish our desires, we will see the world as it is, empty and nothing, and we will slip into this state of happy nirvana, defined as having enough life to enjoy being dead. (Laughter) That's the Buddhist way of thinking.

But as I am a Westerner and still concerned with the puzzle of existence, \_\_\_\_\_\_\_\_ + — because this quickly becomes a serious problem — \_\_\_\_\_\_\_\_ + nothing = the world.

What shall we fill in that blank?

Now what about science?

Science is the best guide to understanding the nature of reality, and the most fundamental science is physics.

It tells us what naked reality really is. It reveals the true ultimate furnishing of the universe, which I call tau tu tu.

So maybe physics can fill this void. And indeed, since the late 1960s or about 1970s, physicists have claimed to offer a purely scientific explanation for how a universe like ours emerged from utter nothingness, quantum fluctuations from space.

Dr. Stephen Hawking, and most recently Alex Bilenkin, is one such physicist, and this was propagated by another very good physicist, my friend Lawrence Krause. He wrote a book called "The Universe from Nothing". And Lawrence thinks he has a gift. By the way, he's a militant atheist, so he keeps God out of the question.

The laws of state-of-the-art physics, quantum field theory, show how out of utter nothingness, space, time, matter, nothingness, tiny blobs of false vacuum can oscillate into existence, then explode by a miracle of inflation into this vast and colorful universe we see all around us.

Well, this is a really original scenario.

It's very speculative. Fascinating, isn't it?

But there is a big problem with this, the problem is this. It is a pseudo-religious point of view.

Lawrence now considers himself an atheist, but is still trapped in a religious worldview.

He considers the laws of physics to be like divine decrees.

For him, the laws of quantum field theory are like the legal lux "let there be light".

Law has a certain ontological force and influence that can form the abyss and conceive existence.

They can call the world out of nothingness.

But that's a very primitive view of what the laws of physics are, isn't it?

We know that the laws of physics are actually generalized descriptions of the patterns and regularities of the world.

They do not exist outside the world.

They don't have their own Ontic cloud.

They cannot bring the world into existence out of nothing.

That's a very primitive view of what a scientific law is.

If you don't believe this, listen to Dr. Stephen Hawking. He himself proposed a model of the universe that is self-contained and requires no external cause or creator. Dr. Hawking admitted he was still perplexed after suggesting this.

He said the model is just an equation.

What ignites the equations and creates the world they describe?

He was embarrassed by this, so the equations themselves cannot do magic, nor can they solve the mystery of existence.

And even if laws can do that, why do we need this set of laws?

Why do we need a quantum field theory that describes the universe in terms of a specific number of forces, particles, etc.?

Why not enact a completely different law?

There are a great many laws that are mathematically consistent.

Why is there no law at all? Why not utter emptiness?

Believe it or not, this is a question thoughtful physicists think about really well, and at this point they tend to get metaphysical. For example, perhaps a set of laws that explain our universe. It's just a law, it explains part of reality. But perhaps all coherent laws explain a different part of reality, and in fact every conceivable physical world actually exists and is all there.

We only see a small part of reality described by the laws of quantum field theory, but there are so many other worlds, parts of reality described by incredibly exotic, wildly different theories that differ from ours in ways we cannot imagine.

Steven Weinberg, the father of the Standard Model of particle physics, actually realized for himself this idea that all possible realities really exist.

Also, the young physicist Max Tegmark believes that all mathematical structures exist and that mathematical beings are the same thing as physical beings, and thus there is this very rich multiverse that encompasses every logical possibility.

Now, in getting out of this metaphysical way, these physicists and philosophers are actually going back to a very old idea that goes back to Plato.

Abundance, fecundity, or the principle of the Great Chain of Existence that reality is actually as fulfilled as possible.

It is as far from nothing as possible.

So now we have these two extremes.

We have utter emptiness on one side and a vision of reality on the other that encompasses all conceivable worlds. That is, the fullest possible reality, the nothingness, the simplest reality.

So what lies between these two extremes?

There are all sorts of intermediate realities that include some and exclude others.

So one of these intermediate realities is, for example, the mathematically most elegant reality, without the ugly parts and ugly asymmetries.

Well, there are physicists who say we actually live in the most elegant reality.

I'm sure Brian Green is in the audience, and he's written a book called The Elegant Universe.

He argues that the universe we live in is very elegant mathematically.

don't believe him (Laughter.) This is a godly hope, I wish it were true, but I think he admitted to me the other day that the world is really ugly.

It's stupidly constructed, has too many arbitrary coupling constants and mass ratios and extra subatomic groups, and what the heck is dark energy?

It's a stick and bubblegum device.

It's not an elegant world. (Laughter) And then there's the best of all the worlds imaginable in an ethical sense.

We must be solemn now. Because it's a world where sentient beings don't suffer needlessly, a world where there's no such thing as childhood cancer or the Holocaust.

This is an ethical concept.

Anyway, various special realities between nothingness and maximum reality.

Nothing special. It's the easiest.

And then there is the most elegant reality possible.

It's special.

Reality to the fullest, it's special.

But what are we omitting here?

There are also some sort of random, boring, common realities that are never special.

They are infinitely removed from nothingness, but infinitely short of complete sufficiency.

They mix chaos and order, mathematical elegance and ugliness.

Therefore, I describe these realities as infinite, mundane, imperfect chaos, common reality, a sort of cosmic junkshot.

And does God exist in any of these realities, any of these realities?

Perhaps, but the God is not perfect like the Judeo-Christian God.

God is omnipotent and not omnipotent.

Rather, it may be 100% malicious but only 80% effective. I think this pretty much describes the world we see around us. (Laughter) So I would suggest that the solution to the mystery of existence is that the reality in which we exist is one of these general realities.

Reality must somehow turn around.

It can turn out to be nothing, everything, or something in between.

So if it has some special characteristics, such as being very elegant, or very substantial, or very simple like nothing, it deserves an explanation.

But if it's one of random, common realities, there's no further explanation.

And in fact, we can say that it is the reality we live in.

That's what science tells us.

Earlier in the week, we got exciting information that inflation theory predicts a reality that is large, infinite, messy, arbitrary and meaningless. It's like champagne with big bubbles coming out of the bottle. Gravitational waves from just before the big bang.

I'm sure you all know this.

Anyway, I think there's evidence to show that this is the reality we're stuck with.

Well, why should you care?

Now — (laughter) — the question is, "Why does the world exist?"

It's a cosmic question, one that rhymes with the more intimate question, "Why do I exist?" why do you exist

You know, our existence would seem surprisingly improbable. This is because, if the number of genes, the number of alleles, etc., can be examined and calculated, the number of genetically conceivable humans is enormous. Back calculations show that the number of genetically possible humans is about 10 to 10,000.

It's between Googol and Googolplex.

And the actual number of humans that have ever existed is 100 billion, maybe 50 billion, which is very small. So we've all won this amazing cosmic lottery.

i was here have understood.

What kind of reality do we want to live in?

Do we want to live in a special reality?

What if we lived in the most elegant reality possible?

Imagine the existential pressure put on us to respond, be elegant, and not detract from the atmosphere.

Or what if we were living in the fullest possible reality?

Then our existence is guaranteed because everything possible exists in that reality, but our choices become meaningless.

What difference would that make if I really struggled and suffered morally and decided to do the right thing? Because there are countless versions of me doing things right, and countless versions of me doing things wrong.

So my choice is meaningless.

Therefore, we do not want to live in that particular reality.

And when it comes to the special reality of nothingness, we wouldn't be having this conversation.

So I think that living in a mediocre general reality, there are bad parts and good parts, but you can make the good parts bigger and the bad parts smaller, and that gives us a kind of purpose in life.

The universe is absurd, but we can still build purpose, and it's a pretty good one, and the overall mediocrity of reality kind of resonates nicely with the mediocrity we all feel at the core of our existence.

And I know you feel it

We know you're special, but don't you think there's something secretly mediocre about you?

(Laughter.) (Applause.) Anyway, you might say, this puzzle, the mystery of existence, it's just a stupid mystery seller.

You are not surprised by the existence of the universe and you are on good terms with it.

Bertrand Russell said, "I should say that the universe is just there, that's all."

just a cruel fact.

And Sidney Morgenbesser, my professor at Columbia University, who was a great philosopher, when I said to him, "Professor Morgenbesser, why is there something instead of nothing?"

And he said, "Oh, even if there were nothing, you would still not be satisfied."

So — (laughter) — okay.

so you won't be surprised I do not care.

But in the end, I guarantee you'll be surprised, so I'll tell you something. Because all the bright, wonderful people I met at this TED conference were surprised when I told them this. That's it. "I've never had a mobile phone in my life," he said.

thank you.

(laughter) (applause)

It's another sweltering morning in Memphis, Egypt.

As the sun lights up the Nile, Peseshet checks the essentials.

Honey, garlic, cumin, acacia leaves, cedar oil.

She is well stocked with the necessities needed to treat her patients.

Peseshet is sww, that is, doctor.

In order to become one, she had to train as a scribe and study the medical papyri kept in Pel Ankh, the House of Life.

She now teaches her students there.

Before teaching, Mr. Peseshet has a patient he wants to see.

One of the workers injured his arm at the construction site of the temple.

When Peseshet arrived, the worker's arm was clearly broken, and worse, the fracture had become a sed with multiple bone fragments.

Peseshet binds and fixes the wound.

Her next destination is the House of Life.

On the way, a woman ambushes Peseshet on the street.

The woman's son was stung by a scorpion.

Mr. Peseshet has witnessed similar stings many times and knows exactly what to do.

She must cast a spell to expel the poison.

She summons Serket, patron of physicians and goddess of poisonous creatures, and begins casting spells.

Peseshet casts spells as if he were Serket.

This commanded approach is most likely to succeed.

After she says her final lines, she tries to cut the poison with a knife just in case.

Peseshet packs to leave, but the woman has another question.

She wants to know if she is pregnant.

Peseshet explains a pregnancy test that never fails. Plant two seeds: barley and emmer.

After that, urinate over the seeds daily.

If the plant grows, she is pregnant.

A barley seedling prophesies a baby boy, and an emmer prophesies a baby girl.

Peseshet also recommends praying to Hathor, the goddess of fertility.

When Peseshet finally arrives at the House of Life, he meets Isesi, a physician and priest.

She greets Iseth politely, but thinks that Fr. is too full of himself.

She does not envy Isethi's role as Nel Pehat, which literally translates to the royal anal herder, or the royal anal guardian.

As always, the House of Life is crowded with scribes, priests, doctors, and students.

It contains papyri containing not only medical information, but all sorts of records.

Peseshet's son Aketetep is diligent in copying documents as part of his training to become a scribe.

He is a particularly promising student, but was admitted because Peseshet was the clerk, as was her previous father.

This education is very difficult for boys and impossible for girls if their family members are not working.

Mr. Peseshet oversees all female swws and swnws in training in Memphis.

Male doctors do not consult women, so men have their own supervision.

Currently, Peseshet teaches anatomy.

She quizzes her students on the metu, the body's blood vessels that carry blood, air, urine, and even evil spirits.

As Peseshet was preparing to leave, a thin, pale woman approached the door and begged him to see a doctor.

There was a painful and large lump under the woman's armpit.

Peseshet examined the growth and noticed that it was cool to the touch and hard like an unripe hemat fruit.

She had read about such diseases, but had never seen them.

There is no cure, no medicine, no spells for this tumor.

The same advice is given in all texts. "Do nothing".

After delivering the bad news, Peseshet goes outside.

She hangs out on the steps of the House of Life and looks out over the city at dusk.

Despite her best efforts, there are always patients she cannot help, such as a woman with a tumor.

They linger with her, but Peseshet has no time to stay.

Within a few weeks, the Nile's annual flooding would begin, breathing life into the soil for next year's harvest and causing a whole new set of patients.

Recently, a white man and a black woman exchanged Twitter avatars and photos online.

They continued to tweet as usual without altering their content, until suddenly white men found themselves constantly being called the N-word and subjected to the worst kind of slander online. Black women, on the other hand, suddenly realized that the situation had become much more comfortable for them.

Now, if you're my 5-year-old, your internet consists mostly of puppies and fairies, and sometimes puppies-riding fairies.

That's the thing. Please google it.

But the rest of us know that the internet can be a very ugly place.

I'm not talking about the colorful arguments that I think are healthy for democracy.

I'm talking about gross personal attacks.

Maybe it's happened to you too, but if you're a woman, a person of color, gay, or more than one at the same time, the chances are at least doubled, or even worse.

In fact, while writing this talk, I came across a Twitter account called @SallyKohnSucks.

My biography states that I am "a man-hating and bullish person, and the only thing I've accomplished in my career so far is promoting perverted sexuality."

By the way, this is only one-third correct.

In other words, it is a lie! (Laughter) But seriously, we all say we hate this crap.

The question is, are you willing to make the personal sacrifices to change it?

I'm not giving up on the Internet.

Changing the way you click is because clicking is a public act.

We no longer have a few powerful elites who control all media and the rest of us are just passive receivers.

Increasingly, we are all becoming media.

I used to think, 'Oh okay, I'm going to dress up, put on a lot of makeup, be on TV, and talk about the news.

It is a public act of making media.

Then I go home and browse the web or read Twitter. It is a private act of consuming media.

Of course it is. I'm wearing pajamas

error.

Everything we blog, tweet, and click is a public act of creating media.

We are new editors.

We decide what gets our attention based on what we pay attention to.

That's how the media works today.

There are all these hidden algorithms that determine what you see more, and what we all see more, based on what you click on, which in turn shapes our entire culture.

More than 3 out of 5 Americans think there is a serious disrespect problem in the country right now, but I would guess that at least 3 out of 5 Americans click on the same insulting, rumor-spreading trash that triggers society's most offensive impulses.

In an increasingly noisy media environment, there is an incentive to make more noise and be heard, and the tyranny of the loud will foster the tyranny of the mean.

It doesn't have to be.

it's not.

You can change incentives.

First, there are two things we can all do.

First, don't stand by and watch someone get hurt.

If someone is being abused online, do something.

Become a hero. This is your chance.

Raise your voice. Please speak up. Be a good person.

Swap out the negative with the positive.

And second, you have to stop clicking linkbait on the lowest common denominator bottom feed.

If you don't like 24/7 Kardashian shows, stop clicking on Kim Kardashian's sideboobs.

I know you do (Applause.) Apparently you are too.

So it's really the same example. If you don't like politicians bad-mouthing each other, stop clicking on articles about what one guy in one party called another person in the other party.

Clicking on a train wreck just pours gasoline.

Things get worse and the fire spreads.

Our entire culture is on fire.

If the one with the most clicks wins, then we must start shaping the world we want with our clicks, because clicking is a public act.

So click responsibly. thank you.

(applause)

Here is a picture of the man I planned to kill for many years.

This is my father, Clinton George "Buggy" Grant.

He is called Bagai because he has permanent dark circles under his eyes.

When I was 10, I dreamed with my siblings of scraping poison off fly paper and putting it in his coffee, or smashing up a glass and sprinkling it in his breakfast, or loosening the carpet on the stairs so he tripped and broke his neck.

But when the day came, he always skipped that slack step, always bowed out of the house without coffee or a bite to eat.

So for many years I feared that I would die before I could kill my father.

(laughter) Bagai was a horrible demon until our mother asked him to leave and not come back.

As you can see, he was always on the verge of rage, just like me.

He worked the night shift at Vauxhall Motors in Luton and demanded total silence in the house, so when we came home from school at 3:30 p.m., he would huddle by the TV and, rather like a safecracker, fiddle with the TV's volume knob until it was barely audible.

And sometimes, when we got this way, there was a 'shhh', 'shhh' in the house, and we imagined ourselves like German crews of U-boats creeping along the sea's edge while HMS Bageye patrols on the surface and hears the first sound of commotion and prepares to execute.

So the lesson was, "Don't draw attention to yourself at home or outside."

Perhaps it's an immigration lesson.

We were supposed to be under the radar, so really, there was no communication between Baguay and us, and between us and Baguay, and the sound we most looked forward to, when you were a kid, waiting for your dad to come home, all happy, the door opening.

Well, the sound we were looking forward to was the click of a door closing. It meant he was gone and never came back.

So for 30 years I never saw my father, nor did he look at me.

We had never spoken for 30 years, but a few years ago I decided to put him in the spotlight.

"You are being watched.

In fact you are.

you are being watched ”

That was his mantra for us, his children.

Over and over again he told us:

This was in the 1970s, working for Vauxhall Motors in Luton. he was Jamaican

And what he meant was that you, the child of Jamaican immigrants, are being watched to see which way you fall and fit into the stereotype of your host country as reckless, jobless and destined for a life of crime.

You are being watched, so confuse their expectations of you.

To that end, Bagay and his friends (mostly Jamaicans) exhibited the likes of the Jamaican Bella Figura. In other words, show the world your best side, let the world see your best side.

If you've seen photos of people coming to the Caribbean in the '40s and '50s, you may have noticed that many men wore trilbys.

Well, Jamaica didn't have a tradition of wearing trilbys.

They invented that tradition to get here.

They wanted to project themselves in the way they wanted to be perceived, so the way they looked and the names they were given defined them.

So Bageye is bald and has baggy eyes.

Tidy Boots is very particular about shoes.

Anxiety is always anxiety.

The watch has one arm longer than the other.

(Laughter) And my favorite was a guy called Summerwear.

When summerwear came to the country from Jamaica in the early '60s, he insisted on wearing light summer suits regardless of the weather. In the process of researching their lives, I asked my mom, "What happened to summer wear?"

And she said, "He caught a cold and died." (Laughter) But men like Summerwear taught us the importance of style.

Perhaps because they thought they weren't considered very civilized, they exaggerated their style and transferred their generational attitudes and anxieties to our next generation.

You didn't just express yourself.

You represented the group, and it was kind of scary to accept that maybe you could be looked at the same way.

That's why I had to take on the challenge.

Our father and many of his colleagues had some kind of transmission but not reception.

They are made to send, not to receive.

we had to keep silent.

When our father spoke to us, it was from the pulpit of his heart.

They clung to certainty, believing that doubt would undermine them.

But when I'm working from home and writing, when I'm done writing for the day and rush downstairs, I'm so excited to talk about Marcus Garvey and Bob Marley, the words come out of my mouth like butterflies and I'm so excited that my kids stop me and say, 'Dad, nobody cares.

(Laughter) But the truth is, they care.

they cross.

Somehow they get to you.

They shape their lives according to your life story, just like I did to my father and mother, and maybe like Buggy did to his father.

And it became clearer as I looked at his life and realized what Native Americans say, "Don't judge a man until he can walk in moccasins."

But in remembrance of his life, he had no problem and very easy to portray Caribbean life in 1970s England, complete with plastic bowls of fruit, polystyrene ceiling tiles, and chaise longues permanently encased in clear covers.

But what is more difficult is the change in sentiment between generations, and the old adage that wisdom comes with age is not true.

As you get older, you see the superficial appearances and the superficial unpleasant truths.

But the truth is that my parents, my mother and my father went along with it and didn't trust the state to educate me.

So hear me out.

They decided to send me to private school, but my father worked at Vauxhall Motors.

Funding a private school education and feeding a large number of children is very difficult.

I remember my father saying to the priest when I went to that school for the entrance exams--it was a Catholic school--that he wanted a better "education" for the boy, but at the same time, the father didn't care about the entrance exams, he couldn't even pass the wormhole.

But in order to finance my education, he would have to do some dangerous things, so my father ended up financing my education by trading illegal goods from the back of the car, and my father, by the way, it's not his car, so it was even more troublesome.

My father longed for such a car, but he was driving a worn-out Mini. My father, who came to this country as a Jamaican, had no driver's license, no insurance, no road tax, no MOT.

He thought, "I know how to drive, so why do I need a national certification?"

But when I was stopped by the police, it became a little more difficult.

He was going to promote that police officer right away, so P.C.

So my father was doing what Jamaicans call "playing a fool to catch a smart man."

But it also gave the idea that he was actually being disrespected or disrespected by the cops — I saw that as a 10-year-old boy — but also an ambivalent feeling about authority.

So, on the one hand, there was derision of authority, but on the other hand, there was respect for authority, and the Caribbean people had haughty submissiveness to authority. This is very impressive and in some ways very strange. Because immigrants are very brave people.

they leave home My father and mother had traveled 4,000 miles since leaving Jamaica, yet they were infantilized by the journey.

They were timid, and at some point the order of nature was reversed.

Children have become parents to their parents.

Caribbean people came to this country with a five-year plan. It's about working, saving money, and coming back, but 5 years turns into 10, 10 turns into 15, and before you know it you're changing the wallpaper and at that point you know you're here to stay.

It still felt temporary that our parents were here, but we kids knew the game was over.

I think there was a feeling that we could not continue the ideal life that we expected.

The reality was very different.

And that was also true of the reality that tried to educate me.

After starting the process, my father did not continue.

My education was left to my mother and, as George Raming would say, my father was my mother.

Even in his absence, the old mantra of "you are being watched" remained.

But such intense scrutiny can cause anxiety, and years later, when I was investigating why so many young black men were diagnosed with schizophrenia, I wasn't surprised to hear the psychiatrist say, "Blacks are being educated with paranoia."

And I wonder how Bageye will judge it.

Well, I also had a son who was 10 years old, and I set my sights on Bagay and went looking for him.

He is back in Luton. He was now 82 years old. I hadn't seen him in 30-odd years. He opened the door and saw this little man with his eyes squinting and smiling. he was smiling I never saw him smile.

I was very embarrassed by that.

But when we sat down, he had a friend from the Caribbean with him and was telling old stories. And my father looked at me and stared at me as if he would miraculously disappear when I woke up.

And he turned to his friend and said, "This boy and I have a deep, deep connection, a deep, deep connection."

But I never felt that connection.

If there is a pulse, it may be very weak or absent at all.

And in the process of that reunion, I almost felt like I was auditioning to be my father's son.

When the book was published, it ran an impartial review in a national newspaper, but Luton's newspaper of choice was the Luton News, not The Guardian, and the Luton News headlined the book as "The Book That May Heal a 32-Year Crack".

And I also understood that it could represent a rift between one generation and the next, between people like me and my father's generation, but there is no tradition of memoirs and biographies in Caribbean life.

It was a tradition not to talk about my business in public.

But I welcomed the title and thought, in fact, that this could start a conversation that never happened before.

This will surely close the generation gap.

This may be a repair tool.

And I even began to feel that this book might be seen as an act of filial piety for my father.

Poor, deluded fool.

Bagay was stabbed because he felt his shortcomings would be exposed to the public.

Angered by my betrayal, he went to the newspaper the next day and demanded the right to reply, and got a reply with the headline "Buggy bites back."

And it was a poignant explanation for my betrayal.

I wasn't his son.

He knew in his heart that his colors had been dragged into the mud, but he could not allow it.

He had to restore his dignity, and he did, and though I was disappointed at first, I came to admire the attitude.

Even though he was 82 years old, fire was still welling up in his veins.

And if that means we're going back to 30 years of silence, my father would say, "Then it will be."

Jamaicans will say that there are no facts, only versions.

We all tell ourselves the version of the story we can best live.

Every generation builds edifices that are either unwilling or unable to dismantle, but as I wrote it, my version of the story began to shift and become disconnected from me.

I lost my hatred for my father.

I didn't want him dead anymore, I didn't want him killed anymore, and I felt so much more free than I ever felt.

And I wonder if that freedom was transmitted to him.

At our first reunion, I realized I had very few pictures of myself as a child.

This is a picture of me at 9 months old.

In the original photo, I am supported by my father, Bagay, but when my parents separated, my mother cut him off from all aspects of our lives.

She picked up a pair of scissors and cut him out of all the photos. For years I told myself that the truth in this photo is that you are lonely and unsupported.

But there is another way to look at this photo.

This is a picture of the possibility of a reunion, the possibility of a reunion with my father.

The first reunion was a very awkward and tense moment. To ease the tension, we decided to go for a walk.

And as I walked, I was shocked to find myself reverting to being a child even though I was now towering over my father.

I was nearly a foot taller than my father.

He was still a big man and I tried to keep pace with him.

And I found him walking as if he was still being observed, but I admired the way he walked.

He walked like a man on the losing side of an FA Cup final and climbed the stairs to receive a tribute medal.

There was dignity in defeat.

thank you.

(applause)

I'm an industrial engineer.

My life goal has always been to create more products with the least amount of time and resources.

When I was working at Toyota, I only knew how to make cars until I met Dr. Akira Miyawaki.

I was so fascinated that I volunteered to join his team and learn about this methodology.

I immediately started planting a forest in my own backyard, and this is what it looks like three years later.

These forests grow 10 times faster, are 30 times more dense and have 100 times more biodiversity than traditional plantations.

Within two years of having this forest in our backyard, we could observe that the groundwater did not dry out during the summer months, and we doubled the number of bird species we found in the area.

The air quality has improved, and the seasonal fruits that are growing well in our backyard can now be harvested.

I wanted to create more forests like this.

I was so moved by these results that I wanted to create these forests with the same acumen that makes cars, writes software, and runs mainstream businesses, so I started a company that is an end-to-end service provider for creating these natural natural forests.

However, in order to make afforestation mainstream as a business and industry, it was necessary to standardize the forest development process.

So we benchmarked the Toyota Production System, known for its quality and efficiency in the forestation process.

For example, the core of TPS, or Toyota Production System, is the leveling of manufacturing different models of cars on a single assembly line.

You can now replace this car with a tree to create a multi-layered forest.

These forests utilize 100% vertical space.

It's so dense you can't even go inside.

For example, you can create a forest of 300 trees in an area about the size of 6 car parking spaces.

To reduce costs and our carbon footprint, we have started using local biomass as a soil conditioner and fertilizer.

For example, mechanically crushed palm husks are combined with rice straw, rice husk powder mixed with organic fertilizers, and finally put into the soil where our forests are planted.

After planting, the soil is covered with grass or rice straw to prevent the water used for irrigation from evaporating back into the atmosphere.

And with these simple improvisations, you can make a forest today for as cheap as an iPhone.

Now, we are planting forests at homes, schools, and even companies and factories.

But that's not enough.

Many people want to take matters into their own hands.

So we let it happen.

We are currently working on an internet-based platform and plan to open source and share our methodology. With it, anyone can create their own forest using our methodology without being physically there.

With the click of a button, you can learn all the native species of a place.

Remote soil testing can be done by installing small hardware probes in the field, which can be used to remotely direct step-by-step reforestation.

You can also observe the growth of this forest without being on site.

I believe this methodology has potential.

By sharing, we can actually restore our original forests.

Now, if you come home and find a piece of barren land, remember that it could be a potential forest.

thank you very much. thank you.

(applause)

There are over 1 trillion galaxies in the universe.

And my team discovered a very unusual galaxy, a galaxy that looks nothing like anything that has ever been observed.

This galaxy is so singular that it challenges our theories and assumptions about how the universe works.

Most galaxies are spiral, similar to our own Milky Way.

We have strong theories about how these common galaxies formed and evolved.

However, it is not known how rare galaxies form and evolve.

A particularly puzzling rare case is Hoag's object.

A highly symmetrical central body is surrounded by a circular outer ring, with nothing visible connecting them.

Hoag galaxies are one of the most unusual types of galaxies known today.

The number of galaxies is less than 1 in 1,000.

I wonder why the stars in the outer ring float so orderly.

That's interesting.

hold up.

The situation is becoming more and more mysterious.

The galaxies my team discovered are even rarer and far more complex than that.

You can search and search for these objects and find nothing.

However, in some cases, they may appear in the background when you're not even looking for them.

This system is very similar to Hoag's Object with a central body and a circular outer ring.

We were very excited and thought we had discovered another Hoag object.

However, according to my research, this is a completely new type of galaxy, now commonly called the "Boursin galaxy".

(Laughter) (Cheers) (Applause) We won't be visiting this galaxy anytime soon.

It is about 359 million light years away from Earth.

You may think this is far away.

In fact, this is one of the nearby galaxies.

I study this object in different lights: ultraviolet, optical, and near-infrared.

Small parts of our bodies like scars and wrinkles tell the story of our lives.

Similarly, the structure of galaxies seen in different lights helps trace their origin and evolution.

How can I find out these details?

I model a bright central object and remove the model from the image to see if there are any hidden features. This is because bright structures within galaxies can obscure the vision of faint features, similar to using sunglasses when intense light blinds the eye.

The result was a big surprise.

Not only does this galaxy have an outer ring, but it also has an additional diffuse inner ring.

We have been having trouble explaining the origin of the outer rings of Hoag galaxies.

At this point, we should also mention this mysterious second ring.

No mechanism is currently known that can explain the existence of inner rings in such peculiar galaxies.

The discovery of the Bursin Galaxy thus clearly highlights gaps in our knowledge of galaxy evolution.

Further study of how this highly unusual galaxy formed may provide new clues about how the universe works.

This discovery tells us that we still have a lot to learn and that we need to keep looking deeper into the universe and searching for the unknown.

thank you.

(applause)

It's like a dream.

Please try to imagine. In an empty desert, you come across a giant wheel with skeleton rings, and someone invites you to pull a series of heavy ropes at its base. So you walk to one side where the team is waiting and everyone throws their backs into that wheel and pulls in turn. And finally, the wheels roared to life, the lights started flashing, the audience cheered, and we had just activated one of the world's largest zoetropes, Peter Hudson's "Karon."

This is the furthest thing from marketable art.

(laughs) It's big, it's dangerous, it takes a dozen people to run, and it doesn't fit on the couch.

(Laughs) There is no waste at all, it is made very beautifully and it is wonderful.

A work like "Charon" is unlikely to make headlines in the art world.

Recently, more attention is paid to the sale of works than to the works themselves.

Last year, a work by Jean-Michel Basquiat sold for $110 million, a record for an American artist, and a Leonardo da Vinci painting sold for $450 million, setting a new auction record.

And yet, these are great and important artists, but still, when you look at these pieces and see the headlines, you have to ask yourself, "Do I care about these things because they inspire me, or do I care because they're expensive and I think they should be?"

In our modern world, it can be difficult to separate these two.

But what if we try?

What if we redefine the value of art, not by its price, but by the emotional connection it creates between the artist and the audience, the benefits art brings to society, and the fulfillment it brings to the artist himself?

This is Nevada's Black Rock Desert as far as the New York, London and Hong Kong galleries can reach.

And here at Burning Man, in just about 30 years, a movement has formed to do just that.

Since the early anarchist days, Burning Man has grown.

Today, it's like a collective dream experiment.

The community takes place year-round, and every year for a week in August, 70,000 people turn off their technology and make a pilgrimage to the desert to build an anti-consumerist society that transcends everyday life.

The situation is grim.

Strangers will hug you and swear each year that the last was better. But it's still silly, free, and alive, and art is one of the things that thrives here.

This is me last year in Playa in the desert with my brother. Clearly working hard.

(Laughter) I spent several years studying the art of Burning Man for an exhibition I had planned for the Smithsonian Institution's Renwick Gallery. And what fascinates me most is not the quality of the work here, but that it is actually quite high. That's why, in this increasingly digital age, people come out here to the desert again and again to get their hands dirty and create something.

Because it seems to arrive at something inherently human.

In fact, the entire Burning Man camp can be thought of as one giant interactive art installation powered by the participation of everyone who attends.

One of the things that makes this work different from the world of commercial art is that anyone who creates it can publish it.

These days, around 300 art installations and countless artistic movements converge on Playa.

None are sold there.

At the end of the week, if the work has not been baked, the artist must remove the work from the cart and store it.

It's a tremendous labor of love.

The Burning Man aesthetic pioneered by artists like Kate Rodenbush and Michael Christian certainly exists, but much of the character of the work here comes from the desert itself.

For a piece to be successful, it must be portable enough to travel, robust enough to withstand wind and weather and participants, evocative in daylight and dark, and appealing without interpretation.

Encountering monumental and intimate works here feels surreal.

Scales tend to fool the eye.

What seemed huge in an artist's studio may be buried in the playa, but with virtually no space limitations, artists can dream as big as they can build.

Some pieces are overwhelmed by their elegance, others by the boldness required to bring them here.

Burning Man's irreverent humor is also present in works like Rebecca Waits' "Church Trap." This small country chapel, perched precariously on wooden beams like a mousetrap, invited participants to religion. This church was built in 2013 and was set on fire...

Others, like Christopher Shard's Firmament, aim for the sublime.

Here, under a canopy of lights dancing to classical music, attendees were able to escape the thunderous rave beats and chaos of their surroundings.

At night, the city is swarmed by mutant vehicles, the only vehicles allowed to roam the playa.

And if necessity is the mother of invention, here absurdity is its father.

(laughter) They zigzag from artwork to artwork, like a strange, random public transport system, pulsing with light and sound.

When artists stop caring about critics and collectors and start making work for themselves, they make great toys.

And what's surprising is that people who come to Burning Man for the first time generally don't know how to make this stuff.

What makes this possible is a vibrant and supportive maker community.

Collectives like Five Ton Crane share their skills, from gothic rocket ships ready to take off, to shelves full of artist-made books, blackbird pies in ovens, and fairytale houses in giant trunks with climbable beanstalks, collectives like Five Ton Crane share their skills and tackle complex projects never attempted by a single artist.

Both good and bad people are welcome.

In fact, part of the charm and innovation of the work here is that so many of the creators aren't artists at all, but scientists, engineers, welders, and garbage collectors whose work crosses professional boundaries, from origami mushroom forests that evolved from yurt designs to trees that respond to the voices and biorhythms of everyone around them through 175,000 LEDs embedded in their leaves.

A typical museum visitor spends less than 30 seconds viewing a work of art. I often see people wandering from label to label looking for information, as if 80 words of text contained the entire story of a work of art.

But in the desert there are no gatekeepers and no placards to explain the art. There is only natural curiosity.

You will see a piece on the horizon and run towards it.

Once it arrives, walk around, touch it, test it.

Is it sturdy enough to climb on? Will I be skewered on it?

(Laughter) Art can be a long-term exchange, and while an exhibition may be short-lived, the experience is memorable.

At Burning Man, nowhere is that more true than at Temple.

In 2000 David Best and Jack Hay built the first temple. The building became a temporary memorial after a member of the team died tragically in an accident shortly before the event.

It's a fine piece of architecture in itself, but the structure is just a shell until it disappears under the thick blanket of messages.

"I mıss you."

"please forgive me."

"Even a broken crayon can color."

An intimate testimony to the experience of loss, the most universal of human experiences.

The collective feeling of this place is overwhelming and indescribable before it flares up on the final night of the event.

Every year something forces people from all walks of life around the world to go out into the desert to create works of art when they have no money.

The work isn't necessarily sophisticated, it's not always viable, it's not always good, but it's genuine and optimistic in ways rarely seen elsewhere.

It is comforting to know that even in these cynical times we are still capable of great feats of imagination and that when we seek connection we can unite and build cathedrals in the dust.

Forget the price tag.

Forget big names.

What else is art for in our modern world?

thank you.

(applause)

For over ten years as a physician, I have cared for homeless veterans and working class families.

I have cared for people living and working in difficult, if not harsh, environments. That work led me to believe that we needed a radically different view of medicine.

What we need is a healthcare system that can actually see and improve health in its infancy, not just the symptoms that bring people to the clinic.

And health does not begin within the four walls of a doctor's office, but where we live, work, eat, sleep, learn, play, and spend most of our lives.

So what does this different approach to health care look like, one that can radically improve health?

To explain this, let's talk about Veronica.

Veronica was the 17th patient out of my 26 patients per day at that clinic in South Central Los Angeles.

She presented to our hospital with chronic headache.

I've had this headache for years and this particular episode was very annoying.

In fact, three weeks before her first visit to us, she visited an emergency room in Los Angeles.

The emergency room doctors said, "We did some tests, Veronica.

Since the results are normal, prescribe painkillers and see your GP, but if the pain persists or gets worse, come back. ”

Veronica followed that standard instruction and got back on track.

She came back not just once, but twice more.

In the three weeks before Veronica met us, she went to the emergency room three times.

As in years past, she went back and forth to hospitals and clinics, trying to seek relief, but it wasn't enough.

Veronica came to our clinic and despite various encounters with medical personnel, Veronica was still ill.

But when she came to our clinic, we tried a different approach.

Our approach begins with GED-level trained, community-savvy medical assistants.

Our medical assistant asked some routine questions.

She asked, "What is your chief complaint?"

"headache."

"Let's get vital signs" - measure blood pressure and heart rate, but let's ask something equally important for Veronica and many patients like her in South Los Angeles.

“Veronica, can you tell me where you live?”

Please tell me more about the housing situation.

Do you have mold? Are there any water leaks?

Are there cockroaches in your home? ”

In the end, Veronica said yes to cockroaches, leaks, and mold.

I picked up the chart, checked its contents, turned the door handle, and entered the room.

You must understand that Veronica, like so many patients I have had the privilege of caring for, is a dignified figure, a formidable being, a personality larger than life, but here she sat at my table, crouching in pain.

Her head was visibly throbbing and resting in her hands.

As she looked up, I looked at her face, said hello, and immediately noticed something behind the bridge of her nose, a crease in her skin.

In medicine, this wrinkle is called an allergy salute.

It is usually seen in children with chronic allergies.

This comes from chronically rubbing your nose up and down in an attempt to relieve allergy symptoms. But here was Veronica, an adult woman with the same telltale signs of allergies.

After a few minutes, asking Veronica some questions, examining her, listening to her, I said, "Veronica, I think I know what you have.

I think you have chronic allergies, and you also have migraines and sinus congestion, but I think they're all related to where you live. ”

She seemed a little relieved that it was her first diagnosis, but I said, 'Veronica, let's talk about treatment.

I'm going to order medicine according to your symptoms, but if you don't mind, I'd like to introduce you to a specialist. ”

Well, it's a little hard to find an expert in south-central Los Angeles, so she gave me a "Really?"

And I said, 'Actually, the professionals I'm talking to are what I call community health workers, people who, if you're okay with them, trying to figure out what's going on with those water leaks.'

Veronica returned several months later.

She agreed to all of those treatment plans.

She said her symptoms improved 90 percent.

She spent more time with work and family, and less time traveling to and from the Los Angeles emergency room.

Veronica has improved noticeably.

One of her sons had asthma, but he was less ill.

She got better, and not coincidentally, Veronica's house got better, too.

Why did this different approach we tried lead to better care, fewer ER visits, and better health?

Well, very simply, it started with that question. "Veronica, where do you live?"

But more importantly, it puts in place a system that allows Veronica and hundreds like her to be queried on a regular basis about important conditions in her community and where health and, unfortunately, disease begins in places like South Los Angeles.

In that community substandard housing and food insecurity are the main conditions we have to recognize as a clinic, while in other communities traffic barriers, obesity, access to parks, gun violence, etc. can be a problem.

The important thing is that you have put in place a system that works. This is what I call the upstream approach.

It's a term that many people are familiar with.

This comes from an analogy often used in public health circles.

This is the parable of the three friends.

Imagine that you are one of three friends who have come to the river.

It's a beautiful sight but shattered by the cries of children, actually several children, in need of rescue in the water.

So you should do well what everyone else is trying to do.

You can join instantly with your friends.

The first friend said he would go help those who were drowning, those most at risk of falling over the waterfall.

A second friend says they are going to build a raft.

I'm definitely going to reduce the number of people who reach the waterfall basin.

Connect these branches to build this raft and bring more people to safety.

Over time they succeed, but in reality they are not as successful as they would like to be.

More people slip through, and when I finally look up, my third friend is nowhere to be seen.

They finally found her.

she is in the water She tries to escape by swimming upstream while helping the children, but they yell at her, "Where are you going?"

There are children here who want to be saved. ”

Then she said: "Find out who and what threw the children into the water."

In the medical field, we have our first friends. We have specialists, trauma surgeons, ICU nurses, and paramedic doctors.

We have important rescuers, people you want by your side when you are in dire straits.

We also know that we have a second friend. That means you have a raft-building friend.

It's the primary care clinician, who's there to manage your chronic disease, diabetes, high blood pressure, who's there to give you an annual checkup and make sure your vaccines are up to date, but who's also there to make sure you have a raft to guide you to a safe place to sit.

But it is also essential and much needed, but what we lack is that third friend.

We don't have enough of those puritanists.

The upper class, medical professionals who know that health begins where we live, work and play, goes beyond that realization and is starting to mobilize resources to build systems within clinics and hospitals and actually work on that to connect people to the resources they need outside the four walls of the clinic.

Now, you might ask, this is a very obvious question that many medical professionals ask. “Are doctors and nurses thinking about transportation and housing?

Wouldn't it be better to just provide drugs and treatments and focus on the task at hand? ”

Indeed, lifesaving at the water's edge is an important enough task.

who has time?

But if you use science as a guide, I would argue that an upstream approach turns out to be absolutely necessary.

Scientists now know that the living and working conditions we all belong to have more than twice as much impact on our health as our genetic code, and how our living and working conditions, environmental and social structures are intertwined, and how they influence our behavior, have five times more impact on our health than the drugs and procedures that doctors and hospitals give us all put together.

Living and working conditions together account for 60% of preventable deaths.

Let me give you an example of what this feels like.

For example, let's say a technology startup comes to you and says, "We have a great product.

It will reduce your risk of dying from heart disease. ”

Now, if the product is a drug or device, you may be more likely to invest, but what if the product is a park?

A groundbreaking study from the United Kingdom, which looked at the records of more than 40 million people in the United Kingdom, adjusted for many factors and examined several variables, and found that exposure to green space had a powerful effect when adjusting for heart disease risk.

The closer you are to green spaces, parks, and trees, the less likely you are to have heart disease, rich and poor alike.

This study shows what a public health friend of mine often says these days: a person's zip code is more important than their genetic information.

We also know that postal codes actually form our genetic code.

The science of epigenetics examines these molecular mechanisms, the intricate ways our DNA is literally formed, how genes are turned on and off based on exposure to the environment, where we live and work.

So it is clear that these factors, upstream issues, are important.

These are so important to our health that medical professionals need to do something about it.

Yet Veronica asked me perhaps the most compelling question I've been asked in a long time.

On a follow-up visit, she said, "Why hasn't any doctor asked about my family before?"

During my emergency room visit, I had two CAT scans, a needle stuck in my lower back to draw spinal fluid, and nearly a dozen blood tests.

I went back and forth, met all sorts of medical people, and no one asked about my house. ”

The honest answer is that medical practice often treats only the symptoms without addressing the conditions that caused the disease in the first place.

There are many reasons for that, but the big three are the first is that we don't pay for it.

In the medical industry, we often pay for quantity rather than value.

We usually pay doctors and hospitals according to the number of services they provide, but not necessarily according to how well they make you.

This leads to a second phenomenon that I call the "don't ask, don't tell" approach to upstream medical issues.

We don't ask where you live or work. If there is a problem there, we don't know what to tell you.

Doctors aren't unaware that these are important issues.

In a recent survey of more than 1,000 doctors in the United States, 80% actually said they knew their patients' upstream issues were just as important as their health and medical problems.

There is this gap between knowing that the lives of our patients, the circumstances of where they live and work matter, and our ability to do something about it in the systems in which we work.

This is a big problem now. Because that leads them to the next question: Who is responsible?

And that brings us to our third point, the third answer to Veronica's compelling question.

One of the reasons we face this challenge is the near shortage of upstream personnel in the healthcare system.

A third friend, someone trying to figure out who threw the children into the water and what caused it, is hardly good enough.

There are a lot of high-ranking people now. I have had the opportunity to meet many of them in Los Angeles, other parts of the country, and around the world. It's important to note that an upperclassman can be a doctor, but doesn't have to be.

They may be nurses, other clinicians, care managers, social workers, etc.

It doesn't really matter what degree the puffer's name ends with.

More importantly, they all seem to share the same ability to carry out the process of transforming support and changing the way healthcare is practiced.

That process is a very simple process.

1, 2, 3.

First, they said let's sit down and identify the clinical problem in a particular group of patients.

For example, try to help children who are in and out of hospitals with asthma.

After identifying the problem, we say let's go to the second step and identify the root cause.

Now, in root cause analysis in medicine, it's usually said, "Let's look at your genes, let's look at how you're behaving."

Maybe you're not eating enough healthy food.

Eat healthier.

This is a very simplistic approach to root cause analysis.

After all, it turns out that just limiting that worldview to yourself doesn't really work.

The root cause analysis that the poshmen bring to the table is, take a look at your living and working conditions.

Maybe for kids with asthma, it's happening in the house, or maybe they live near a highway with a lot of asthma-triggering air pollution.

And perhaps that's what we should mobilize resources to deal with. Because that third element, the third part of the process, is the second most important part after what the pundits do.

Let them mobilize resources to create solutions within the clinical system, involve public health, other departments, lawyers, whoever wants to, take patients with real clinical problems, and connect them to the resources they need to create rational solutions to address the root causes together.

Clearly, there are plenty of stories of posh people doing amazing things.

The problem is that there are hardly enough of them.

By one estimate, healthcare systems need one upstream person for every 20-30 clinicians.

For example, in the United States, that means we will need 25,000 poshers by 2020.

But by all accounts, there are only a few thousand high-ranking people at this point. That's why, a few years ago, my colleagues and I said we need to cultivate and nurture more high-minded people.

So we decided to start an organization called Health Begins. Health Begins does just that. Train the poshmen.

There are many measures we use to measure success, but our main concern is to ensure that we change the trust of “don’t ask, don’t tell” among clinicians.

We seek to ensure that clinicians, and therefore the systems in which they work, are competent and confident in dealing with the problems of our living and working conditions.

Confidence in our work has nearly tripled.

It's worth noting, but I'll tell you the most compelling part of what it means to work with the upstreamists and bring them together.

Most compelling is that I hear stories like Veronica every day, every week.

It's the story of Veronica and so many people like her who came to the healthcare system to get a glimpse of what it's like to be part of a healthcare system that stops running you back and forth and actually improves your health, listens to who you are, and addresses the background of your life, whether you're rich or poor or middle class.

These stories are compelling because they tell us not only that we are so close to the health system we want, but that there is something we can all do to get there.

Doctors and nurses are better able to ask about conditions in their patients' lives, not just because they behave better at the bedside, but because, frankly, it makes for a better standard of care.

Healthcare systems and payers could start calling on public health agencies and departments to look at the data together.

Let's see if we can discover some patterns in data about patient lives and identify upstream causes. And, just as importantly, can resources be adjusted to accommodate them?

Medical schools, nursing schools, and health professional education programs of all kinds can help by training the next generation of upperclassmen.

It also allows these schools to accredit community health workers who are the backbone of the upstream approach.

For the transition from the sick care system to the healthcare system to be truly effective, we need more healthcare in the healthcare system.

But finally, and perhaps most importantly, what do we do? What do we do as patients?

You can start by going to a doctor, nurse, or clinic and asking, "Is there anything I should be aware of where I live or work?"

Are there barriers to my health that I am just unaware of, and more importantly, if there are barriers that I am beginning to surface, I come to you and think that there is a problem with my apartment or work, there is no transportation, the park is too far, I am sorry sir, the advice to go jogging is unacceptable, sir, if there is such a problem, sir, would you listen to me?

And what can we do together to radically improve my health?

If doctors, health systems, payers, and all of us can work together on this task, we can do something about health.

Health is not just a personal responsibility or phenomenon.

Health is a common good.

It comes from our personal investment in knowing that our lives matter, the circumstances of where we live and work, eat and sleep matter, and that what we do for ourselves should also be done for those who return to living and working conditions again, which can be difficult, if not harsh.

We can all invest in ensuring better allocation of resources upstream, but at the same time we can work together to show that healthcare can move upstream.

We can radically improve our health.

thank you.

(applause)

Today I would like to talk about a project being carried out by scientists around the world to paint a neuroimage of the human mind.

And the central idea of ​​this research is that the human mind and brain are not a single general-purpose processor, but a collection of highly specialized components, each solving a different and specific problem, collectively making us as humans and thinkers.

To see this idea in action, imagine the following scenario. You walk into your child's nursery.

As usual, there are a dozen or so children waiting to be picked up, but this time the faces of the children are strangely similar, and it is difficult to tell which child is mine.

Need new glasses?

Are you out of your mind?

Do a quick mental checklist.

No, you seem to be thinking clearly and your vision is perfectly sharp.

And everything looks normal except for the children's faces.

The face is visible, but nothing distinctive, none of it looks familiar, and the daughter can only be found by finding an orange hair ribbon.

This sudden loss of the ability to recognize faces does occur in humans.

This is called prosopagnosia and is caused by damage to certain parts of the brain.

The surprising thing is that only facial recognition is impaired. everything else is fine.

Prosopagnosia is one of many amazing and specific psychiatric disorders that can occur after brain injury.

It has long been suggested that these syndromes involve the division of the mind into discrete components, but efforts to discover those components were rapidly accelerated by the invention of brain imaging techniques, particularly MRI.

MRI allows you to see your internal anatomy in high resolution. So let's quickly show a series of cross-sectional MRI images of a familiar object. We fly through them and try to figure out what the object is.

please.

It's not that easy. It's an artichoke.

Now let's try one more. Start at the bottom and work your way up.

broccoli! Broccoli head.

Isn't it beautiful? I like that.

Well, there's one more thing. The brain, of course.

Actually, it's my brain.

We keep slicing my head like that.

That's my nose on the right side, and now we're going right there, right here.

This photo, if I say so myself, is great, but it only shows anatomy.

A really great breakthrough in functional imaging came when scientists found a way to create images that show not only the anatomy but also the activity: where neurons are firing.

Here's how it works.

The brain is like muscle.

As the brain becomes more active, it needs increased blood flow to supply its activity. Luckily, blood flow control to the brain is localized, so if, for example, a large number of neurons there start to activate and fire, blood flow increases there.

Therefore, functional MRI senses increased blood flow and produces a high MRI response with elevated neural activity.

So, to give you a concrete feel for how functional MRI experiments work, and what you can and can't learn from them, let me describe one of my first studies.

We wanted to know if there was a special part of the brain for recognizing faces, and based on the phenomenon of prosopagnosia I just described, we already had reason to think that such a thing might exist, but no one had seen that part of the normal human brain, so we decided to look for it.

So I was the first test subject.

I turned to the scanner, lay on my back, and stared at faces like this, objects like this, pictures of faces and objects for hours without moving my head as much as possible.

As a human fairly close to the world record for total time spent inside an MRI scanner, I can say that one really important skill for MRI research is bladder control.

(Laughter) After we got it out of the scanner, we did a quick analysis of the data looking for parts of the brain that were more responsive when looking at faces than when looking at objects. And here is what I saw.

This image looks terrible by today's standards, but I thought it was beautiful at the time.

What it shows is that area there, that little blob, it's about the size of an olive, and it's on the bottom of my brain about an inch straight from it.

And what that part of my brain is doing is producing a higher MRI response, or higher neural activity, when looking at a face than when looking at an object.

That's all very nice, but how do we know this isn't a fluke?

Well, the easiest way is to run the experiment again.

So I went back to the scanner, looked at more faces, looked at more objects, got a similar mass, and did it again, and again, and again, and at that time decided to believe it was real.

But still, maybe this is something weird in my brain that no one else has, so to find out, I scanned a lot of other people and found that most of them have that little face processing area in a similar area of ​​their brain.

So the next question was what does this actually do?

Is it really specialized only for face recognition?

Well, maybe not, right?

Maybe not just the face, but any part of the body.

Perhaps it responds to humans or creatures or anything round.

The only way to be truly sure that the domain is dedicated to facial recognition is to rule out all these hypotheses.

So we spent most of the next few years scanning subjects while looking at different types of images. And they showed that that part of the brain responded strongly to seeing images of all kinds of faces, and less strongly to non-face images like some of these.

So is there finally evidence that this region is necessary for facial recognition?

No, it's not.

Brain imaging cannot tell if the area is needed for anything.

All brain imaging can do is watch areas turn on and off as people think about different thoughts.

To know if a part of the brain is necessary for mental function, we need to play around with it and see what happens, which we usually can't do.

But very recently, a surprising opportunity presented itself when some of my colleagues examined this man. This man has epilepsy and is pictured here in a hospital bed where electrodes have just been placed on the surface of his brain to determine the cause of his seizures.

So it was pure coincidence that two of the electrodes happened to be right over his facial area.

So the doctors, with the patient's consent, asked what happened when they electrically stimulated that part of the brain.

Now, the patient doesn't know where those electrodes are, nor has he heard about the facial area.

Now let's see what happens.

It begins with the control condition, where "Sham" is almost invisibly displayed in red in the lower left when no current is delivered, and the neurologist is first heard speaking to the patient. So let's see.

(Video) Neurologist: Okay, look at my face and tell me what happens when you do this.

have understood?

Patient: Okay.

Neurologist: 1, 2, 3.

Patient: Nothing. Neurologist: Nothing?

I will do it again.

look at my face

1 2 3。

Patient: So you've become a different person.

your face has changed.

His nose was drooping and he leaned to the left.

You were almost like someone I had seen before, but different.

It was a trip.

(Laughter) Nancy Kanwisher: So this experiment — (applause) — this experiment conclusively demonstrated that this region of the brain not only responds selectively to faces, but is causally involved in the perception of faces.

So I looked into all these details about facial regions to show what it takes to really prove that parts of the brain are selectively involved in certain mental processes.

Next, we'll take a quicker look at some of the other specialized areas of the brain that we and others have discovered.

To do this, I spent a lot of time in my scanner last month to allow these things to show up in my brain.

Let's get started. Here is my right hemisphere.

So we have that kind of direction. You're looking at my head like this

Imagine removing the skull and observing the surface of the brain that way.

Now, as you can see, the surface of the brain is all folded.

So it's not good. Something may be hidden there.

We want to see the whole thing, so let's inflate it so that we can see the whole thing.

Now let's find the areas of the face we've talked about that respond to images like this.

To see that, rotate your head and look inside the bottom. That's my face.

Immediately to its right is another region shown in purple that responds when processing color information, and near those regions are other regions involved in the perception of location. For example, I can see the layout of the space around me right now, but the green area right there is very active.

There is another one on the outer surface, which also has some more facial areas.

Also in this vicinity are regions that are selectively involved in processing visual movements, like the moving dots here, shown in yellow at the bottom of the brain. Nearby are areas that react when looking at images of bodies and body parts like this, shown in lime green at the bottom of the brain.

All these areas shown so far are involved in specific aspects of visual perception.

Do we also have brain regions dedicated to other senses, such as hearing?

Yes, it is. So let's turn our brains around a little. This is the dark blue area we reported on just a few months ago. This area reacts strongly to hearing such pitched sounds.

(siren) (cello music) (doorbell) In contrast, the same areas do not react strongly when hearing such perfectly familiar sounds that do not have a distinct pitch.

(chomping) (drumroll) (flushing the toilet) Okay. Next to the pitch regions are another set of regions that selectively react when hearing speech.

Now let's look at these same regions.

My left hemisphere has a similar placement, similar but not the same. The sizes may vary, but most of the same areas are here.

Now, all that I have shown so far are areas that are involved in different aspects of perception, sight, and hearing.

Do we also have brain regions dedicated to really fancy and complex mental processes?

Yes, it is.

Pink here is my language region.

Thus, it has been known for a very long time that that part of the brain is involved in language processing, but we have just recently shown that these pink areas respond very selectively.

They respond when they understand the meaning of a sentence, but they do not respond when performing other complex mental functions, such as mental arithmetic, retaining information in memory, or appreciating the complex structure of music.

The most amazing area ever discovered is the turquoise area here.

This area responds when you think about what other people are thinking.

It may seem crazy, but in fact we humans do this all the time.

This is what you do when you realize your partner will be worried if you don't call home to let them know you're going to be late.

I'm doing this in that area of ​​my brain right now, and I realize you're probably wondering about the gray, uncharted area in your brain right now, and what's going on?

Well, I wonder about that too. My lab is currently conducting a lot of experiments to discover many possible brain specializations for other very specific mental functions.

But the point is, we don't believe our brains have all the important mental functions, or even specializations of mental functions that are essential to survival.

In fact, a few years ago there was a scientist in my lab who was convinced that he had discovered a brain region for detecting food, and when people saw images like this, that region reacted very strongly in the scanner.

Furthermore, it was found that 10 out of 12 subjects had similar reactions at roughly the same locations.

So he got pretty excited and was running around the lab telling everyone he was going to "Oprah" with his breakthrough.

But then he devised an important test. He showed subjects images of food like this and compared them to images that were similar in color and shape but not food.

And his region had the same response to both image sets.

So it wasn't a food area, just an area where you like colors and shapes.

So much for "Oprah."

But the question, of course, is how do we handle everything else that we don't have specialized brain regions for?

I think the answer is that, in addition to the highly specialized components we've discussed so far, we have a lot of very general machines in our minds that allow us to deal with whatever problems arise.

In fact, we recently showed that the white areas here respond whenever you perform difficult mental tasks. One of seven areas tested.

Therefore, each of the brain regions that I have described today are present in approximately the same locations in all normal subjects.

Any of you can put it in a scanner and find each area of ​​your brain. The area should then look a lot like my brain, although the exact location and size will be slightly different.

What is important to me about this research is not the specific location of these brain regions, but the simple fact that we have selective and specific components of the mind and brain in the first place.

I mean, maybe it wasn't.

The brain was a single general-purpose processor and could have been more like a kitchen knife than a Swiss Army knife.

Instead, what brain imaging has produced is a rich and interesting picture of the human mind.

So we have in our minds the image of a very versatile machine, along with an amazing array of very specific components.

This company is still in its early stages.

We have only drawn the first brushstrokes of the neural representation of the human mind.

The most basic question remains open.

For example, what exactly do each of these regions do?

Why do we need 3 face regions and 3 place regions, and what are their responsibilities?

Second, how are all these things connected in the brain?

Diffusion imaging can be used to track bundles of neurons that connect to different parts of the brain. Using this method demonstrated here, it is possible to trace the connections of individual neurons in the brain, and one day the wiring diagram of the entire human brain may be obtained.

Third, how is this highly systematic structure constructed both in childhood development and in the evolution of our species?

To address such questions, scientists are now scanning other species of animals, as well as human infants.

Many justify the high cost of neuroscience research by pointing out that it may one day help treat brain disorders such as Alzheimer's and autism.

That's a very important goal, and I'd be very happy if my work could contribute to that, but fixing broken things in the world isn't the only thing worth doing.

Efforts to understand the human mind and brain are worthwhile, even if they don't lead to a cure for a single disease.

What could be more thrilling than understanding the fundamental mechanisms underlying the human experience and understanding who we are at heart?

I think this is the greatest scientific quest in history.

(applause)

My dream is to build the world's first underground park in New York City.

Now, why would anyone want to build an underground park, and why in New York City?

These three tough little pests are on the left my grandmother aged 5 and my sister and brother aged 11 and 9.

This photo was taken just about a century ago, just before they emigrated from Italy to the United States.

And, like many immigrants of the time, they arrived on New York City's Lower East Side and stumbled upon a crucible of madness.

The amazing thing about their generation was that they were not just building new lives in this new and unfamiliar area, they were literally building cities.

I've always been fascinated by its decades and its history, and I used to beg my grandmother to tell me as much as possible about old New York.

But she often ignored it and told me to eat more meatballs and pasta. As such, I rarely heard the history I wanted to hear.

The city of New York I encountered felt quite constructed.

Ever since I was a kid, I have always wanted to make a difference and somehow make the world more beautiful, more interesting, more fair.

I just didn't understand how to do that.

At first, I wanted to work abroad, so I got a job at UNICEF in Kenya.

But it struck me as odd that he knew more about the politics of his home country of Kenya than he knew about the politics of his own hometown.

I got a job in New York City and quickly became frustrated with the slow government bureaucracy.

I once got a job at Google, where I quickly drank Kool-Aid and believed almost wholeheartedly that technology could solve all social problems.

But I still didn't feel like I was making the world a better place.

It was in 2009 that my friend and now business partner James Ramsey informed me of the location of a very spectacular place. Here it is.

This former trolley terminal was a stop for passengers crossing the Williamsburg Bridge from Brooklyn to Manhattan and opened from 1908 to 1948, around the time my grandparents lived in the area.

I also learned that the site was completely abandoned in 1948.

Fascinated by this discovery, we begged the authorities to take us to this space, and we were finally able to take a tour. And here is what we saw.

Well, this photo doesn't do it justice.

It's a little hard to imagine the incredibly magical feeling you get when you enter this space.

It's a football field on unused land just below a very crowded area of ​​the city, making you feel like you've become Indiana Jones in an archaeological dig, with all the details still there.

Really quite remarkable.

Today, the place itself is located in the heart of the Lower East Side and remains one of the city's busiest neighborhoods.

New York City has two-thirds as much green space per inhabitant as any other major city, but this neighborhood has one-tenth the green space.

So we immediately started thinking about how we could make this place not only accessible to the public but also environmentally friendly.

In a nutshell, our plan is to bring natural sunlight underground using a simple system that collects sunlight on roads, directs it down city sidewalks, and allows plants and trees to grow with the downwardly directed light.

Using this approach, you can currently convert a site like this to a site like this:

In 2011, we published some of these images for the first time. And the funny thing is, a lot of people said, "Oh, it's like the High Line underground."

And what our nickname eventually stuck with was Lowline, and Lowline was born.

What's also become clear is that people really want to know more about how technology looks and feels, and the interest in this is much higher than we ever thought possible.

So I quit my job like a madman and decided to focus completely on this project.

Here we are demonstrating the technology in the warehouse with our team.

This is the bottom of this solar canopy we built to showcase the technology.

You can see six solar collectors in the center there.

And here is the complete exhibit assembled in this warehouse.

Overhead you can see the canopy of the sun, the light shining in, and below it a completely living green space.

So, in just a few weeks, tens of thousands of people came to see our exhibition. Since then, we have developed a growing following among design enthusiasts both locally and globally.

Here's a rendering of the area immediately above the line site and an image after the major redevelopment planned for the next decade.

Notice how crowded the district is still and how scarce green space it really is.

So what we are really proposing is to add one more green soccer field under the district, but more importantly, to introduce a true community-driven initiative in a rapidly gentrifying area.

And now, we're very focused on how we engage with New York City to really transform the entire ecosystem in an integrated way.

This is a rendering of how we actually invite people into the space itself.

Here is this iconic entrance that literally peels back the street to reveal the city's historic layers and invites people into this warm underground space.

When it's freezing outside in the dead of winter, you probably don't want to go to an outdoor space or an outdoor park.

Lowline is truly a space for the four seasons, and it will be a rest for the city.

So I'd like to think that Lauraine actually lets my own family story come full circle.

If my grandparents and parents were serious about developing the city from the ground up, I think my generation would be focused on reusing the spaces we already have, rediscovering our shared history, and reimagining how to make our communities more interesting, more beautiful, more just.

thank you.

(applause)

"Jó napot, pacák" I'm sure everyone here knows this, which means "What's wrong?" Given the fact that Magyar is a unique non-Indo-European language spoken by Hungarians, and that cognitive diversity is at least as threatened on this planet as biodiversity, few would have imagined such a future even a century or two ago.

But there it was: "Jó napot, pacák" I said that someone here must know. Despite the fact that there aren't that many Hungarians to begin with, and even more so, that I don't have a drop of Hungarian blood in my veins, I always had Hungarian friends and mentors by my side at every important moment in my life.

I even have dreams that take place in landscapes that I recognize as scenes from Hungarian cinema, especially the early films of Miklos Jansso.

So how do we explain this strange affinity?

Perhaps it's because Hungary now and my not-so-small home state of South Carolina once envisioned their future as independent nations.

And as a result of that assumption, my hometown was burned to the ground by an invading army. This experience has befallen many towns and villages in Hungary through its long and difficult history.

Or maybe it's because when I was a teenager in the 1950s, Uncle Henry, who was bombed, had crosses burned in his yard, and lived under death threats for denouncing the Ku Klux Klan and causing trouble, took his wife and children to Massachusetts for safety and returned to South Carolina to face the Klan alone.

As anyone who remembers 1956 can attest, this was a very Hungarian act.

And, of course, Hungarians sometimes invented their own equivalents of clans.

Now, it seems difficult to explain this Hungarian presence in my life, but I attribute it ultimately to my admiration for people of complex moral consciousness, whose tradition of guilt and defeat equals defiance and bravado.

This is not typical thinking for most Americans, but it is definitely typical for virtually all Hungarians.

So, "Hello, everyone!"

I returned to South Carolina for the first time in 15 years in the late 1960s, in the midst of the maize invasion. With the reckless condescension of the time, I thought I would save the people.

Never mind the fact that they were slow to recognize the need to save.

I worked in that vineyard for a quarter of a century, then left for a Methodist institution of higher education in a small kingdom in northern South Carolina called Wofford College.

I knew nothing about Wofford, and even less about Methodism, but on my first day teaching at Wofford, I was relieved to find a 90-year-old Hungarian in the classroom audience, surrounded by a crowd of middle-aged European women who seemed to be the entourage of the Rhinemaidens.

His name was Sander Tezler.

He was a difficult widower, his wife and children dead, and his grandchildren living far away.

The appearance resembled Mahatma Gandhi, except for the loincloth and orthopedic boots.

He was born in 1903 in the region of the former Austro-Hungarian Empire that would later become Yugoslavia.

He was ostracized at an early age, not because he was Jewish (his parents weren't very religious anyway), but because he was born with two clubfoots, a disease that at the time required institutionalization and a series of painful surgeries between the ages of 1 and 11.

As a young man he attended a commercial high school in Budapest, where he was modest but clever and achieved considerable success. After graduating, he continued his success in the field of textile engineering.

He built factory after factory.

He got married and had two sons. He had high-ranking friends who assured him that he was of great value to the economy.

Once he was called in the middle of the night by the night watchman of one of the factories, leaving instructions.

The night watchman caught an employee stealing socks. It was a sock factory. He was just backing up the truck to the loading dock and raking up a pile of socks.

Mr. Tezler went down to the factory and confronted the thief, saying, "But why are you stealing from me? If you want money, just ask."

The night watchman, seeing what had happened, said indignantly, "Then shall we call the police?"

But Tezler replied: "No, you don't have to.

He will never steal from us again. ”

Well, maybe he trusted too much. Because he stayed where he was long after the Nazi concentration camps in Austria and after arrests and deportations began in Budapest.

He took the simple precaution of keeping a cyanide capsule in a locket that he and his family could wear around their necks.

And then one day it happened. He and his family were arrested and taken to a death penalty facility along the Danube.

In the early days of Final Solution, it was a homemade atrocity. People were beaten to death and their bodies thrown into the river.

But no one who entered that house of death came out alive.

And it's unbelievable for a Steven Spielberg movie. Gaureiter, who oversaw this brutal assault, was the same man who stole the socks from Mr. Tezler's sock factory.

It was a brutal beating. And in the middle of the brutality, one of Mr. Tezler's sons, Andrew, looked up and said, "Is it time for your capsules, Papa?"

And Gaureiter, who then disappears from the story, crouched down and whispered in Mr. Tezler's ear, "No, don't take the capsules. Help is on the way."

and resumed beating.

But the rescue was on the way, and soon after a car arrived from the Swiss embassy.

They made their way to safety in good spirits. They were reclassified as Yugoslav citizens, managed to stay ahead of their pursuers during the war, survived arson and bombing, and were arrested by Soviet forces at the end of the war.

Presumably, Mr. Tezler had some money in a Swiss bank account so he could take his family first to England, then to Long Island, and then to the textile capital of the southern United States.

It happened to be Spartanburg, South Carolina, where Wofford University is located.

So Mr. Tezler started over and again had great success, especially after inventing a new fabric manufacturing process called double knit.

And in the late 1950s, when clans were revived across the South in the aftermath of Brown v. the Board of Education, Mr. Tezler said, "I've heard the story."

Then he called his chief of staff and asked, "Where do you think racism has the most negative impact in this region?"

"Well, I don't know exactly, Mr. Tezler. I think it's King's Mountain."

"Good. I'm announcing that I'm buying land on King's Mountain and building a large factory there."

The man did as he was told, and shortly afterwards Mr. Tezler was visited by the white mayor of Kings Mountain.

Now, you should know that the textile industry in the South was notoriously racist at the time.

The white mayor visited Mr. Tezler and said, "Mr. Tezler, I believe you will hire a lot of white workers."

Mr. Tezler told him, "You bring in the best workers you can find. If they are good enough, I will hire them."

He was also visited by a minister, a leader of the black community, who said, "Mr. Tezler, I hope you will hire some black workers for this new factory of yours."

He received the same answer. "You bring in the best workers you can find. If they are good enough, I will hire them."

As it happens, black ministers have gotten the job done better than white mayors, but that's neither here nor there.

Tezler employed 16 people, eight white and eight black.

They were supposed to be his seed group, future coach.

He installed heavy equipment for the new process in an abandoned store near Kings Mountain and for two months these 16 people lived and worked together to master the new process.

After an initial tour of the facility, he gathered them up and asked if they had any questions.

There was hemming and eaves and a limp, and then one of the white workers stepped forward and said, "Well, we've looked at this place, and there's only one place to sleep and eat. There's only one bathroom and one fountain. Is this factory going to be consolidated or what?"

“You are paid twice as much as any other textile worker in the area,” said Tezler. “This is how we do business. Any other questions?”

"No, I don't think so."

Then, two months later, when the headquarters factory opened and hundreds of new workers, both white and black, rushed in for their first tour of the facility, they were greeted by 16 white and black foremen who stood shoulder to shoulder.

When I toured the facility and asked if they had any questions, the same question inevitably arose. "Is this factory consolidated or what?"

Then one of the white foremen stepped forward and said, "You are being paid twice as much as other workers in this industry in this area. This is how we do business.

Any more questions? ”

And there was nothing. In one fell swoop, Mr. Tezler consolidated the textile industry in that region of the South.

It was a feat worthy of Mahatma Gandhi, done with the insight of a lawyer and the idealism of a saint.

Tezler retired from the textile industry in his 80s and enrolled at Wofford University, where he attended courses semester after semester, but his tendency to kiss anything that moved led him to become universally affectionately nicknamed "opi" (meaning "grandfather" in Magyar). Even before I got there, the university library was named after Mr. Tezler, and after I arrived in 1993, the faculty decided to name Mr. Tezler a university professor in their own honor—partly because he had already completed all the courses in the catalog, but mostly because he was by far the smartest of all of us.

It was very reassuring to me that the head of this small Methodist college in northern South Carolina was a Holocaust survivor from Central Europe.

He was clever, sure, but he also had a great sense of humor.

And once, in an interdisciplinary class, we were showing the opening part of Ingmar Bergman's The Seventh Seal.

When the medieval knight Antonius Block returned from a crusader goose chase and arrived on the rocky coast of Sweden, Mr. Tezler sat in the dark with his fellow students only to find that the ghost of death was waiting for him. And I heard Mr. Tezler's trembling voice as Death opened his cloak and embraced the Knight in a sinister embrace. (Laughter) But his greatest passion was music, especially opera.

And when I visited his house for the first time, he gave me the honor of deciding which music to listen to.

And I rejected "Cavalleria Rusticana" in favor of Bela Bartok's "Bluebeard's Castle" to please him.

I loved Bartok's music as much as Mr. Tezler, and he owned almost every recording of Bartok music ever published.

And it was at his house that I first heard Bartok's Piano Concerto No. 3, and I learned from Mr. Tezler that it was composed near Asheville, North Carolina in the latter years of the composer's life.

Knowing that he was dying of leukemia, he dedicated this concerto to his wife Dita, who was a concert pianist.

Then, in the slow second movement marked 'adagio religioso', he incorporated the birdsong he heard outside the window in what he knew would be the last spring. He imagined a future in which he played no part in her.

And apparently, this piece is the last statement to her, the first performed after his death, and through her to the world.

And just as clearly, he says, "It's okay. Everything was so beautiful."

Whenever you hear this I will be there. ”

It was only after Mr. Tezler's death that I learned that Vera Bartok's grave in Hartsdale, New York, had been erected at his expense. "Joe Napot, Bella!"

Shortly before Mr. Tezler himself died at the age of 97, he heard me advocating human injustice.

After I gave a lecture describing history as a whole as a tsunami of human suffering and atrocities, Mr. Tezler came to me and gently denounced me, saying,

And I swore to myself on the spot that if this man with a different idea came to that conclusion, I would not object until he released me from my covenant.

And now that he is dead, I cannot keep my vows.

"Hello, Thunder!"

I thought my connections with the Hungarian leaders were over, but almost immediately I met the Hungarian doctor Francis Lobisek. He was actually a heart surgeon in Charlotte, North Carolina, and was in his late 70s at the time. He was a pioneer of open-heart surgery, tinkering in the garage behind his home and inventing many of the instruments that are standard components of open-heart surgery.

He is also an extraordinary art collector, starting as an intern in Budapest collecting 16th- and 17th-century Dutch art and Hungarian paintings, then moving to Spanish colonial art, Russian icons, and finally Mayan ceramics.

He is the author of seven books, six of which are on Mayan pottery.

It was he who broke the Mayan codex, allowing scholars to relate the Mayan pottery pictograms to the Mayan hieroglyphs.

On our first visit, we toured his home and saw hundreds of museum-quality works. And, stopping in front of the closed door, Dr. Robisek said with obvious pride: "Well, it's a piece of 'Resistance'."

And he opened the door, and we entered a windowless, six-foot-by-six room. There were floor-to-ceiling shelves, all crammed with his collection of Mayan pottery.

Now, I don't know anything about Mayan pottery, but I wanted to cheer myself up as much as possible, so I said, "But Dr. Robisek, this is really dazzling."

"Yes," he said. "That's what the Louvre said.

They wouldn't leave me alone until I let them have the piece, but it wasn't a good piece. (Laughter) Now it occurred to me that I should invite Dr. Robisek to give a lecture at Wofford University, but what else?

- Leonardo da Vinci. And furthermore, I should let him see my oldest trustee. He majored in French history at Yale University nearly 70 years ago and, at 89, still wields power over the world's largest privately owned textile empire.

His name is Roger Milliken. And Mr. Milliken agreed, and Dr. Lobisek agreed. Dr. Lobisek visited and gave a lecture, which was a resounding success.

And then we met at the Presidential Palace with Dr. Robisek on one side and Mr. Milliken on the other.

And it wasn't until that moment as I sat down to dinner that I realized the enormity of the risk I had created. Because uniting these two giants, these two rulers of the universe, was like introducing Godzilla to Mothra on the Tokyo skyline.

If they didn't like each other, we could all be trampled to death.

But they were, they liked each other.

They famously got along until the end of the meal, but then they got into a heated argument.

And what they were debating was whether the second Harry Potter movie was as good as the first. (Laughter.) Milliken said no. Dr. Lobisek disagreed with this.

When I was still trying to come to terms with the idea that these giants, rulers of the universe, were watching Harry Potter movies in their spare time, I thought Mr. Milliken would win the argument by saying, "I haven't read the book, so I just think it's very good."

Dr. Lobisek staggered back in his chair, but quickly gathered his brains and leaned forward. "Yes, yes," Milliken admitted.

"Oh!" said Dr. Lobisek. "I went to the movies alone." (Laughter) (Applause) And I realized that what these two men were revealing in this moment of revelation was the secret of their extraordinary success, each with its own unique characteristics.

And it was precisely in that insatiable curiosity, that unquenchable desire to know. Whatever the subject, whatever the sacrifice, even in a time when the custodians of the Doomsday Clock would bet money that in 2100, just 93 years from now, humanity would be inconceivable.

“Live each day as if it were your last,” said Mahatma Gandhi.

“Learn as if you were to live forever.”

This is what I am passionate about. This is exactly it.

It is this unquenchable, unflinching desire to learn and experience however lofty, however esoteric, however inflammatory it may seem.

This is what defines the imagined future of our fellow Hungarians, Lobicek, Tezler and Bartok, just like us.

I think everyone here is probably the same.

Suffice it to say, "This is our job, and it is no small part."

This is our task. We know it's hard.

"This is our job. It's no small thing. Hello everyone!" (Applause)

Hello.

My name is Urdas.

I'm a photo-based artist from Russia.

I started making ironic self-portraits about six years ago to expose many stereotypes about nationality, gender and social issues. [“I am Russian. I sell drugs, guns and porn to children!”] [“Vodka = water. ["Marry me, I need a visa."] Today I'm still performing in front of the camera and trying to be as brave as Wonder Woman.

I focus on balancing meaningful messages, aesthetics, beauty, composition, irony, artifacts, and more.

Today I want to tell you about my project called Desperate Romantics.

These are my crafts, or Pre-Raphaelite Brotherhood British paintings from the mid-19th century.

I used this painting to give it a new, contemporary meaning to talk about the issues that surround me in Russia, capturing people who are not models but have interesting stories.

This boy is a professional dancer, only 12 years old, but in middle school he hides his dance classes, puts on a mask of brutality, and tries to unite with his classmates like stormtroopers without personality.

However, this boy has goals and dreams, but hides them for social acceptance. Because it's not easy to be different, especially in Russia.

The interpretation of the following portrait is figurative.

This is Nikita, a security guard in a St. Petersburg bar.

He likes to quote the Hulk from the movie and say, "You won't like me when I'm mad," but I've never seen him mad.

He hides his sensitivity and romantic side. Because in Russia it's not cool to be romantic among men, but it's cool to look like an aggressive giantess surrounded by women.

(laughter) Sometimes, in my projects, I took a picture and gave it a new meaning, a new temptation.

Sometimes I compared facial features and wordplay, such as irony, iron man, iron man.

(laughter) Through my craft, I bring into the conversation the social issues that surround me in Russia.

An interesting fact about marriage in Russia is that most 18- and 19-year-old girls are already ready for marriage and dream of getting married.

Since childhood, we have been taught that a successful marriage means a successful life, so most girls struggle to find a good husband.

And what about me?

I am 27 years old.

For Russian society, I am an old maid, hopeless to marry.

That's why you see me in my Mexican fighter mask, in my wedding dress, frantic in my garden.

But remember, it's the sarcasm that's important, and this is actually meant to motivate girls to fight for their goals and dreams and change stereotypes.

Take courage. Ironically, it helps.

Make it funny and create magic.

(applause)

I am very honored to be here with all of you.

The good news is that I am well aware of my responsibility to get you out of here, as I am the only one standing between you and the bar.

(Laughter) And the good news is that I don't have a prepared speech, but I do have a box of slides.

I have some pictures that represent my life and what I do for a living.

I've learned from experience that people remember pictures long after they've forgotten the words, so I hope you'll remember these pictures for a few minutes.

The whole story begins with me as a high school student in Pittsburgh, Pennsylvania. It was in a tough area where everyone had given up for dead.

Then on Wednesday afternoon, I was walking down the halls of my high school, minding my own errands. And an artist who made a large old pottery vessel was teaching. I happened to be looking through the door of the art room. If you've ever seen clay come to life, it's magic. And I had never seen anything like it in my life.

So I went into the art room and said, "What is that?"

And he said, "Pottery. So who are you?"

And I said, "I'm Bill Strickland, and I want you to tell me that."

And he said, "Well then, ask your homeroom teacher to sign a piece of paper saying that you can come here, and I will teach you."

So I cut all classes for the remaining two years of high school.

(Laughter) But I was prepared to take a class on cutting the pottery that I made in my teacher's class (Laughter) And they gave me a passing grade.

This is how I graduated from high school.

Then Mr. Ross said, ``You are too smart to die, and I don't want to go against your conscience, so I will quit this school and take you with me.''

And he drove me to the University of Pittsburgh, where I filled out my application and went on probation.

Now, I am on the board of trustees of the university, and at my inauguration, I said: "I'm a guy from my neighborhood who entered this university on probation.

Don't give up on your poor children, because you never know what life will bring to them. ”

In the next few minutes, I will show you a facility I built in one of the toughest neighborhoods in Pittsburgh with the highest crime rate.

One is called the Bidwell Training Center. A vocational school for former steel workers, single parents and welfare mothers.

Remember when we were making steel in Pittsburgh?

Well, we don't make steel anymore, so the people who used to make steel are having a very hard time.

And I rebuild them and give them new life.

The Manchester Artisans Guild is named after my neighborhood.

I was adopted by the bishop of the Episcopal Diocese during the riots, and he donated the tenement. And in that tenement I started the Manchester Craftsmen's Guild. And I learned that wherever there were Episcopalians, there was money just around the corner.

(Laughter.) And the bishop adopted me as his own child.

And last year, I spoke at his memorial service and wished him the best of luck in his life.

I hired a student of architect Frank Lloyd Wright and asked him to build a world-class center in the worst neighborhood of Pittsburgh.

My building was a scale model of the Pittsburgh airport.

And when you come to Pittsburgh, and you're invited, you're going to dive into the bombed-out version of my building.

That's the building.

It was built in a harsh area where people were abandoned for dead.

My take is that if you want to be involved in the lives of people who have given up, you need to look like a solution, not a problem.

As you can see, there is a fountain in the courtyard.

The reason there is a fountain in the courtyard is because I wanted a fountain and had a checkbook so I bought one and put it there.

(Laughter) And now I'm speaking at conferences like TED, and I've been appointed to the board of the Carnegie Museum.

At the reception in the courtyard, I noticed that there was a fountain because we believe museum-goers need a fountain.

Well, I think welfare mothers and at-risk children and former steel workers should be given a spring of life.

So when spring comes, the first thing you see at my center is the water that greets you. Water is life, the water of human potential. And it sets attitudes and expectations for how you will feel about people before you give your speech.

So I built this building out of that fountain.

As you can see, there is world class art and I have raised money so it's all to my liking.

(Laughter) I said to my son, "When you collect the money, I'll put your tastes on the wall."

We have quilts, we have clay, we have calligraphy, wherever you look, something beautiful is looking back at you, it's intentional.

it's intentional.

In my opinion, such a world can save the souls of the poor.

We also built a boardroom and hired a Japanese furniture maker from Kyoto to make 60 pieces of furniture for the building.

Since then, we have taken him on his own to start his own business.

He makes a lot of money making custom furniture for the wealthy.

And I prepared 60 of them for school. Welfare mothers, ex-steel workers and single parents felt it was worth coming to a school with handcrafted furniture to greet them every day.

Because long before you give a speech, you set your tone and attitude about how you feel about people.

The hallways are also decorated with flowers, but they are not plastic.

They are real and in my building every day.

And now, after I gave so many speeches, so many high school principals came to see me and said, "Mr. Strickland, what a wonderful story, what a wonderful school."

And we were particularly moved by the flowers and curious how they got there. ”

I said, "I got in the car, went to the greenhouse, bought it, took it home and put it there."

You don't need a special committee or study group to buy flowers for your children.

What you should know is that both children and adults have the right to blossom in life.

The cost is incidental, but the gesture is huge.

And in my building, full of sunshine and flowers, we believe in hope and human potential.

It happened to be Christmas time.

The next thing you see is a million dollar kitchen built by Heinz. Ever heard of Heinz?

They did well in the ketchup business.

And it so happened that I was familiar with the company because John Heinz, a U.S. Senator who died tragically in a plane crash, had heard of my desire to build a new building. Because I had a cardboard box, put it in a garbage bag, and walked all over Pittsburgh to raise funds for this place.

And he called me into his office -- it's like going to see the Wizard of Oz (laughs) -- and John Heinz had $600 million, and I had about 60 cents at the time.

And he said, "But we hear of you.

We hear you've been working with children and former steel workers and want to support your desire to build a new building.

Add a culinary program to your program and you will have a great service. ”

Because at that time we were building a trading program.

"That will help us achieve our affirmative action goals for Heinz," he said.

I said, "Senator, I'm reluctant to get into an area I'm not familiar with, but if you support my school, I promise to build it and come back in a few years to consider the program you want."

And Senator Heinz sat very quietly and said, "So if I told you I would give you a million dollars, how would you react?"

I said, "Senator, it looks like we're getting into the food training business."

(Laughter.) And John Heinz gave me a million dollars.

And most importantly, he lent me the head of research at Heinz.

And we've borrowed curriculum from the Culinary Institute of America (the Harvard of culinary schools for them) to create a gourmet cook program for welfare mothers in this million-dollar kitchen in the middle of downtown.

And we never looked back.

Now I want to show you some of the food that welfare mothers are cooking in this million dollar kitchen.

That happens to be our cafeteria queue.

It's puff pastry day. why?

The students made the pie crust, which the school ate every day.

But the concept was that we wanted to remove the stigma from food.

Good food is not for the rich. Good food is for everyone on the planet and there is no reason why we can't all eat it.

So my school subsidizes a gourmet lunch program for inner-city welfare mothers. Because it turns out that lunch is good for your stomach, but it's also good for your brain.

Because I wanted to show them in their daily lives that there is value in this place that I call the Center.

We have a black kid and a white kid who sit together. And what we discovered is that creating world-class environments can solve racial problems. Because people tend to show you world class behavior when you treat them that way.

This is a meal example that a welfare mom is practicing after completing half a year of training.

No sophistication, no dignity, no dignity, no history.

What we have discovered is that the only problem with the poor is having no money, which happens to be a curable condition.

How people think about people often determines their behavior.

This was done by a student after seven months in the program. Conducted by a very good young lady who was taught by a pastry chef.

I actually ate 7 of these baskets and they were delicious.

(Laughter) No calories.

That's our dining room.

It looks like your average high school cafeteria in your average American town.

But this is my take on how students should be treated, especially after they have been pushed aside.

We train pharmaceutical technicians for the pharmacy industry, medical technicians for the medical industry, and chemical technicians for companies such as Bayer, Calgon Carbon, Fisher Scientific and Exxon.

And if you come to my center in Pittsburgh, and you are invited, ten months after you enroll in the program, you will see welfare mothers doing analytical chemistry on logarithmic calculators.

There is absolutely no reason why poor people can't learn world-class technology.

What we have discovered is that we must give them flowers and sunshine and food and anticipation and Harvey's music and we can always cure spiritual cancer.

We provide training for corporate travel agencies for the travel industry.

We also teach people how to read.

The red-striped kid was in the program two years ago and is now an instructor.

Some children have high school diplomas but are illiterate.

So you have to ask yourself. In the 21st century, how is it possible to get kids out of school who can't read the diploma they're holding?

The reason is that the system pays off for the children who vomit on the other side, not the children who read the book.

I was able to accept these children and proved fit at 20 weeks. You can get a qualification equivalent to high school.

Not a big deal.

It's our library with a lot of handmade furniture.

This is the art program I started in 1968.

Remember I'm a black man in the '60s whose life was saved by pottery.

Well, I decided to go out and recreate my experience with other kids in the neighborhood. The theory is that if you give children flowers, give them food, give them sun and enthusiasm, they can be brought back to life in no time.

I have 400 kids from Pittsburgh Public Schools coming to me every day for their arts education.

And these are the kids who have fallen out of public schools.

And last year, I sent 88 percent of those kids to college, and the 15-year average is over 80 percent.

We made an interesting discovery. There's nothing wrong with children who can't be cured with love, sunshine, food, enthusiasm and Herbie's music.

Thanks to that, I won the big old shield of best in education.

I beat all of my PhDs because I thought treating kids as humans made them more likely to act that way.

And it remains a mystery to me why such a policy cannot be introduced in every school, in every city, in every town.

Let me show you what these guys are doing.

We also do pottery, photography and computer image processing.

And they are all children with no artistic ability, no talent, no imagination. And we have the world's greatest artists - Gordon Parks was there, Chester Higgins was there - and what we've learned is that children become like those who teach them.

In fact, I brought a mosaic artist from the Vatican. She was an African-American woman who had studied the old Vatican mosaic techniques and was shown what they had done with this piece.

They were the children who were left out of public school by the rest of the world. With love, sunshine, food, good music and confidence, they can do it.

We teach photography.

These are some of the children's creations.

The boy won a four-year scholarship for the power of photography.

Here is our gallery.

We have world class galleries. We designed this because we believe poor children need world class galleries.

We've smoked salmon at art exhibition openings, prepared formal printed invitations, and even figured out how to get their parents to come.

Fifteen years ago, I couldn't afford to buy a parent, so I hired Jesus a very successful man.

He was dragging men out of bars and saving their lives for the Lord.

And I said, 'Bill, I want to hire you.

You have to tone down the Jesus thing a bit, but keep the enthusiasm.

(Laughter.) (Applause.) You can't bring these parents to school. ”

He said, "I will send them to school."

So he jumped in a van and went to Mr. Jones' house and said, "Mr Jones, I knew you wanted to come to the children's art opening, but you probably couldn't make it.

So I came to pick you up in the car. ”

And he had 10 parents, and 20 more.

At the last show we went to, 200 parents showed up and none of them picked us up.

Because now it's become socially unacceptable not to show up to support your children at the Manchester Craftsmen's Union because people think you're a bad parent.

And there is no statistical difference between white and black parents.

Mothers go to every town, every city where their children are celebrated.

This gallery is really great and I would love to see it.

And by the time I get these kids out of high school, they'll have four shows on their resumes before they apply to college.

Before we can change people's behavior, we need to change the way people see themselves.

And it's been working very well to this day.

I also pasted another room in the building and would like to show it to you.

This is brand new.

This slide was completed in time for the TED conference.

I did this little slideshow in a place called Silicon Valley and it worked.

Then a woman came out of the audience and said, 'Great story, I was very impressed with your presentation.

My only criticism is that the computer is a bit dated. ”

And I said, "So what do you do for a living?"

She said, "Well, I work for a company called Hewlett-Packard."

So I said, "You're in the computer business, aren't you?"

She said, "Yes, sir."

And I said, "There is a simple solution to that problem."

We are very pleased to announce that HP and Steelcase, a furniture company, have selected us as their demonstration model for all technology and all furniture for the US.

And that is the room where the relationship starts.

Finished just in time, this is like the world debut of our digital imaging center.

(Applause) (Music) We only have two slides left, but this is where things get interesting.

So I want you to listen for a few more minutes. Then you'll know why he's there and I'm here.

In 1986, while the building was under construction, I decided to have a music hall at the north end of it.

And then a guy named Dizzy Gillespie showed up to play there. Because he knew the guy here, Marty Ashby.

And on Wednesday afternoon, when I stood on that stage with Dizzy Gillespie at soundcheck, I said, "Dizzy, why would you come to a black-run center in the middle of an industrial park with a high crime rate and a bad reputation in the music world?"

He said, "I heard you built a center, but I didn't believe you did, because I wanted to see it with my own eyes.

So, I understand, so I would like to give you a present. ”

I said, "You are a gift."

He said, "No, sir. You are a gift.

And we give permission to record concerts and provide music. And if you choose to sell it, you'll have to sign a contract that the money will come back and help the school. ”

And I recorded Dizzy. And before he passed away a year later, I told a fellow named McCoy Tyner what we were doing.

And he appeared and said, "Vertigo is talking about you all over the country, dude, I want to help you."

Then a man named Wynton Marsalis appeared.

Then a bassist named Ray Brown, a fellow named Stanley Turrentine, a piano player named Herbie Hancock, a band called the Count Basie Orchestra, a fellow named Tito Puente, a man named Gary Burton, Shirley Horn, Betty Carter, Dakota Staton and Nancy Wilson all came to this center in the middle of an industrial park to fill the inner-city audience.

And with their permission, I have now amassed 600 recordings of the world's greatest artists, including the late Joe Williams, but I am very happy to tell you that his last recording was before my school.

Then Joe Williams came up to me, put his hand on my shoulder and said, 'God chose you to do this job.

And I want my music to be with you. ”

And it worked.

When Basie's band came, they were so excited about the school that they voted to give me the rights to the music.

I recorded it and won a Grammy Award.

And stupidly, I didn't think I would win, so I didn't go to the ceremony.

Well, we won, and our name literally lit up Madison Square Garden.

Then the United Nations Jazz Orchestra stopped by and we recorded them and were nominated for a Grammy two years in a row.

So we are one of the hottest young jazz recording studios in the United States, in the middle of a high crime downtown area (laughs).

It was full of Republicans.

(Laughter) (Applause) If you had dropped a bomb in that room, all of Pennsylvania's money would have been there, and it would have wiped it all out.

That includes my mother and father who lived long enough to see their children build that building.

And then, like I said, there's Dizzy. he was there

And there he was, Tito Puente.

Pat Metheny and Jim Hall were there and we recorded together.

That was our first recording studio, the Broom Closet.

We put the mop in the hallway, redesigned it, and scored our first Grammy there.

This is our new facility, all using video technology.

It's a room built for a woman named Nancy Wilson who recorded that album at our school last Christmas.

And if you happen to see Oprah Winfrey on Christmas Day, he was there and Nancy sang an excerpt from this album, the rights of which she donated to our school.

And I can now say with certainty that an appearance on Oprah Winfrey would sell 10,000 CDs.

(laughter) We're currently number four on the Billboard charts behind Tony Bennett.

And I think we'll be fine.

It was next to my building because it burned down in the riots. So I had another cardboard box made and went out into the street again.

That's the building, the model, with the high-tech greenhouse on the right and the medical technology building in the middle.

And I am very happy to hear that the building has been completed.

There are also many anchor tenants at $20 a foot, three times the price of downtown.

And there is a fountain there.

(Laughter) Every building has a fountain.

The University of Pittsburgh Medical Center is a nuclear tenant, occupying half of the building and currently training medical technicians through all of its systems.

Mellon Bank is also a tenant.

And I love them because they pay the rent on time.

(Laughter) And because of this association, I am now on the board of directors of Mellon Financial Corporation, which bought Dreyfus.

And this is under construction at the time we speak.

Magnify this photo by 4 to see the greenhouse, which is scheduled to open in October of this year. Because we plan to grow these flowers in the middle of the city.

And I plan to have high school students grow Phalaenopsis orchids in the middle of the city.

And we shook hands with one of the major retail grocery stores to sell our orchids in all 240 stores in 6 states.

And our partner is the Hispanic Zuma Canyon Orchid in Malibu, CA.

So Hispanics and blacks decided to form a partnership to grow hi-tech orchids in the middle of the city.

And when I told the U.S. Senator that if we could find this money, we could very well be on the left column of the Wall Street Journal, and he readily agreed.

We were able to raise funds and will open in the fall.

And you should come and see it - it's going to be a hell of a story.

And this is what I want to do when I grow up.

(Laughter) The brown building is the building you're looking at. I will tell you where I made a big mistake.

I had the chance to buy this entire industrial park less than 1,000 feet from the river for $4 million, but I didn't.

And I built the first building, and what do you think happened?

I appreciated the property value exceeding everyone's expectations, but the park owner declined to pay me $8 million last year and said, ``Mr.

thank you very much. ”

The moral of the story is that you should be ready to act on your dreams in case they do come true.

And finally there is this photo.

This is a place called San Francisco.

The reason this picture is here is when I did this slide show at a big economic summit a few years ago, I had a fellow in the audience who approached me.

He said, "Well, that's a great story.

I want one of those. ”

I said, "I am very honored. What do you do for a living?"

He says, "I run the city of San Francisco.

My name is Willie Brown. ”

So I kind of accepted the compliments and praises and got them out of my head.

And that weekend, when I got home, Herbie Hancock was playing center that night—I met him for the first time.

And he came in and said, "What is this?"

And I said, "Harvey, this is my concept for a training center for the poor."

And he said, "God as my witness, I've had this center in my heart for 25 years, and you built it.

And now I really want to make it. ”

I said, "So where are you going to build this?"

He said "San Francisco".

(Laughter.) As a matter of fact, he knew Willie Brown, and Willie Brown, Harvey, and I had dinner four years ago and started drawing that centerpiece on the tablecloth.

And Willie Brown said, "I'm the mayor of San Francisco, so I'm going to build this as a legacy for the poor in this city."

And he gave me five acres of land on the San Francisco Bay, and we hired an architect, hired a general contractor, had Harvey on the board, and friends from HP, friends from Steelcase, friends from Cisco, and friends from Wells Fargo and Genentech.

Along the way, I met a really short guy at a slide show in Silicon Valley.

Afterwards he came to me and said, 'That's a great story.

I want to help you "

And I said, "Well then, thank you very much.

what do you do for a living? "

He said, "Well, I started a company called eBay."

I was like, 'Well, that's great.

Thank you very much, if you give me a card, let's talk sometime. ”

I hadn't heard of eBay from the water jar on the piano, but I was willing to go back and talk to one of the center's tech kids.

I said, "Hey, what is eBay?"

"That's the e-commerce network," he said.

I said, "Well, I met the guy who made that thing, and he left me a card."

So I called him up and said, "Mr. Squall, I've come to understand more about who you are (laughs) and I want to be your friend."

(Laughter) So Jeff and I became friends and he organized a team of people and we're going to build this center.

And I went to a district called Bayview Hunters Point and said, "The mayor has sent me here to work with you. I want to build a center with you, but if you don't want it, I'm not going to build you anything."

And all I have is the box with the slides. ”

So I stood in front of 200 people on a summer night who were very angry and very disappointed and the air conditioner broke and it was 100 degrees outside and I started showing them these pictures.

And after about 10 photos, everyone calmed down.

And I went ahead and said, "What do you think?"

Then a woman stood up in the back of the room and said, "In thirty-five years of living in this Godforsaken place, you are the only one who has come here and treated us with dignity.

I'll go with you, hey. ”

And she flipped the audience with a pin.

And I promised these people that I was going to build this, and we were going to build it all right.

And this year we hope to get to the ground as the first replica of the center in Pittsburgh.

But on the way I met a guy named Quincy Jones and showed him a box with slides.

And Quincy said, "I want to help you.

Let's do it in LA too. ”

So he gathered a group of people.

And just like Herbie and his music, I fell in love with him.

Quincy said, "Where did the idea for a center like this come from?"

And I said, 'It came from your music, dude.

Because when I was 16 years old when I was in pottery class, Mr. Ross used to bring your albums, but at that time the world was pitch black and your music gave me sunshine. ”

So I said, 'If you can follow that music, go out and get some sunshine and you'll be fine.

If it's not true how did I get here? ”

I want everyone to know that I believe this world is a place worth living in.

i believe in you.

I believe in your hopes and dreams, I believe in your intelligence, and I believe in your enthusiasm.

And I'm tired of living like this, and I'm going to towns and people standing in corners with holes where their eyes used to be, and their minds are broken.

Unless we can turn this situation around, we cannot survive as a country.

In Pennsylvania it costs $60,000 to put people in jail, and most of it is similar to mine.

It will cost $40,000 to build the University of Pittsburgh Medical School.

It's $20,000 cheaper to build a medical school than to keep people in jail.

Do the math. It never works.

I'm counting on you guys, and I'm counting on people like Harvey, Quincy, Hackett, Richard, and very decent people who still believe in something.

And I want to do this in every city, every town in my lifetime.

And I don't think I'm crazy.

I think we can solve this problem and we can build these all over the country for less money than we spend on prisons.

And we believe we can turn this whole story into a story of blessing and hope.

In my business, it's a very difficult task.

Always fighting upstream like salmon, never short of money and needing too many things, I tend to have occupational depression that comes with work.

So over time I found a solution to my depression. Make friends in any town and you will never be lonely.

And my wish is that I made some achievements here tonight.

And thank you for listening to me.

(applause)

Hans Rosling: I will ask three multiple-choice questions.

Please use this device. Please use this device to answer.

The first question is how has the number of annual deaths from natural disasters changed over the last century?

Has the world as a whole more than doubled, has it remained almost the same, or has it halved?

Answer A, B, or C.

I found many answers. This is much faster than doing it at university.

they are very slow They think and think and keep thinking.

Oh very, very good.

Then move on to the next question.

So how long have 30-year-old women in the world been in school? Seven years, five years, three years?

A, B, or C? Please answer.

Then move on to the next question.

How has the share of the world's people living in extreme poverty changed over the past 20 years?

Extreme Poverty - Not having enough food for the day.

Has it almost doubled, stayed about the same, or halved?

A, B or C?

Well, I will answer.

As you can see, the number of deaths from natural disasters worldwide can be found in this graph from 1900 to 2000.

In 1900, about 500,000 people died each year from droughts and other natural disasters, including floods, earthquakes and volcanic eruptions.

And how has it changed?

Gapminder asked the Swedish public.

they replied:

The Swedish people replied: 50% said it had doubled, 38% said it was about the same, and 12% said it had halved.

This is the best data available from disaster researchers, but it went up and down, lasted until World War II, then started to go down, continued to go down, and fell by more than half.

As the decades have passed, the world has become much more capable of protecting people from this problem.

So only 12 percent of Swedes know this.

So I went to the zoo and asked the chimpanzees.

(Laughter) (Applause) Chimpanzees don't watch the evening news, so the Swede's answer is worse than random, because chimpanzees choose at random.

Well, what did you do?

That is you.

You were beaten by a chimpanzee.

(Laughs) But it was close.

You were three times better than the Swedes, but that's not enough.

Don't compare yourself to the Swedes.

You must have higher aspirations in the world.

Let's see the next answer here. A woman at school.

Here you can see that the male has been going on for 8 years.

How long have women been in school?

Well, when I asked a Swede like this, I got a hint.

The correct answer is probably the answer chosen by the fewest Swedes.

(Laughter) Let's see. here we come

Yes, yes, women have almost caught up.

This is an American citizen.

And this is you I'm here.

ah.

Congratulations, you're twice as good as the Swedes, but you don't need me — so why not?

I'm tired of being stopped when I go to school.

But in most parts of the world, in most countries where most people live, girls today attend school to a greater or lesser extent than boys.

That doesn't mean gender equality is achieved, at all.

Schooling is in today's world, although they are still trapped in terrible restrictions.

Now we miss the majority.

When answering, base your answer on the worst part. And you're right there, but you're missing most of it.

What about poverty?

Clearly, poverty here has almost halved, but in the United States, when we asked the public, only 5 percent got it right.

you also?

Oh, I almost reached the chimpanzee.

(Laughter.) (Applause.) That little one, just a few of you!

There should be some preconceived notions.

And many in wealthy countries think, oh, we'll never end extreme poverty.

They don't even know what happened, so of course they think so.

To think about the future, we must first know about the present.

These questions are some of the first questions in the pilot phase of the Gapminder Foundation Ignorance Project we run, which was started last year by my boss and my son, Ola Rosling. (Laughter) He's a co-founder and director, and Ora told me that when fighting devastating ignorance, we have to be more methodical.

Pilots have already made this clear. So many citizens score worse than random. So we have to think about our preconceptions. One of the main preconceptions concerns global income distribution.

Look at this. It was like this in 1975.

This is the number of people on each income from $1 a day — (applause) You see, there was one hump here at about $1 a day, and then one hump somewhere between $10 and $100.

There were two groups in the world.

It was a camel world, like a camel with two humps, one for the poor and one for the rich, with a few humps in between.

But look how this has changed. As I move forward, what has changed is that the world's population is growing and the humps are beginning to merge.

The lower hump merged with the upper hump, and the camel died, creating a dromedary world with only one hump.

Poverty rates have decreased.

Still, it's amazing that so many people still live in extreme poverty.

There's still nearly a billion people in this group out there, but it can end now.

The challenge we have now is to get out there and understand where the majority is, and that is very clearly shown in this question.

We asked what percentage of the world's one-year-olds are getting basic vaccines against measles and other things we've had for years. 20, 50 or 80 percent?

Well, here's the answer for Americans and Swedes.

Look at the Swedish results. I know what is correct.

(Laughter) Who the hell is that country's professor of global health?

That's right, it's me. that's me

(Laughs) This is quite difficult. Very difficult.

(Applause.) But Ola's approach to actually measuring what we know made headlines, and CNN published these results on the web, where questions were asked, millions answered, and I think about 2,000 comments. This was one of the comments.

"I don't think anyone in the media has passed the test," he said.

So Ola said to me, "Take these devices with you."

Invited to media conference.

Give it to them and assess what the media knows. ”

And, ladies and gentlemen, the unofficial results of the meeting with the US media have been announced for the first time.

And more recently from the media of the European Union.

(Laughter.) As you know, the problem is not that people don't read or listen to the media.

The problem is that the media don't know who they are.

What do we do about this, Ola?

Any ideas?

(Applause) Ola Rosling: Yes, I have an idea, but first, I'm so sorry you were beaten by a chimpanzee.

Luckily, we can actually comfort you by showing you why it's not your fault.

Now, let me give you some tips on how to defeat chimpanzees in the future.

That's basically what I'm going to do.

But first let us consider why we are so ignorant. It all starts here.

It's Hadiksbarr. A city in northern Sweden.

It's an area where I grew up, and it's also an area with big problems.

In fact, the exact same problem exists everywhere you grew up.

It was not representative. have understood?

It gave me a very biased view of how life is on this planet.

So this is the first piece of the puzzle of ignorance.

We have our own personal prejudices.

We get different experiences from the community and the people we meet, plus school starts and the next challenge.

Well, I like school, but teachers tend to teach outdated worldviews. Because I learned something when I went to school. And now he explains this world to his students without malice. Of course, printed books are obsolete in a changing world.

And they have absolutely no habit of keeping their materials up to date.

That's what we focus on.

So add these old facts to our personal biases.

What happens next is news, okay?

Good journalists know how to pick stories that make headlines, and people will read them because they are sensational.

Unusual events are more interesting, aren't they?

And they are exaggerated, especially those that we fear.

The shark attack on a Swede will make headlines in Sweden for weeks.

It was therefore very difficult to escape from these three biased sources.

They kind of attack us, feed our minds with a lot of strange ideas, and put on top of that what makes us human: human intuition.

Evolutionarily good.

This allowed us to generalize and reach conclusions very quickly.

It gives us the illusion of confidence to exaggerate our fears, to seek causality where there is none, and to believe that we are above-average and above-average car drivers.

To that question, everyone said, "Yeah, I'm a better driver."

Well, evolutionarily this was good, but when it comes to worldview, that's exactly why it's upside down.

The increasing trend is on the contrary decreasing, and in this case the chimpanzee uses our intuition against us and it becomes our weakness instead of our strength.

That was supposed to be our strength, wasn't it?

So how do we solve such problems?

First you have to measure it, then you have to treat it.

So by measuring it, we can understand what the pattern of ignorance is.

We started piloting it last year, and now I'm sure you'll run into a lot of ignorance around the world. And the idea is to really scale to any area or aspect of global development: climate, endangered species, human rights, gender equality, energy, finance.

There are facts in all different fields and there are organizations trying to spread awareness about these facts.

So I actually started reaching out to organizations like WWF, Amnesty International, and UNICEF and asking them what their favorite facts the public didn't know?

Well, let's collect these facts.

Imagine a long list with say 250 facts.

Then poll the public and see where the worst scores are.

So you get a short list with terrible results, like some of Hans' examples, but I have no problem finding this kind of terrible results.

So what do we do with this little candidate list?

We convert it into a certificate of knowledge, a certificate of global knowledge. Any large organization, school, university or news agency can use it to prove themselves world-class.

Basically, we don't hire people who perform like chimpanzees.

Of course you shouldn't.

So maybe 10 years from now, if this project succeeds, you'll be sitting in an interview filling out this crazy world knowledge.

Now let's look at some practical tricks.

How can we succeed?

Of course, you can also sit up late at night and read all these reports and memorize all the facts.

In reality that will never happen.

Even Hans doesn't think that will happen.

People don't have time for that.

People like shortcuts, and here are the shortcuts.

We need to turn our intuition into power again.

It should be generalizable.

So here are some tricks to turn misconceptions into rules of thumb.

Let's start with the first misconception.

This is very widespread.

everything is getting worse.

Did you hear that? You yourself thought so.

Another idea is that most things get better.

So you're sitting with a question in front of you, but you're not sure. I have to guess "improve".

have understood? Don't go wrong.

Doing so will help you get a better score on the test.

(Applause) That was the first one.

There is a gap between rich and poor, and the gap is widening.

It's gross inequality.

Sure, it's an unequal world, but when you look at the data, it's one bump.

have understood? If you're not sure, choose 'most people in the middle'.

It helps you come up with the correct answer.

Now, the next preconception is that a country and its people must first be very wealthy in order to be socially developed and prepared for natural disasters like schoolgirls.

No no no. That's wrong.

Look, the big hump in the middle already has a girl in school.

So if you're not sure, choose something like electricity or school girls where "the majority already have this".

These are just rules of thumb, so of course they won't apply to everyone, but in general:

Let's see the last.

If anything, yes this is a good one, but sharks are dangerous.

No, that's right. But they are not that important in world statistics, that's what I mean.

Actually, I'm very scared of sharks.

So as soon as you see a question about what I'm feeling, such as what I'm afraid of, earthquakes, other religions, terrorists or sharks, consider me exaggerating the problem.

It's a rule of thumb.

Of course, it can be dangerous and it can be wonderful.

Very few sharks kill people. You should think so.

Using these four rules of thumb, you could probably answer better than a chimpanzee. Because chimpanzees cannot do this.

They cannot generalize this kind of rule.

And hopefully we can turn your world around and beat the chimpanzees. have understood?

(Applause) That's a systematic approach.

Now the question is, is this important?

Yes, it is important to understand poverty, extreme poverty and how to fight it, and how to get girls into school.

You'll understand it when you actually see it succeed.

But does it matter to others who care about wealth on this scale?

For the same reason, it is very important.

If you have a world view based on the facts of the present, you may have a chance to understand what will happen in the future.

Back to those two humps in 1975.

At that time I was born and chose the West.

That is the current EU countries and North America.

Next, compare how wealthy you are with other countries in the West.

They are the people who can afford to fly abroad for vacation.

In 1975, only 30% of people lived outside the EU and North America.

But this has changed, okay?

First, let's take a look at what has changed so far in 2014.

It's 50/50 today.

As of today, the dominance of the West is over.

that's nice. So what happens next?

Can you see the big hump? Did you see how it worked?

I did a little experiment. I went to the website of the IMF, the International Monetary Fund.

They have projections of GDP per capita for the next five years.

Therefore, we can apply this to the future five years from now, assuming that countries have the same income inequality.

I did that too, but went further.

We used that 5 years at the same rate for the next 20 years to experiment with what actually happened.

Let's go to the future.

By 2020, the remaining 57%.

By 2025, it will be 63%.

2030, 68. And by 2035, the West will lose ground in the wealthy consumer market.

These are just projections of future GDP per capita.

73% of wealthy consumers will live outside of North America and Europe.

Yes, I think it's a good idea for companies to use this certification to ensure fact-based decisions in the future.

thank you very much.

(Applause) Bruno Giussani: Hans and Ola Rosling!

hello everyone. So my name is Mac.

My job is to lie to my children, but it's an honest lie.

I write children's books, and in the words of Pablo Picasso, "Everyone knows that art is not true.

Art is the lie that makes us aware of the truth, or at least the truth that we are given to understand.

An artist must know how to convince others that his lies are true. ”

When I first heard it as a kid, I loved it, but I had no idea what it meant.

(Laughter.) So I thought, what I'm here to tell you today is about truth and lies, fiction and reality.

So how do we untangle this tangled bundle of sentences?

And I said I have PowerPoint. Let's draw a Venn diagram.

["Truth. Lie."] (Laughter) There you go, Dawn.

We have truths and lies, a little space in the middle of it, an edge.

That limit space, that is art.

have understood. Venn diagram. (Laughter) (Applause) But that doesn't really help much either.

It was working with children that made me understand that word and what art, at least fictional art, is.

I used to be a summer camp counselor.

I used to do it a lot during summer vacations in college, and I really liked it.

It was a sports summer camp for 4 to 6 year olds.

I was in charge of the 4 year old and it was great. Because 4 year olds can't play sports and neither can I.

(laughs) I play sports at a 4-year-old level. And what happens is, the kids run dribbling around the cone, they get hot, they sit under the tree where I was already sitting — (laughs) — and I just make up stories and tell them, and I tell them stories of my life.

I told them that on weekends I would go home and spy for the Queen of England.

And soon other kids who weren't even in my kid's group were coming up to me and saying, "You're Mac Burnett, aren't you?"

You are a spy for the Queen of England. ”

And I've waited my whole life for a stranger to come along and ask that question.

In my imagination, they were slender Russian women, but you know, four-year-olds taking in everything you can get in Berkeley, California.

And I realized that the stories I was telling were real in this way familiar to me and in a really exciting way.

The high point for me, which I will never forget, was a little girl named Riley. Since she was small, she always took out her lunch and threw out the fruit every day.

She just brought fruit and her mother stuffed her with melons every day and she just threw it in the ivy and then she was eating fruit snacks and pudding cups and I said, 'Riley, you can't do that, you have to eat fruit.'

and she said "why?"

And I used to think, "Throw the fruit into the ivy and it will soon grow into a melon." I think that's why I ended up telling stories to my kids and not being their nutritionist.

So Riley said, 'That will never happen.

It won't happen. ”

So on the last day of camp, I woke up early, bought a big cantaloupe from the grocery store, and hid it in the ivy. And at lunchtime he said, "Riley, why don't you go over there and see what you've done?"

And — (laughter) — she trudged through the ivy, and her eyes were so wide open, she pointed at this melon, which was bigger than her head, and then all the kids ran there and rushed around her, and one of the kids said, 'Hey, why does this have a sticker on it?

(Laughter) And I said, 'That's why I'm telling you not to throw the stickers in the ivy.

Throw it in the trash. Doing so destroys nature. ”

And Riley carried it around all day and was very proud of it.

Riley knew the melon didn't grow in seven days, but he knew it did. It's a strange place, but it's not just for kids.

it can be anything. Art takes us to that place.

She was right in the middle, a place that could be called art and fiction.

Let's call it wonder.

It is, as Coleridge puts it, the spontaneous cessation of disbelief or poetic faith, the moment when a story, no matter how bizarre, has a true resemblance and can be believed afterward.

Children aren't the only ones who can get there.

Adults can too, and reading a book will get you there.

So even if nothing happened, two days later people would be on a Bloomsday walking tour and landing in Dublin to see everything that happened in Ulysses.

Or someone goes to London and visits Baker Street to see Sherlock Holmes' apartment, even though the number 221B is actually just a number painted on a building that never had that address.

We know these characters aren't real, but we have real feelings about them and we can do that.

We know these characters aren't real, but we also know they're real.

Children can get there much easier than adults, which is why I love writing for children.

I think children are the best readers for serious literary novels.

As a kid, I was obsessed with Secret Door novels, like The Chronicles of Narnia, where you open your wardrobe and go to a magical land.

And I was convinced that the secret door really existed and tried to find it and go through it.

I wanted to live and dive into that fictional world. I mean, I always just opened people's closet doors. (Laughter) I just checked my mom's boyfriend's closet and there was no secret magic land there.

There were some other oddities my mother should have known about.

(laughter) And I was happy to tell her all about it.

My first job after college was working behind one of these secret doors.

This is a place called 826 Valencia.

It's located at 826 Valencia Street in the San Francisco Mission.

This is a zoned retail store, and in San Francisco, they weren't going to give us a difference. So the author who founded the store, Dave Eggers, insisted that it conform to the norm and said, "Okay, I'm just going to make a pirate store."

And that's what he did. (laughs) And it's beautiful. It's all wood.

It has drawers so you can take out the citrus without getting scurvy.

In the spring, the pirates go on a rampage, so she wears a colorful eyepatch.

you don't know Black is boring. pastel.

Or, depending on how you want to handle the situation, you can just use a full color eye, or just a glass eye.

And in that store, strangely enough, people came to the store to buy things and eventually pay the rent for the tutoring center behind it. But what was more important to me was the fact that if the work you were doing was of good quality, the kids would come and be taught writing. And when you have to walk through such a strange, limiting, imaginary space to get to writing, it will affect the kind of work you make.

A secret door that you can walk through.

So I ran 826 in Los Angeles and it was my job to build a store there.

So, I would like to introduce Echo Park Time Travel Mart.

That's our motto. "Whenever you are, we are already there."

(laughs) It's on Sunset Boulevard in Los Angeles.

Our friendly staff will assist you.

They're from all eras, even the 1980s, and the last guy is from the very recent past.

We have Employee of the Month including Genghis Khan, Charles Dickens.

Some great people have risen through our ranks.

This is our pharmacy department.

There are some patented medicines, canopic jars for organs, and communist soaps that say, "This is the soap of the year." (Laughter) The slimy machine broke on the first night and I didn't know what to do.

Our architect was covered in red syrup.

It seemed like he had just killed a man, but it wasn't out of the question for this architect and we didn't know what to do.

It was supposed to be the highlight of our store.

So I put up a sign that said, "It's out of order. Please come back yesterday." (Laughter.) And it ended up being a better joke than slushy, so we left it there forever.

mammoth chunk. These weigh about 7 pounds each.

barbaric repellent. It's full of salads and potpourri that savages hate.

dead language.

(laughter) Hill, nature's little doctor.

And Viking Odorant has many wonderful scents, including toenails, sweat, rotting vegetables, and wood ash.

Because we believe Ax Body Spray should only be found on the battlefield, not in your armpits. (Laughter) And these are emotional chips for robots, so they can feel love or fear.

Our biggest sell is Schadenfreude. This was unexpected.

(Laughter) We didn't expect that to happen.

But there's a non-profit behind it, and kids walk through doors that say "employees only" to this space where they do their homework, write stories, and make movies. This is a book publishing party for children to read.

There is a quarterly magazine published in text only, it is done by children who come after school every day, there is a release party, they eat cake, read books for their parents, drink milk in champagne glasses.

And it's a very special space because it's this weird space in front.

A joke is no joke.

Fiction finds no seams, and I love it. It is this little piece of fiction that is colonized by the real world.

I think of it as a kind of three-dimensional book.

There's a term called metafiction, but it's just a story about a story, and meta is having a moment right now.

Its last big moment was probably in the 1960s by novelists like John Barth and William Gaddis, but it's been around all along.

It's almost as old as storytelling itself.

And one of metafiction's techniques is breaking the fourth wall. right?

That's when an actor says to the audience, "I'm an actor. These are just rafters."

And even in those moments that are supposed to be honest, I would argue, serve lies, but that is to foreground the artificiality of fiction.

For me, I prefer the opposite.

If you want to break the fourth wall, get out of fiction and into the real world.

I want books to open secret doors and lead stories into reality.

So I'm trying to do this in my book.

This is just an example.

This is the first book I made.

It's called "Billy Twitters and his Blue Whale Problem."

It's about a kid who keeps a blue whale as a pet, but it's a punishment and his life is ruined.

So it will be delivered overnight by FedUp.

(laughter) And he has to take it to school.

He lives in San Francisco, a city that is very strict when it comes to keeping blue whales.

There are many slopes and real estate is very expensive.

Folks, this market is crazy.

But under the jacket is this case, and it's on the cover of the book, under the jacket, with an ad offering a 30-day no-risk free trial of Blue Whale.

If you send me a self-addressed stamped envelope, I will send you the whale.

And children write.

So here is the letter. It reads, "Dear friends, bet $10 and you won't get a blue whale.

Elliott Gannon (age 6). ”

(Laughter) (Applause) So what Elliot and the other kids who sent this get back is a letter in very small print from a Norwegian law firm — (Laughter) — saying that whales are being held in Sognefjord due to changes in customs laws. Sognefjord is a very beautiful fjord and then we are talking a little bit about Sognefjord and Norwegian cuisine. Story was it.

(Laughter) But it ends with the words that your whale is waiting to hear from you.

He has a phone number so you can call and leave a message.

And when you call him and leave a message, on outgoing messages it just makes a whale sound and a beep, actually a lot like a whale sound.

And they also take pictures of whales.

So this is Randolph. Randolph belongs to a child named Nico, one of the first children to call. Play some Nico's messages.

This is the first message I received from Nico.

(Audio) Nico: Hi, I'm Nico.

I'm your owner, Randolph. Hello.

So this is the first time I can talk to you, but maybe another day. good bye.

Mac Barnett: So, about an hour later, Nico called me.

(Laughter) And there is another message from Nico.

(Audio) Nico: Hi Randolph, I'm Nico.

I haven't talked to you in a long time, but I talked to you on Saturday or Sunday, yes, Saturday or Sunday, but I called you again to say hello, and I was wondering what you were doing, and I think I'll call you again tomorrow or today, so I'll talk to you later. good bye.

MB: So he called back again that day.

Over the course of four years, he left Randolph over 25 messages.

You'll find out all about him and the granny he loves, and the granny he doesn't like a little — (laughter) — and the crossword puzzle he does, and this — play another message from Nico.

A Christmas message from Nico.

[beep] (audio) Nico: Hello Randolph, sorry for the long hiatus.

It's just that school has started and I've been very busy, you may not know, but maybe you're a whale, so I don't know, and I'm just calling to wish you a Merry Christmas.

Merry Christmas and goodbye Randolph. good bye.

MB: Actually, Nico contacted me, but I haven't heard from him in 18 months, and I just left him a message two days ago.

His voice is completely different, but he called the babysitter. She was also very kind to Randolph.

But Nico is the best reader I can hope for.

I want the person I write to be in that place emotionally with what I create.

I feel lucky. Kids like Nico are the best readers and deserve the best stories we can give them.

thank you very much.

(applause)

cancer.

It's a terrible disease that takes a toll on you mentally.

Not only the patient, but also the people important to the patient.

It's a battle that humanity has fought for centuries.

We've made some progress, but haven't beaten it yet.

Two out of five people in the United States will develop cancer in their lifetime.

Of these, 90% die from metastases.

Metastasis is the spread of cancer from the primary site through the circulatory or lymphatic system to distant sites.

For example, women with breast cancer do not get breast cancer just because they have a lump in their breast.

She died from the disease because it had metastasized to her lungs, liver, lymph nodes, brain, and bone, making it unresectable or untreatable.

Metastasis is a complex process.

It's something I've been researching for several years.

And what my team and I have recently discovered is that cancer cells can communicate with each other and coordinate their movements based on how crowded they are in the tumor microenvironment.

They communicate with each other through two signaling molecules called interleukin-6 and interleukin-8.

Now, like anything else in nature, when things get a little too tight, the signal is strengthened, causing cancer cells to move away from the primary site faster and spread to new sites.

Therefore, blocking this signal using our drug cocktail could stop the communication between cancer cells and slow the spread of cancer.

Let's pause here for a moment and remember when it all started in 2010, when I was a sophomore in college.

I had just started working in Dr. Danny Wertz's lab at Johns Hopkins University.

To be honest, I was a young and naive Sri Lankan girl (laughs). I had no previous research experience.

I was then tasked with observing how cancer cells migrate within a 3D type I collagen matrix re-encapsulated in a dish to the conditions they would be exposed to in the body.

This was new and exciting to me because my previous studies were done in 2D flat plastic dishes, which didn't really represent what conditions cancer cells were exposed to in the body.

Because, let's be honest, our body's cancer cells aren't clinging to plastic dishes.

It was around this time that I attended a seminar by Dr. Bonnie Basler at Princeton University. So she talked about how bacterial cells communicate with each other and perform specific actions based on their density.

At this moment, a light bulb went off in my head and I was like, "Wow, this is what I see every day when it comes to cancer cell movement."

This is how the idea for my project was born.

I hypothesized that cancer cells could communicate with each other and coordinate their movements based on how crowded they are in the tumor microenvironment.

I became obsessed with pursuing this hypothesis.

And luckily I work for someone who is open to implementing my crazy ideas.

So I threw myself into this project.

But I couldn't do it by myself.

I needed help.

I definitely needed help.

So we brought together undergraduates, graduates, postdocs, and professors from various institutions and multiple disciplines to work together on this idea that came to me during my sophomore year of college.

After years of experimenting together and fusing different ideas and perspectives, we discovered new signaling pathways that control how cancer cells communicate with each other and migrate based on cell density.

Some of you may have heard of this as it is known as the Hasini Effect on most social media.

(Laughter) (Applause) And we're not done yet.

So we wanted to see if blocking this signaling pathway could slow the spread of cancer.

We did it in a preclinical animal model.

We devised a drug cocktail consisting of tocilizumab, currently used to treat rheumatoid arthritis, and reparixin, currently in clinical trials for breast cancer.

And, interestingly, what we found was that this drug combination actually had no effect on tumor growth and directly targeted metastasis.

This was an important finding because currently there are no FDA-approved therapies that directly target the spread of cancer.

In fact, cancer spread, metastasis, is thought to be a by-product of tumor growth.

The idea is that if we can stop the growth of tumors, we can also stop them from spreading.

But most of us know this is not true.

On the other hand, we have devised a drug cocktail that targets metastasis not by targeting tumor growth through targeting of the Hasini effect, but by targeting the complex mechanisms that govern metastasis.

(Laughter) This research was recently published in Nature Communications, and my team and I received an overwhelming response from all over the world.

No one on my team could have predicted this kind of reaction.

We seem nervous.

Looking back, I am extremely grateful for the positive response I have received, not only from academia, but from patients and those affected by this terrible disease around the world.

When I reflect on the success I have encountered with the Hasini Effect, I am reminded of the people I was fortunate enough to work with.

Undergraduate students who have demonstrated superhuman strength through hard work and dedication.

Graduate students and postdocs, fellow Avengers, taught me new techniques and always made sure I was on track.

My Yoda and Obi-Wan Kenobis, the professors who brought their expertise to make this work what it is today.

Support staff, friends and family, people who lifted our spirits and never gave up on our ambitions.

The best companions we could ever ask for.

I needed the cooperation of the village to help me research metastasis.

And believe me, without my village, I wouldn't be here.

Our team has now grown to develop combination therapies that exploit the Hasini effect to effectively target tumor growth and metastasis.

We develop new anticancer therapeutics to limit toxicity and reduce drug resistance.

And we are developing groundbreaking systems to help develop better human clinical trials.

It's amazing to think that all of this, the great work I'm pursuing, and the fact that I'm standing here today talking to you all came from this little idea that came to me when I was just 20 years old, sitting in the back of a seminar.

I now find myself on an amazing journey that allows me to pursue work that I am very passionate about and that feeds my curiosity every day.

But what I love most about all of this, besides being here today talking to you, is the fact that I get to work with a wide variety of people. They make my work stronger, better and a lot more fun.

For this reason, I have to say that collaboration is my most favorite superhuman power.

And what I love about this power is that it's not unique to me.

it's in all of us.

My research shows that even cancer cells work together to invade our bodies and spread their wrath.

For us humans, it is a superpower that has made incredible discoveries in the fields of medicine and science.

And it is a superpower that we can all rely on to inspire us to create something bigger than ourselves that will help make the world a better place.

Collaboration is what I rely on to fight cancer.

And I am confident that with the right cooperation, we can overcome this terrible disease.

thank you.

(applause)

In 1960, still a student, I won a travel scholarship to study housing in North America.

we traveled all over the country.

We've seen public housing skyscrapers in every major city, including New York and Philadelphia.

People who had no choice lived there.

Then we traveled from suburb to suburb and came back thinking we had to reinvent the apartment building.

There must be another way to do this.

Suburbs cannot be maintained, so design buildings that give each dwelling a residential character.

Habitat is all about gardens, contact with nature, and streets instead of corridors.

It was built as a prefabricated building in pursuit of economy, but nearly 50 years have passed since then.

A very desirable place to live.

Although it is now a historic building, it was not so popular.

In 1973 I visited China for the first time.

It was the Cultural Revolution.

We traveled around the country and met with architects and planners.

This is Beijing at that time, and there is not a single skyscraper in Beijing or Shanghai.

Shenzhen didn't even exist as a city.

There were very few cars.

Thirty years later, this is Beijing today.

This is Hong Kong.

If you're rich, you live there, if you're poor, you live there, but it's dense, and it's not just Asia.

In São Paulo, take a 45-minute helicopter ride to see skyscrapers engulfing a 19th-century low-rise environment.

Congestion will occur and the ability to move will be lost.

So a few years ago we decided to go back and rethink Habitat.

Could it be made more affordable?

Can we really achieve this kind of quality of life in today's prevalent population densities?

And we realized that it was basically about light, the sun, nature, fractalization.

Can building surfaces be opened up to increase contact with the outside world?

We have come up with several models. Economic model, cheaper to manufacture, more compact model. A residential membrane where people can design their own homes and create their own gardens.

We decided to take New York as a test case and turned to Lower Manhattan.

And I made a map of all the building areas in Manhattan.

On the left is present-day Manhattan. Residential buildings are blue, office buildings and retail stores are red.

The one on the right is a reconstruction of it. An office building forms the base, on top of which there are 75 floors of apartments.

On the 25th floor is an aerial street, Community Street.

It is permeable.

There are gardens and open spaces for the community, nearly every unit has its own private garden and surrounding community spaces.

And most importantly, be permeable and open.

Light spreads everywhere without creating walls or obstacles in the city.

And in the last couple of years, we have experienced Habitat's quality of life for the first time in real projects across Asia.

This is middle-income housing in Qinhuangdao, China, where regulations dictate that every apartment must receive three hours of sunlight.

It is measured on the winter solstice.

And in Singapore, again middle-income housing, gardens, community streets and parks are under construction.

and Colombo.

And one more thing I would like to touch on is the design of the public area.

One hundred years after the construction of skyscrapers began, we still don't understand how they form the building blocks of cities and public spaces.

In Singapore, there was an opportunity for 10 million square feet of ultra-high density.

With an outdoor-indoor concept, it combines promenades and parks with the hustle and bustle of urban life.

So they are outdoor and indoor spaces, moving from one to the other, there is contact with nature and most importantly, on every level of structures, public gardens and plazas, on podium roofs, climbing towers and finally roof tops, 2.5 acre skyparks, jogging tracks, restaurants and the world's longest swimming pool.

That's all I can say in 5 minutes.

thank you.

(applause)

We are now in a remarkable moment.

In the next 20 years, we will face two fundamental transformations that will determine whether the next 100 years will be our best century or our worst.

Let me explain with an example.

My first visit to Beijing was 25 years ago to teach at Renmin University of China.

China was getting serious about its market economy and university education, so it decided to bring in foreign experts.

Like many others, I cycled through Beijing.

Aside from avoiding the occasional car, it was a safe and easy way to get around.

Cycling in Beijing now has a completely different outlook.

The roads are congested with cars and trucks.

The air is dangerously polluted by burning coal and diesel.

When I was last there in the spring, people my age 65 and older were advised to stay indoors and not move around much.

How did this happen?

It comes from the process of Beijing's growth as a city.

It has more than doubled from 10 million to 20 million in the last 25 years.

It has become a sprawling urban area that relies on dirty fuels, dirty energy, especially coal.

China consumes half of the world's coal each year, which is the main reason why China is the world's largest emitter of greenhouse gases.

At the same time, we must recognize that China has grown significantly during this time.

It became the second largest economy in the world.

Hundreds of millions of people have been lifted out of poverty.

It really matters.

But at the same time, the Chinese people have questions such as: What is the value of this growth if our cities become uninhabitable?

They analyzed and diagnosed this as an unsustainable path of growth and development.

China plans to cut coal.

Trying to build cities in different ways.

At present, China's growth is part of a dramatic change in the global economic structure, a fundamental change.

Just 25 years ago, the developing world, the world's poorest countries, accounted for only about one-third of global output, despite comprising the majority of the population.

More than half now. Twenty-five years from now, there will probably be two-thirds of the countries that were considered underdeveloped 25 years ago.

It's an amazing change.

That means most countries around the world, rich or poor, are going to face two fundamental changes that I want to talk about and highlight.

Now, the first of these changes is the fundamental structural change in the economy and society that I have already begun to explain through my explanation of Beijing.

Now 50% are urban areas.

It will reach 70% by 2050.

Over the next 20 years, energy demand will increase by 40%, and economic and population growth will increase pressure on land, water and forests.

This is a significant structural change.

Negligence or shortsighted management results in waste, pollution, congestion, land and forest destruction.

If you think about the three areas I have quantified: cities, energy and land, poor management of all of these would worsen and undermine the prospects for life and livelihoods of people around the world.

And more than that, greenhouse gas emissions will increase, posing immense risks to the climate.

The concentration of greenhouse gases in the atmosphere is already higher than in millions of years.

If these concentrations continue to increase, over the next century or so, there is a danger that temperatures will rise unlike any seen on Earth in tens of millions of years.

We've lived as Homo sapiens -- a pretty generous definition, sapiens -- for probably 250,000, 250,000 years.

Over the course of a century, we are at risk of exposure to temperatures unlike anything we have experienced in tens of millions of years.

It will transform the relationship between humanity and the Earth.

It will lead to changes in deserts, changes in rivers, changes in hurricane patterns, changes in sea levels, and hundreds of millions, perhaps billions, of people will have to move. And if we are learning anything from history, it means serious and long-lasting conflicts.

And I couldn't just turn it off.

We cannot make a peace treaty with Earth.

You cannot negotiate with the laws of physics.

you are there I'm stuck.

These are the bets we're betting on, and that's why we must implement this second transformation, climate change, and move to a low-carbon economy.

Well, one way or another, the first of these transformations will happen.

We have to decide whether to make economic or structural changes for the better or for the worse.

But on the second transformation, climate change, we need to decide.

These two transformations will face us in the next 20 years.

The next 20 years will be decisive for what we must do.

Now, the more I thought about these two transformations, the more I realized that this is a huge opportunity.

It's an opportunity we can take advantage of and an opportunity we can lose.

Let me explain through the three main areas I have identified: cities, energy and land.

Let's start with cities.

We have already talked about Beijing's problems: pollution, congestion, waste, and so on.

Indeed, in many cities around the world we recognize it.

Now, cities, like life, need to think ahead, especially with cities.

There are many cities to be built, and many large ones, but we have to think about how to design cities compactly so that we can save travel time and save energy.

Already existing and established cities must think about updating and investing in them so that they can be better connected and facilitate and encourage more people to live closer to the centre.

Examples of how to make it happen are being built all over the world.

Bogota, Colombia's bus rapid transit system is a very important example of how to get around the city safely and quickly without polluting it. Very frequent buses, heavily guarded routes, practically the same service as the metro system, but much cheaper and quicker to implement, is a great idea and is being developed in many cities around the world.

Well, some things take longer in urban areas.

In cities it can also occur earlier.

Take my hometown, London, for example.

In 1952, the smog in London killed 4,000 people and severely damaged the lives of many more.

And it happened all the time.

For those who live outside of London, UK.

You may remember it used to be called The Smoke.

So was London.

By regulating coal, the problem of smog was rapidly reduced within a few years.

I remember the smog very well.

When the visibility dropped below a few meters, the bus stopped and I had to walk.

That was in the 1950's.

I had to walk three miles home from school.

Again, breathing is a dangerous act.

But that has changed. Changed by decision.

Good decisions quickly bring good, amazing results.

we've seen a lot more. London has indeed very quickly and effectively introduced congestion pricing, a much improved bus system and a cleaner bus system.

You can see that the two changes I described, structure and climate, are very closely related.

But we have to invest. We need to invest in our cities, and we need to invest wisely. The result is cleaner cities, quieter cities, safer cities, more attractive cities, more productive cities, and stronger communities in those cities. Public transport, recycling, reuse, all sorts of things that connect communities.

It's possible, but you have to think, invest and plan.

Let's move on to energy.

Today, energy has increased by about 50% over the last 25 years.

80 percent of that comes from fossil fuels.

Over the next 20 years, it will probably increase another 40 percent.

We must invest strongly in energy, use it more efficiently and clean it.

I know how to do that.

Let's take the example of California.

If independent, it would be among the top 10 countries in the world.

I don't want to start anything — (Laughter) California is a big place.

(Laughter) Over the next five or six years, the share of renewables like wind and solar would likely rise from about 20 percent to over 33 percent, and that would bring California's greenhouse gas emissions back to 1990 levels in 2020, and the California economy would have nearly doubled by then.

That's an amazing achievement.

It shows what you can do.

It's not just California. India's incoming government plans to deploy solar technology to light the homes of India's 400 million people without electricity.

They set goals for the next five years.

I think they have a good chance of doing that.

As you will see, what you are seeing now is that people are moving much faster.

400 million people, more than the population of the United States.

In terms of the speed of change, people now have such ambitions.

Again, good decisions have immediate consequences, and we see two transformations closely intertwined: economic and structural, climate and low carbon.

If you do the first structural one well, the second climate-related one becomes much easier.

Look at land, land, especially forests.

Forests are habitats for valuable plant and animal species.

They retain water in the soil and remove carbon dioxide from the atmosphere. This is fundamental to tackling climate change.

But we are losing forests.

Over the past decade, we've lost a forest area as large as Portugal, and much more has been degraded.

But we already know that much can be done about it.

We can recognize the problem, but we can also understand how to deal with it.

In Brazil, the rate of deforestation has decreased by 70% over the last decade.

how? By engaging local communities, investing in agriculture and the economy, monitoring more closely, and enforcing laws more rigorously.

And it doesn't just stop deforestation.

It is of course of primary and fundamental importance, but it is also about reconditioning, regenerating and restoring degraded lands.

My first visit to Ethiopia was in 1967.

was very poor. The years that followed were devastating famine and severely devastating social conflict.

Over the last few years, actually more than a few years, Ethiopia has grown even faster.

It has ambitions to become a middle-income country and carbon neutral in 15 years.

Again, this is a strong ambition, but I think it's a plausible one.

You can see the commitment there.

I see what I can do.

Ethiopia is investing in clean energy.

We are working on land reclamation.

In Humbo, southwestern Ethiopia, an impressive project to plant trees on degraded land and work with local communities on sustainable forest management has led to a significant improvement in living standards.

So from Beijing to London, from California to India, from Brazil to Ethiopia, we know how to manage the twin changes of structure and climate.

We know how to manage them well.

And technology is changing very quickly.

You don't have to list all of these to an audience like this, but you can see electric cars and batteries with new materials.

You will find that you can remotely manage your home appliances using your mobile phone even when you are on the go.

It can be seen that the thermal insulation is improved.

Much more happens.

But the big thing is that the world as a whole is moving too slowly.

We are not reducing our emissions the way we should be.

We have not managed these structural changes to the best of our ability.

Our understanding of the immense risks of climate change is still elusive.

Our understanding of the allure of what we can do has yet to deepen.

It takes political pressure to build.

We need our leaders to step up.

We can create better growth, a better climate and a better world.

Successfully managing these two transformations will make the next 100 years the best of centuries.

We, you and I, if we mess it up, the next 100 years will be the worst century if we don't manage the change properly.

These are the main conclusions of a report on the economy and climate chaired by former Mexican President Felipe Calderón, which I co-chaired and handed over to UN Secretary-General Ban Ki-moon here at the UN building in New York yesterday.

we know this can be done.

Well, two weeks ago I became a grandpa for the fourth time.

Our daughter — (baby cries) (laughter) (applause) — our daughter gave birth to Rosa here in New York two weeks ago. This is Helen and Rosa.

(Applause.) Two weeks old.

Are we going to look our grandchildren in the eye and tell them that we understand the problem, we see the danger and the opportunity, yet we fail to act?

Certainly not. Let's make the next 100 years the best 100 years.

(applause)

What is America's favorite pie?

Audience: Apple. Kenneth Kukier: Apple. of course.

How can we know that?

because of the data.

I'll take a look at the supermarket sale.

When you see frozen 30cm pies for sale in the supermarket, there is no contest and the apple wins.

Most of the sales are apples.

But then supermarkets started selling small 11-centimeter pies, and apples suddenly dropped to fourth or fifth place.

why? what happened?

Well, let's think.

The whole family must agree when buying a 30-centimeter pie, and apples are everyone's second favorite.

(laughs) But if you buy one 11cm pie, you get what you want.

You can get your first choice.

We have more data.

You will be able to see things you couldn't see when you were taking only a small amount.

The point here is that more data doesn't just allow us to see more of what we used to see.

With more data comes new discoveries.

It allows us to see better.

It allows us to see things differently.

In this case, you can find out what kind of pie Americans like best, and not apples.

Now, you may have heard the term big data.

In fact, you may be tired of hearing the term big data.

It's true that there is a lot of hype about the term, but this is very unfortunate because big data is such an important tool for advancing society.

In the past, we used to look at small pieces of data and think about what it meant to try to make sense of the world, but now we have much more data than before.

What we've found is that with a lot of data, you can basically do things that you couldn't do with a small amount of data.

Big data is important, and big data is new. If you think about it, the only way our planet can meet its global challenges - feed people, provide health care, provide energy and electricity, and keep the planet from being burned to the ground - is through the effective use of data.

So what's new in big data? What's the big deal?

Now, to answer that question, let's consider what information looked like physically in the past.

In 1908, archaeologists discovered a clay disk on the island of Crete.

They estimated it to be 2000 BC, so it is 4,000 years old.

Well, this disc has an inscription, but I don't really know what it means.

It's a total mystery, but the point is, this is what information looked like 4,000 years ago.

This is how society stores and transmits information.

Well, society is not that advanced.

We still store information on disk, but now we can store more information than ever before.

Searching is easier. It's easier to copy.

It's easier to share. It will make processing easier.

And what we can do is repurpose this information for uses we never imagined when we first collected the data.

In this regard, data has changed from stock to flow, and from static to fluid and dynamic.

Information is fluid, so to speak.

The 4,000-year-old disk found off the coast of Crete is massive and contains a lot of information that cannot be changed.

By contrast, all the files Edward Snowden took from the US National Security Agency fit on a memory stick the size of a fingernail and can be shared at the speed of light.

more data. more.

One of the reasons we have so much data in the world today is that we are collecting what we have always collected information, but another reason is that we are ingesting into data what has always been information but has not been converted into data form.

For example, consider the problem of location.

Take Martin Luther, for example.

If you want to know where Martin Luther was in the 1500s, you have to keep track of him and record it with a quill and inkwell. But now let's see how it goes.

You probably know that somewhere in a telecommunications carrier's database, there's a spreadsheet, or at least a database entry, that keeps track of where you've been at all times.

If you have a mobile phone and your phone has GPS, you can record information even if you don't have GPS.

At this point, location information is digitized.

Now, let's take, for example, the problem of posture, the way you are sitting, how you sit, how you sit, how you sit.

It's all different and a function of leg length, back and back contour. If I put a sensor, maybe 100 sensors on every chair right now, I could create a pretty unique index, like a fingerprint, but it's not your finger.

So what can we do with this?

Researchers in Tokyo use it as a potential anti-theft device for cars.

The idea is that the carjacker sits behind the wheel and tries to get away, but the car realizes that an unauthorized driver is behind the wheel, and unless he enters a password into the dashboard and says, "I have permission to drive," it will probably just shut off the engine. wonderful.

What if every car in Europe had this technology?

What can you do then?

Perhaps by aggregating the data, we might be able to identify the tell-tale signs that best predict that a car crash will occur within the next five seconds.

And what we digitize is driver fatigue, and the service is that the car senses and automatically recognizes when a person has fallen into that position, sets an internal alarm that vibrates the steering wheel, and honks the car's horn to say, 'Hey, wake up, pay more attention to the road.'

We can do this by digitizing more aspects of our lives.

So what is the value of big data?

Well, let's think.

There is more information.

You will be able to do things you couldn't do before.

One of the most impressive areas where this concept has been realized is in the field of machine learning.

Machine learning is a branch of artificial intelligence, which itself is a branch of computer science.

The general idea is that instead of telling the computer what to do, simply throw some data at the problem and tell the computer to solve it on its own.

And looking at its origins helps us understand it.

In the 1950s, IBM computer scientist Arthur Samuel liked to play checkers, so he wrote a computer program that allowed him to play against computers.

he played he won

he played he won

he played He won because the computer knew only legal moves.

Arthur Samuel knew otherwise.

Arthur Samuel knew strategy.

So he wrote a small subprogram that ran in the background, and all it did was score the likely probabilities that a given board configuration would lead to a winning board and a losing board for each move.

he plays computer he wins

he plays computer he wins

he plays computer he wins

And Arthur Samuel leaves the computer and plays automatically.

It will play itself. Collect more data.

Collect more data. Increased prediction accuracy.

And Arthur Samuel went back to his computer, played and lost, played and lost, played and lost, and Arthur Samuel created a machine that outperformed him on the tasks he taught him.

And this machine learning mindset is pervasive everywhere.

How do you think self-driving cars came about?

Is a society where all road traffic rules are built into software really good?

No, memory is cheaper. no.

Algorithms are faster. No, the processor is better. no.

These are all important, but not the only reasons.

Because it changed the nature of the problem.

We changed the nature of the problem from trying to blatantly and explicitly tell the computer how to drive to saying, "There's a lot of data around the car."

you get it

You can see that it's a traffic light, and that the traffic light is red, not green, meaning you need to stop instead of moving forward. ”

Machine learning underlies much of what we do online, including search engines, Amazon's personalization algorithms, computer translation, and speech recognition systems.

Researchers recently looked at the problem of biopsies, or cancerous biopsies, and asked a computer to look at the data and viability to determine if cells were indeed cancerous. And sure enough, throwing the data through a machine-learning algorithm, the machine was able to identify the 12 telltale signs that best predicted that this biopsy of breast cancer cells was indeed cancerous.

Problem: Only nine of them were known in the medical literature.

Three of those features didn't need to be looked for by a human, they were discovered by a machine.

Now, big data also has a dark side.

It will improve our lives, but there are also issues that we must be aware of, and the first thought is that we might be punished for our predictions, that the police could use big data for their purposes, a bit like "Minority Report".

Today, the term is predictive policing, or algorithmic criminology, and the idea is that if you have a lot of data, say where crimes have been committed in the past, you know where to send patrols.

That makes sense, but the problem, of course, is that it's not just location data, it's down to the individual level.

How about using data about the person's high school transcript?

Perhaps we should take advantage of the fact whether they are unemployed, their credit score, their surfing behavior, whether they stay up late at night.

Once their Fitbit can discern biochemistry, you know they have aggressive thinking.

We may have algorithms that predict what we are going to do, and we may be held accountable before we actually act.

Privacy has been a central issue in the small data age.

In the age of big data, the challenge is to protect free will, moral choice, human will, and human agency.

There is one more problem. Big data is stealing our jobs.

Just as factory automation and assembly lines challenged blue-collar work in the 20th century, big data and algorithms will challenge white-collar expertise work in the 21st century.

Think of a laboratory technician who looks at a cancer biopsy under a microscope to determine whether it is cancerous.

The person went to college.

The person buys the property.

he or she votes

He or she is a social stakeholder.

And that person's work, and the work of entire professionals like him, will be radically changed or, in fact, eliminated altogether.

Now, while we like to think that technology will create jobs over a period of time after a short period of temporary disruption, that is also true of the Industrial Revolution by which we all live. Because that's exactly what happened.

But in that analysis we forget something. That said, there are some categories of jobs that are simply eliminated and never come back.

If you were a horse, the Industrial Revolution wasn't so good.

Therefore, we need to take big data with care and tailor it to our needs, human needs.

We must become masters of this technology, not servants of it.

We are just at the beginning of the big data era, and let's be honest, we're not very good at dealing with all the data we can collect today.

This is not just a problem for the National Security Agency.

Companies collect vast amounts of data and sometimes misuse it. We need to improve this and this will take time.

It's a bit like the challenges faced by primitive man and fire.

It's a tool, but it's a tool that can burn you if you're not careful.

Big data will transform the way we live, work and think.

It helps us manage our careers and live lives full of contentment and hope, happiness and health. However, in the past, we often looked at information technology, and our eyes only looked at T, technology, and hardware. Because it was physical.

We now need to turn our attention back to the 'me', the information. It's less obvious, but in some ways more important.

As part of our timeless quest to understand the world and our place in it, humanity is finally able to learn from the information it can gather. That's why big data is so important.

(applause)

When I turned 19, I started my career as the first female photojournalist in Gaza, Palestine.

My work as a female photographer was seen as a serious affront to local traditions and gave me and my family a lasting stigma.

My presence in this field, which is dominated by men, was unwelcome no matter how you look at it.

They made it clear that women should not do men's work.

A photo agency in Gaza refused to train me because of my gender.

The "no" sign was very clear.

Three of my colleagues drove me to the field attack area, where all I heard was the sound of an explosion.

Dust was in the air and the ground below me was swinging like a swing.

It wasn't until the three of us got back in the armored jeep, waving and laughing and driving away, leaving me in the outdoor strike zone, that I realized we weren't there to document the event.

For a moment I felt terrified, humiliated and sorry for myself.

My colleague's actions weren't the only death threats I received, but they were the most dangerous.

Perceptions of women's lives in Gaza are passive.

Until recently, many women were not allowed to work or get an education.

In an era of dual warfare, including both social restrictions on women and the Israeli-Palestinian conflict, both the dark and bright tales of women were fading away.

To men, women's stories were considered insignificant.

I started paying more attention to the lives of Gaza women.

Because of my gender, I was able to access a world my colleagues were off limits to.

Beyond the obvious pain and struggle was a healthy dose of laughter and a sense of accomplishment.

During the First War in Gaza, in front of the police station in Gaza City, an Israeli air raid destroyed the police station and broke my nose.

For a while all I saw was a white glow like these lights.

I thought I was either blind or in heaven.

By the time I managed to open my eyes, I had recorded this moment.

Palestinian worker Mohammed Kader, who spent 20 years in Israel, decided to build a four-story house as part of his retirement plan, but the first field operation in his neighborhood only leveled the house.

There was nothing left but the pigeons he had raised and the jacuzzi and bathtub he had bought from Tel Aviv.

Mohammed has set up a bathtub on top of the rubble and started giving the children bubble baths every morning.

My work does not aim to cover up the scars of war, but rather to reveal the unknown story of the Gazans.

As a Palestinian female photographer, the journey of struggle, survival and everyday life has inspired me to overcome community taboos and see a different side of war and its aftermath.

I became a witness with a choice to run or stay.

thank you.

(applause)

For the past seven years, I have worked as an ER in Suffolk County, New York.

I have been a first responder for many incidents, from car crashes to Hurricane Sandy.

If you're like most people, death may be one of your greatest fears.

Some of us will see it coming.

Some people don't.

There is a little-known medical term called "imminent doom."

It's almost a symptom.

As a healthcare provider, I am trained to treat this symptom like any other. So when a heart attack patient looks at me and says, "I might die today," we are trained to reassess the patient's condition.

Throughout my career, I have dealt with numerous incidents where patients were given a life expectancy and there was nothing I could do.

Because of this, I faced a dilemma. Should we tell the dying that they are dying, or should we lie to comfort them?

Early in my career, I faced this dilemma by simply lying.

i was afraid

I worried that if I told them the truth, they would die in fear and terror, grasping the last moments of their lives.

One incident changed everything.

Five years ago, I dealt with a motorcycle accident.

Ryder was critically injured.

As I examined him, I realized there was nothing he could do. And, like so many other cases, he looked me in the eye and asked, "Am I going to die?"

At that moment, I decided to do something different.

I decided to tell him the truth.

I decided to tell him that I was going to die soon and that there was nothing I could do.

His reaction still shocks me.

He was just relaxed and had a look of acceptance on his face.

He did not encounter the fear and fear that I expected.

He was just laying there and as I looked into his eyes I saw peace and acceptance.

From that moment on, I decided that it was not my position to comfort dying people with my lies.

Since then, I have dealt with many cases where patients were dying and there was nothing I could do, and in nearly every case they all had the same reaction to the truth, to peace of mind and acceptance.

In fact, there are three patterns I've observed in all these cases.

The first pattern always struck me.

The need for forgiveness exists regardless of religious beliefs or cultural background.

Whether they call it a sin or simply say they regret it, their guilt is universal.

I once nursed an elderly gentleman who had a severe heart attack.

As I prepared myself and my equipment for his impending cardiac arrest, I began telling the patient about his impending death.

He already knew by my tone of voice and body language.

As I put the defibrillator pad on his chest and prepared for what was to come, he looked me in the eye and said, “I wish I was less selfish with my time and spent more time with my children and grandchildren.”

In the face of imminent death, all he wanted was forgiveness.

The second pattern I observe is the need for memory.

Whether it was my thoughts or the memories of their loved ones, they needed to feel that they would live on.

An immortal desire resides in the hearts and minds of their loved ones, myself, my crew, or those around us.

Many times I have had patients look me in the eye and say, "Do you remember me?"

The last pattern I observe is always the most profound and soul-stirring to me.

Dying people need to know that their lives had meaning.

They need to know they weren't wasting their lives on meaningless work.

This came to me very early in my career.

I was answering the phone.

A woman in her late 50s was seriously injured inside the car.

She had a T-bone at breakneck speed and was in critical condition.

While the fire department tried to get her out of the car, I got in the car and started treating her.

While we were talking, she said to me, “There was so much more I wanted to do in life.”

She felt that she had not left her mark on this earth.

Further investigation revealed that she was the mother of two adopted children who were in medical school.

Thanks to her, my two children will continue to save lives in the medical field as doctors, with opportunities they never would have had otherwise.

It would eventually take 45 minutes to free her from the car.

However, she died before being released.

I believed what I saw in the movies. When you're in the last moment, it's just fear, fear.

I have realized that no matter what the situation is, it is generally filled with peace and acceptance, and that it is the little things, the little moments, the tiniest things you bring to the world that give you peace in the last minute.

thank you.

(applause)

I'm an engineering professor and have been teaching crap for the past 14 years.

(Laughter) Not that I'm a bad teacher, but I've studied and taught about human waste and how it is transported through sewage treatment plants and how these treatment plants are designed and engineered to protect surface waters such as rivers.

My scientist career is based on using cutting-edge molecular techniques, DNA and RNA-based methods to observe microbial populations in bioreactors and again to optimize these systems.

And over the years, I developed an unhealthy obsession with toilets, and have been known to sneak into toilets and bring camera phones around the world.

But along the way, I learned that it's not just about the technical side, it's also about what's called crappy culture.

So, for example, how many are washing machines and how many are wipers?

(Laughter) Well, you know what I mean.

If you are a launderer, use water for anal cleansing. It's a jargon.

And if you're a wiper, use toilet paper, or in some parts of the world where toilet paper isn't available, newspaper, rags, or corn cobs.

This is more than just trivia, it is very important for understanding and solving hygiene problems.

And this is the big question. There are 2.5 billion people in the world without access to proper sanitation.

For them, there are no modern toilets.

And 1.1 billion people have toilets on roads, riverbanks, squares, etc. The technical term is open defecation, but in reality it is simply open defecation.

And if you live in feces and it's around, you'll get sick.

It will invade your drinking water, your food, and your immediate surroundings.

As such, the United Nations estimates that 1.5 million children die each year as a result of inadequate sanitation.

This equates to 1 preventable death every 20 seconds, 171 deaths every hour, and 4,100 deaths per day.

Therefore, in order to avoid open defecation, municipalities and cities build infrastructure such as pit toilets in peri-urban and rural areas.

For example, tens of thousands of such pit toilets have been built in KwaZulu-Natal, South Africa.

However, problems arise when scaling up to tens of thousands of people. The question is what happens when the pit is full.

This is what happens.

People defecate around the toilet.

At school, children defecate on the floor and then begin to defecate around the building leaving a trail outside the building. These pits must be cleaned and emptied manually.

And who will empty?

Workers must occasionally enter the pit and manually remove the contents.

It's a dirty and dangerous business.

As you can see, no protective gear, no protective clothing.

There is one worker there.

It would be nice to meet him.

He wears a face mask but no shirt.

And in some countries, such as India, the lower castes are condemned to leave a hole, and even more condemned by society.

So you ask yourself, how can we solve this problem and build western flush toilets for these 2.5 billion people?

And the answer is that it's not possible.

Some of these areas are water scarce and energy scarce. It costs tens of trillions of dollars to lay sewers, build facilities, and operate and maintain systems. If you don't build it right, you'll basically end up with flush toilets that run directly into the river, much like what happens in many cities in the developing world.

And is this really the solution?

Because, essentially, what you're doing is using clean water, using that water to flush toilets, taking it to a sewage treatment plant, then discharging it into a river, and that river again being a source of drinking water.

Therefore, we need to rethink hygiene and reinvent hygiene infrastructure. I would argue that we need to adopt systems thinking for that.

We have to look at the entire sanitary chain.

We have to start with the human interface and think about how faeces are collected, stored, transported, processed, reused, and reused rather than just discarded.

Let's start with the human user interface.

It doesn't matter if you are a washer or wiper, a sitter or a squatter. The human user interface should be clean and easy to use. Because after all, throwing out the trash should be fun.

(Laughter) And when the possibility of understanding this hygienic chain opens up, the back-end technology, from collection to reuse, becomes less important and locally adaptable and situational solutions can be applied.

So you can open yourself up to possibilities like, for example, this toilet that diverts urine, this toilet has two holes, and so on.

It has a front and a back, the front collects urine and the back collects faeces.

So what you're doing is you're separating urine that's 80 percent nitrogen and 50 percent phosphorus, and you can process and precipitate it to form something like struvite, a high-value fertilizer, and then sanitize the fecal material and convert it back into a high-value end product.

Alternatively, for example, in some of our studies, water can be reused by treating it in on-site sanitary systems such as planter boxes or constructed wetlands.

So removing the old paradigm of flush toilets and treatment facilities opens up all these possibilities.

So you may be wondering who pays.

I would argue that the government should fund sanitation infrastructure.

NGOs and donors can do their best, but it's not enough.

Governments should fund sanitation just as they fund other infrastructure such as roads, schools, hospitals and bridges. Because we know that every dollar invested in sanitation infrastructure returns anywhere from $3 to $34, and WHO is doing research on this as well.

Let's go back to the problem of emptying the pit.

So at North Carolina State University, they challenged their students to come up with a simple solution. And this is what they came up with. It is a simple and modified screw auger that can move waste from the pit to a collecting drum. This eliminates the need for pit workers to descend into the pit.

I tested it in South Africa and it worked.

We need to make it more robust and will be doing more testing in Malawi and South Africa next year.

And our idea is to make this a service that empties the professional pit from which small businesses can be set up, generating profits and jobs. And as we rethink hygiene, we hope to prolong the life of these pits so we don't have to resort to quick fixes that don't really make sense.

I believe that access to adequate sanitation is a basic human right.

We need to stop the practice of pushing people of lower castes and lower status down into empty pits.

It is our morality, our social and environmental obligation.

thank you.

(applause)

escape from slavery. Risk everything to save your family. Conduct military raids. Defend the cause of women's suffrage. These are just a handful of the feats of America's bravest heroes.

Harriet Tubman was born Araminta Ross in Dorchester County, Maryland in the early 1820s.

Araminta, also known as Minty, was born into a family of chattel slaves, the fifth of nine children.

Two of Minty's older sisters were sold to chain gangs.

From an early age, Minty was hired by various owners to be whipped and punished.

Young Minty's life is turned upside down by an errand at a neighborhood store.

There, the overseer threw a two-pound weight at the fugitive slave, but it came off and hit Minty instead.

The injury left her with lifelong sleep attacks, known today as narcolepsy.

Minty's owner tried to sell him, but the sleep-enchanted slave had no buyers.

Instead, she went to work for her father, Ben Roth, who taught her how to lumber.

The lumber increased Minty's strength and allowed him to contact the free black sailors who transported the lumber northward.

From them, Minty learned of secret communications along the trade route, which proved invaluable later in her life.

In this mixed atmosphere of free blacks and slave blacks working side by side, Minty met John Tubman, a free black man whom she married in 1844.

After marriage, she changed her name to Harriet, after her mother's name.

Harriet Tubman's owner died in 1849.

When the widow planned to sell off her enslaved humans, Harriet feared being sold by her loved ones.

She had heard about the "Underground Railroad". It's a secret network of lairs, captains, and wagon drivers willing to shelter runaway slaves heading north.

So Tubman fled with his two brothers, Ben and Harry.

Afraid of getting lost, they eventually turned back.

But while Harriet was asleep, she had a dream that she could fly like a bird.

Looking down, I could see the road to liberation.

In the fall of 1849, she followed the North Star to Pennsylvania and independence.

Mr. Tubman returned to the South 13 times to free his niece, brother, parents and many others.

Nicknamed Black Moses, she worked hard with fellow abolitionists, helping enslaved people flee first to the North and then to Canada.

Harriet Tubman worked as a nurse, scout and spy for the Union Army during the Civil War.

In 1863, she planned and led the first military raid in U.S. history, liberating nearly 700 enslaved people in South Carolina.

After the war, the 13th Amendment to the U.S. Constitution legally abolished slavery, the 14th expanded citizenship, and the 15th gave former slaves black men the right to vote.

But she didn't flinch and persisted.

She raised money for former slaves and helped build schools and hospitals on their behalf.

In 1888, Tubman became active in the struggle for women's suffrage.

In 1896, she attended the inaugural convention of the National Association of Women of Color in Washington, D.C.

And later, at a women's suffrage rally in Rochester, New York.

She then told the audience: "I used to be a subway conductor, so I can say things that most people can't.

I have never let a train deviate from the tracks and I have never lost a passenger. As her fame grew, various friends and allies helped her in the battle to collect veterans' pensions for her service in the Union Army.

In 1899, she was finally given $20 a month.

In a twist of fate, the U.S. Treasury Department announced in 2016 that Tubman would appear on the redesigned $20 bill.

Harriet Tubman died on March 10, 1913.

Even on her deathbed at the age of 91, she kept civil liberties in mind.

Her last words were: "I am leaving to prepare a place for you."

I want to tell you how 20,000 talented young people from over 100 countries have arrived in Cuba and are transforming the health of their communities.

Ninety percent of them would never have left their homes if it had not been for the scholarships to study medicine in Cuba and the determination to return to places like where they came from, the remote farmlands, mountains and ghettos, to become doctors and walk the streets for people like them.

Havana's Latin American Medical School: The world's largest medical school, has graduated 23,000 young doctors since its inaugural class in 2005, with nearly 10,000 more due.

Its mission is to train doctors for those who need them most: the over one billion people who have never been to a doctor, living and dying below every poverty line ever invented.

The students rebel against all norms.

That's the biggest risk for schools, but it's also the best bet.

They are recruited from the poorest, most devastated places on earth by schools that believe that they are not only good doctors, but that they can become the good doctors their communities desperately need, practicing where most doctors don't, where they are not only poor but often dangerous, carrying antidotes in their backpacks, and roaming their homes in neighborhoods rife with drugs, gangs, and bullets.

They are expected to help transform access to care, health care conditions in poorer areas, and even the way medicine itself is learned and practiced, and to be pioneers in the certainly daunting task of reaching universal coverage worldwide.

Two major storms and the concept of "walk the walk" prompted the creation of ELAM in 1998.

Hurricanes Georges and Mitch hit the Caribbean and Central America, killing 30,000 people and leaving 2.5 million homeless.

Hundreds of Cuban doctors volunteered in the disaster response, but when they arrived there was an even bigger disaster. Whole communities were without medical care, rural hospitals were understaffed and their doors were bolted shut, and too many babies died before their first birthdays.

What happens when these Cuban doctors leave?

A new doctor was needed to make the treatment sustainable, but where will that doctor come from?

where do they train?

In Havana, the former Naval Academy campus was handed over to the Cuban Ministry of Health to become the Latin American Medical College ELAM.

Tuition, room, board and small scholarships were provided to hundreds of students from the countries most affected by the storm.

As a journalist in Havana, I watched the first 97 Nicaraguans arrive in March 1999, settle in barely renovated dormitories, and see professors not only clean classrooms, but help move desks, chairs, and microscopes.

In the years that followed, governments across America requested scholarships for their students, and the Black Caucus of Congress requested and received hundreds of scholarships for America's youth.

Today, our 23,000 alumni come from 83 countries in the Americas, Africa and Asia, and our enrollment has grown to 123 countries.

More than half of the students are young women.

They come from 100 ethnic groups and speak 50 different languages.

WHO Director Margaret Chan said, "Being poor, women or of indigenous origin has distinct advantages and ethics that make this medical school unique."

Luther Castillo is from San Pedro de Tocamacho on the Atlantic coast of Honduras.

There is no running water or electricity, and to get to the village you either have to walk for hours or, like me, take the risk of avoiding the Atlantic waves and taking a pick-up truck.

Luther, the sons and daughters of a black indigenous people known as the Garifuna, who make up 20 percent of Honduras' population, was one of 40 Tocamacho children who began attending grammar school.

The nearest medical facility was at a deadly distance.

Luther had to walk three hours each day to middle school.

There were only 17 people on the trip.

Of the first batch of Garifuna graduates, only five went on to high school and only one, Luther and ELAM, went on to college.

Only two Garifuna doctors preceded them in the history of Honduras.

Thanks to ELAM, we now have 69 companies.

Big problems require big solutions driven by big ideas, imagination and audacity, but they also need effective solutions.

ELAM faculty did not have a convenient evidence base to guide them, so they learned the hard way by making course corrections.

Even the brightest students in these poor regions were not academically ready for six years of medical training, so a bridging science course was set up.

Then came the languages: these were the Mapuche, Quechua, Guarani, Garifuna, natives who learned Spanish as a second language, or Creole-speaking Haitians.

As such, Spanish has become part of the medical doctoral program curriculum.

Yet in Cuba, the music, the food, the smells, almost everything was so different that the teachers became family and home to ELAM.

Religions ranged from indigenous beliefs to Yoruba, Islam, and Christian evangelicals.

Embracing diversity has become a way of life.

Why are so many countries seeking these scholarships?

First, there is a shortage of doctors, and even when there are doctors, they are distributed disproportionately to the poor. Because the global health crisis is caused by a human resource crisis.

With between 4 and 7 million health workers short of basic needs, the problem is everywhere.

Doctors are concentrated in cities where only half the world's population lives, and are concentrated within cities rather than in shanty towns or south of Los Angeles.

Health care reform is progressing here in the United States, but we don't have the expertise we need.

There will be a shortage of 45,000 primary care doctors by 2020.

And we are part of the problem too.

The United States is the largest importer of physicians from developing countries.

A second reason students flock to Cuba is the island's unique health card, which relies on strong primary care.

A panel of The Lancet magazine named Cuba one of the best middle-income countries in terms of health.

Save the Children ranked Cuba as the best country to be a mother in Latin America.

Cuba has a life expectancy and infant mortality rate similar to those of the United States, and although the disparities are small, per capita health care spending is 1/20th that of the United States.

ELAM is academically demanding, but 80% of students graduate.

Basic science and clinical science are familiar subjects, but there is a big difference.

First, training moved from the ivory tower to clinic classrooms and neighborhoods, where most graduates would train.

Of course, there are lectures and hospital rotations, but community-based learning starts on day one.

Second, students work with the patient's whole mind and body within the context of family, community, and culture.

Third, they study public health. This means assessing the patient's drinking water, housing, social and economic situation.

Fourth, we are taught that proper patient interviews and thorough clinical examination provide most of the diagnostic clues, saving expensive techniques for confirmation.

And finally, we are reminded again and again of the importance of prevention, especially as chronic diseases paralyze healthcare systems around the world.

This on-the-job learning entails a team approach with humility, as well as how to lead a team, as well as how to work in a team.

After graduation, these doctors share their knowledge with nursing assistants, midwives, and community health workers to help them do their jobs better. Work with shamans and traditional healers instead of taking their place.

ELAM Graduates: Are They Proving This Daring Experiment Right?

Dozens of projects give us hints of what they can do.

Take Garifuna alumni as an example.

Not only did they return to their hometowns to work, but they organized their communities to build Honduras' first indigenous hospital.

With the help of architects, residents literally built it out of the ground.

The first patient arrived in December 2007 and since then the hospital has seen nearly 1 million patients.

And the government has taken notice, endorsing the hospital as a model for public health in rural Honduras.

ELAM graduates are smart, strong, and dedicated.

Haiti, January 2010.

pain.

People buried under 30 million tons of rubble.

Overwhelming.

340 Cuban doctors have already been on the scene for a long time.

More people were leaving. I needed more.

At ELAM, students were in contact with 2,000 alumni around the clock.

As a result, hundreds of people representing 27 countries arrived in Haiti, from Mali in the Sahara Desert to Saint Lucia, Bolivia, Chile and the United States.

Thanks to Haitian medical students who had flown in from ELAM, Cuba, they spoke comfortably to each other in Spanish and listened to their patients in Creole.

Many stayed for months despite the cholera epidemic.

Hundreds of Haitian graduates have had to pick up the pieces, work through their own heartbreaks, and then carry the burden of building Haiti's new public health system.

Today, with the help of organizations and governments from Norway to Cuba to Brazil, dozens of new health centers are being built and staffed, 35 of which are headed by ELAM graduates.

But Haiti's story also illustrates some of the bigger problems facing many countries.

Let's see. By 2012, the year of the cholera outbreak, there were 748 Haitian graduates, nearly half of whom worked in the public health sector, a quarter of whom were unemployed, and 110 who left Haiti entirely.

So, in the best-case scenario, these graduates will staff and strengthen the public health system, but in many cases they will be the only doctors.

At worst, there are just too few jobs in the public health sector where most poor people are treated, and there is simply not enough political will, not enough resources, and too many patients without care.

Graduates are also facing family pressures and desperate to make a living, so when there are no public sector jobs, new doctors either open their own practice or send money abroad.

Worst of all, in some countries, medical societies are influencing accrediting bodies not to honor ELAM degrees, fearing that these graduates will lose their jobs and reduce patient burdens and incomes.

It's not a question of ability.

Here in the United States, the California Medical Board has accredited the school through rigorous testing, and new doctors are successfully riding Cuba's big bet, passing board meetings and being accepted into highly respected residencies from New York to Chicago to New Mexico.

The 200 of them return to the United States energized, but also frustrated.

As one graduate put it, in Cuba, "We are trained to provide quality care with minimal resources, so when you look at all the resources here and you say it's not possible, I know it's not true.

I've not only seen it work, I've actually made it work. ”

Some of ELAM's graduates, some from here in Washington, DC and Baltimore, come from the poorest of the poor and have provided health, education, and a voice in their communities.

They've done the hard work.

Now we have to do our part to support 23,000 people and counting. We all need to step up: foundations, residency directors, press, entrepreneurs, policy makers, people.

We need to do more globally to give these new doctors a chance to prove their mettle.

They need to be able to take the licensing exam in their home country.

They need jobs in public health departments or non-profit health centers to get training and work.

They need the opportunity to be the doctors their patients need.

To move forward, I may have to find a way back to that pediatrician who, when I was a kid, knocked on my family's door on Chicago's South Side, made house calls, and was a public servant.

These are not very new ideas about what medicine should be.

New is the scale and the face of the doctor himself. ELAM graduates are more likely to be women than men. Indigenous physician of the Amazon, Peru and Guatemala. A doctor of color living in the United States who speaks fluent Spanish.

She is well trained, trustworthy and shares the same face and culture with her patients. Whether by subway, mule or canoe, she teaches us how to walk and definitely deserves our assistance.

thank you. (applause)

Fifty percent of middle managers and professionals are women, but less than a third of them are women at the top of organizations.

This statistic has caused some to wonder why there are so few female leaders.

But if you're like me and believe in leadership at all levels, this statistic tells you that there are tremendous resources out there for middle management leaders. Then another question arises. Why are so many women stuck in the middle, and what must happen to bring them to the top?

Some of you may be women in middle management and looking for a promotion within your organization.

Tonya is a great example of such a woman.

I met her two years ago.

She is a Vice President of a Fortune 50 company and said to me with deep chagrin: "I've worked hard to build my confidence and assertiveness and build a great brand. I've received great performance reviews from my bosses. Thanks to my 360 degree evaluation within the organization, I know my team loves working for me. I've taken every management course I can here and work with great mentors. Still, I've been let down twice for promotion. .

I don't understand why I am being overtaken. ”

So what Tonya doesn't realize is that the equation for career success for women is 33 percent missing, and she understands what that missing 33 percent is to closing the gender gap at the top.

To be promoted within an organization, you need to be known for your leadership skills, and this applies to everyone, women and men.

It means that we need to be recognized for using our own greatness to achieve and sustain extraordinary achievements by leveraging the greatness of others.

In other words, you must use your skills, talents and abilities to help your organization achieve its strategic financial goals, and work effectively with others inside and outside the organization to achieve them.

And while all three of these elements of leadership are important, they are not equally important when it comes to promotion within an organization.

So keep an eye on the green boxes as you proceed.

When looking for and identifying high potential employees, those with the potential to be at the top of the organization, the skills and competencies associated with that green box are weighed twice as much as the other two dimensions of leadership.

These skills and abilities can be summarized as business, strategic and financial acumen.

In other words, this skill set is about understanding where the organization is going, what its strategy is, what financial goals it sets, and your role in moving the organization forward.

That's 33 percent missing in the women's career success equation. It is not because we are lacking in ability or capacity, but because we are lacking in the advice we are given.

Here's what I mean.

Five years ago, when I was asked to moderate a panel of executives, the topic of the evening was, "What do you look for in a high-potential employee?"

So, as I summarize what they told me, let's think about the three elements of leadership.

“We are looking for smart, hardworking, dedicated, dependable and resilient people,” they said.

So which elements of leadership does it relate to?

personal greatness.

They said, "We are looking for employees who are great with customers, empower teams, negotiate effectively, manage conflicts well, and have good overall communication skills."

What element of leadership does it represent?

Attract the greatness of others.

And they almost stopped.

So I asked, "So what about people who understand your business, where it's going, and their role in getting it there?"

And what about those who can scrutinize the external environment, identify risks and opportunities, formulate strategies, and make strategic recommendations?

And what about someone who can look into your business's finances, understand the story your finances tell, and take the right actions or make the right recommendations?"

And to the men they said, "That's right."

So I asked an audience of 150 women. “How many of you have been told that it is your business, strategic and financial acumen that opens the door to career advancement, and all other key factors that differentiate you in the talent pool?”

Three women raised their hands. In the five years since then, I have asked women all over the world this question, and the percentage has never changed significantly.

This is obvious, right?

But how could that be?

There are three main reasons why 33% are missing career success advice for women.

Advice related to business, strategic and financial acumen is sorely lacking as organizations turn to women resources that focus on the traditional advice we've heard for over 40 years.

Much of the advice emphasizes personal actions we should take, such as being more assertive, being more confident, developing our own personal brand, advice on what Tonya has been working on, working with others, learning how to promote ourselves, getting mentors, strengthening our network, etc., with virtually no mention of the importance of business, strategic, or financial acumen.

That's not to say this advice isn't important.

What this means is that while this is absolutely necessary advice to break through from the starting point of your career to middle management, it is not advice to break through from mid-career positions, which are 50% women, to senior and managerial positions.

This is why traditional advice for women hasn't and won't close the top gender gap for 40 years.

Now, the second reason has to do with Tonya's comments that she received excellent performance reviews, received great feedback from her team, and went through all the management training programs available.

So you might think she's getting a message from her organization telling her how important it is to cultivate business, strategic and financial acumen through talent development and performance management systems, but again, that green square is very small.

On average, the people and performance management systems of the organizations I've worked with have placed a 3:1 emphasis on the other two dimensions of leadership compared to the importance of business, strategic and financial acumen. This is why typical talent and performance systems have not and will not close the gender gap at the top.

Well, Tonya also talked about working with mentors. This is very important. Because if organizations, people and performance systems are not informing the public about the importance of business, strategic and financial acumen, how are men getting to the top?

Well, there are two main ways.

One is because of the position they are guided in and the other is because of their informal mentorship and sponsorship.

So what are women's experiences with mentoring?

Well, this comment from an executive I worked with recently speaks to that experience.

He was very proud to have two disciples last year, a man and a woman.

And he said, "I helped women build confidence and I helped men learn the business, but I didn't realize I was giving them special treatment."

And he was sincere about it.

What this shows is that there are ways of thinking about women and men as managers, careers in leadership, whether they are women or men, and that these unexamined ways of thinking do not close the gender gap at the top.

So how do you take this idea that 33% are missing and put it into action?

For women, the answer is obvious. We must begin to focus more on developing and demonstrating the skills to demonstrate that we are human beings who understand our business, where women are heading, and our role in getting there.

That's what makes it possible to make the leap from middle management to top leadership.

But you don't have to be a middle manager to do this.

A young scientist working for a biotech company used his insight on the missing 33 percent to incorporate financial impact data into his project updates, and received overwhelmingly positive feedback from his room manager.

So we don't want to put 100% of the responsibility on women's shoulders, and it's not wise to do so. Here's why. Executives understand that everyone needs to be on the same page if the company is to achieve its strategic financial goals.

In other words, the term we use in business is 'we need to make strategic adjustments'.

And while executives are well aware of this, only 37 percent believe their strategic alignment is in place, according to a recent The Conference Board report.

Therefore, achieving strategic financial goals is questionable for 63% of organizations.

And given what I've just shared, that at least 50 percent of middle managers haven't received a clear message that they need to focus on the business, where it's going, and what role it takes to get there, it's no surprise that the percentage of C-suite executives who are confident in alignment is so low. That is why there are others who have a role in this regard.

It is important for board members to expect a proportionate pool of women in management when they take a seat at the succession meeting once a year.

why? Because if they don't realize it, it can be a red flag that their organization isn't as aligned as it could potentially be.

It's also important for the CEO to expect these prorations, and when you hear comments like, "She doesn't have enough business experience," ask the question, "What are you going to do about it?"

For HR executives, it's important to make sure the missing 33 percent is highlighted appropriately. It's also important for women and men in management to consider how we think about women and men, careers and success, and make sure we're creating a level playing field for everyone.

With that, I'd like to end with the latest chapter in Tonya's story.

Tonya emailed me two months ago. You said you had an interview for a new position. During the interview, her business acumen and strategic acumen for the industry were explored and she said she was delighted to announce that she had been accepted into a new role that would report directly to the company's Chief Information Officer.

So some of you are thinking that the missing 33 percent is ideas to put into action. I also hope that all of you consider this an idea worth spreading to increase the efficiency of your organization, help women leapfrog their careers, and close the gender gap at the top.

thank you.

(applause)

Over the past few days, as I prepared for my speech, I became more and more nervous about what I would say and about sharing the stage with such fascinating people.

To stand on the same stage as Al Gore, who I voted for the first time.

And -- (laughter) So I was pretty nervous, and you know, it was even more nervous because I didn't know Chris was sitting on stage.

But then I started thinking about my family.

I started thinking about my father, grandfather and great-grandfather. And then I realized all these Teds were running through my bloodstream. (Laughs) I realized that I should consider this as a "my factor."

So who am I?

Chris talked about me starting a company with my husband.

We have approximately 125 employees overseas.

I looked at the book and it said...

(Laughs) I was really surprised by this.

(Laughs) Then I saw yesterday's wonderful presentation with a graph, and I wanted to impress everyone with a slide, so I made a moving graph and talked about my makeup.

(Laughter) So, other than this oddity, here are my science slides.

This is math, this is science, this is genetics.

This is my grandmother and this is where I got this mouth.

(Laughter) So -- I'm a blogger, but it probably means something different to a lot of people.

You may have heard about the kryptonite rock hype. A blogger talks about how to hack or break into a kryptonite rock with a ballpoint pen, and it goes viral.

Kryptonite had to adjust the lock and had to deal with it to avoid customer concerns.

You may have heard of Ruthergate. This is basically the result of bloggers noticing that the "th" in 111 was not typeset on older typewriters. It's on Word.

Bloggers have exposed this or tried hard to expose this.

Blogging is scary. Here's what you see.

I've seen this and I'm certainly scared - I swear on stage - about blogging crap, because this is not a friendly thing.

But some blogs are changing the way we read news and consume media, and they're a great example.

These people reach thousands, if not millions, of readers, which is very important.

During the hurricane, MSNBC blogged about the hurricane and updated it frequently.

This was possible due to the straightforward nature of the blogging tool.

I have a friend who writes a blog about PVRs, personal recorders.

He makes enough money just by running ads to support his family in Oregon.

That's all he does now, and this is what blogging has made possible.

And then there is Interplast.

This is a great organization made up of people and doctors who go to developing countries and provide plastic surgery to people who need it.

Children with cleft palates understand it and record their stories.

I'm not that concerned.

(Laughter) I'm talking about myself.

I always decide to be an expert in something, and I am an expert in that person, so I write about it.

Briefly about my blog, it started in 2001 and I was 23 years old.

Being a designer, I wasn't happy with my work, but it didn't inspire me too much.

I majored in English in college.

I didn't have anything to do, but I forgot to write it.

So, I started blogging and making these little stories and stuff like that.

This is about my camping experience when I was 11 years old and how I went to YMCA camp, Christian camp and ended up being so hated by my friends that I hid in my bunk. They couldn't find me and sent a search party. And I've heard people say they should have just jumped off Bible Peak and killed themselves.

It's okay to laugh.

(Laughter) This is me.

This is what happened to me.

And when I started blogging, it was exactly this one goal. I said, "I'm not going to be world famous, but I can be famous to people on the internet."

And set a goal.

I said, "I'm going to win a prize." Because I have never won an award in my life.

And I said, "I'm going to win the South by Southwest Weblog Award."

And I won. I reached out to all these people and had tens of thousands of people read about my life every day.

Then I wrote an article about the banjo.

I wrote an article about wanting to buy a banjo. A $300 banjo, but that's a lot of money.

And I don't play an instrument. I know nothing about music.

I like music and I also like banjo. You've probably heard Steve Martin play. And I said, "Then you can do it."

So I said to my husband, "Ben, can I buy you a banjo?"

And my husband -- (laughter) this is my husband. He's so hot -- he won an award for being hot.

(Laughter) He told me, 'You can't buy a banjo.

You look like your father," he says, collecting musical instruments.

And I wrote an article about how I was so angry with him, how he was such a tyrant. He wouldn't let me buy this banjo.

And those who knew me understood my jokes. This is Mena. This is how I joke with people.

The joke in this is that this person is not a tyrant, but a very loving and kind person, so he makes me dress him up and post his pictures on my blog.

(Laughter) And if he knew I was showing this now -- I put this in today -- he would kill me.

But really, my friend read it and was like, 'Oh, that Mena, she wrote a post about wanting stupid things and being stupid.

But I've gotten emails from people saying, 'Oh my god, your husband really sucks.

How much money does he spend on beer in a year?

You can buy a banjo with that money.

How about opening another account? ”

I have been with him since 17 and we have never had separate bank accounts.

They said, 'Separate bank accounts.

Spend your money. Use his money, that's all. ”

And people said, "Leave him."

(Laughter) I thought, "Okay, what? Who are these people?"

And why are they reading this? ”

And then I realized, "I don't want to contact these people."

I don't want to write for a general audience like this.

And I slowly started quitting blogging.

I feel like I don't want to write this anymore.

Slowly, slowly -- and I've had personal stories from time to time.

I wrote this today under the influence of Einstein and posted this.

This is my first ever pet and he passed away 2 years ago so it's suffocating.

And I wanted to do a little tribute to her, so I decided to move away from "I don't write much about my public life."

Anyway, this is kind of a personal story. You read blogs about politics, the media, gossip, etc.

These are out there, but what interests me is personal, and this is who I am.

When you look at Norman Rockwell, art critics say, "Norman Rockwell is not art."

Norman Rockwell hangs in living rooms and bathrooms, but this isn't high art. ”

And I think this is one of the most important things for us humans.

These things resonate with our hearts. When we think of blogs, we think of high art blogs and historical paintings based on biblical stories. And then there's this.

The blogs I'm interested in are people who just tell stories.

One story is about this baby and his name is Odin.

his father was a blogger.

Then one day, as he was blogging, his wife gave birth to a baby at 25 weeks.

And he did not expect this.

One day it became normal. The next day it was hell.

And this is a 1 pound baby.

So Odin was recorded daily.

Pictures were taken daily: Day 1, Day 2...

It's day 9. They talk about his apnea. Day 39 -- He had pneumonia.

His baby is very small and I have never come across an image so — just — unsettling, but it warmed my heart.

And you happen to be reading this, so on day 55, everyone reads that he has respiratory failure and heart failure, and it slows down, and you don't know what to expect.

But then it gets better. On the 96th day he goes home.

and you see this post.

It's not something you see in newspapers and magazines, but this is what this person feels and people are excited about it -- 28 comments.

We don't read a lot, but the number 28 is significant.

And today he is a healthy baby. Reading his blog (snowdeal.org, which is his father's blog), he still takes pictures of his son. Because he's still a son and he's had great treatment from the hospital, so I think he's at that age level now.

So, blog.

so what? You've probably heard of these things.

We talked about Well and various things throughout our online history.

But I think blogging is basically just an evolution, and that's where we are today.

It's a record of who you are, your persona.

There's a Google search for "what is a mena trot?"

And you find these things and be happy or unhappy.

But you can also find people's blogs. It's a record of people writing every day about things that interest them, not necessarily about the same topic.

We at this panel are talking about a flattening world, and I'm very optimistic. Every time I think of blogging, I think, "I have to reach all these people."

We are trying to expand into China, and we would like to go to China, but there are a lot of people who don't have access to blog.

But blogging software is so simple that it's amazing to see something like a $100 computer.

Our company's success is due to timing and perseverance, and it's simple. It's not rocket science.

It's amazing.

In other words, I consider blogging as a record of my life to be very important to me.

And we started with my Ted slide and I had to add this slide. Because the moment I show this to my mother – my mother will see this, because she reads my blog, she will say, 'Why didn't you have a picture of me?

This person is my mother.

But this is basically the extent of the family I know from my direct line of sight.

I've shown you a Norman Rockwell painting before, and I grew up watching it all the time.

I spent hours looking at the connection and saying, "Oh, the little kid at the top has red hair. So does the first generation over there."

And it's just a small thing.

This isn't science, but it was enough to really get me interested in how we evolved and how we could trace our lineage.

So it's always affected me.

I have this 1910 Census record for another Grabowski. This is my maiden name. And then there is the name Theodore. Because Theodore is always present.

That's all I know. Here are some facts about someone.

I only know their date of birth, age, what they did at home, and if they spoke English. That's all I know about these people.

It's very sad, but I can only go back five generations, so that's it.

I don't even know what's going on on my mother's side. Because my mother is from Cuba and I don't have that much.

Just doing this, I spent time in the archives - that's why my husband is a saint - I spent time in the Washington archives and just sat there looking for these things.

It's online now, but he watched it in silence.

So you have this record, and -- this is my great-great-grandmother.

This is the only photo I have.

And think about what we can do with blogs. It's amazing to think of people with $100 computers, talking about themselves and sharing their personal stories.

Another photo, or series of photos, that has had a big impact on me is this project done by an Argentinian man and his wife.

And he takes family pictures basically every day for the past, what is 76 years? -- 20 ... I'm 77 years old -- 29?

twenty nine years.

Originally, there was a joke about the graph I omitted: "Can you see all this calculation?"

I'm glad I was able to add up to 100 because that's my skill set.

(Laughter.) So these people are old, but here they are today or last year.

Being able to track this is very powerful.

I wish I had this in my family too.

The day will come when my children, or my grandchildren and great-grandchildren, will wonder what I would be like if I had children, who I would be.

So I'm doing a very narcissistic thing -- I'm a blogger -- which is great for me, because it captures every single moment.

I take pictures of myself - I have been doing this since last year - every day.

And, you know, this is the same picture. They are basically the same person.

Only a few people have read it.

I am not writing this for this reader. I'm releasing it now, but if this is really released, people will go crazy.

I think there are probably about 4 people reading it, but they say, "You haven't updated it."

It will probably say that it has not been updated.

But this is amazing. Because I can go back to April 2005 and say, "What was I doing on this day?"

It is this visual cue that is very important to our activity.

Since there are bad photos, I will also post bad photos.

(Laughter) And I immediately remembered. I am in Germany now. I had to go on a day trip.

I was sick in my hotel room and I didn't want to be there.

And when you look at these things, it's not just laughing all the time.

If you look at my driver's license, I have the same look on my face, which is pretty disturbing, but very important.

And the last story I really want to tell is this story. Because this is probably the most meaningful story to me of all the things I do.

I tend to choke when I talk about this stuff, so I will probably choke.

This woman's name is Emma, ​​and she was a blogger for our service, TypePad.

She was a beta tester, so she was there when it opened. There were 100 people.

And she wrote about her life battling cancer.

She was writing more and more and we all started reading it. Our service had very few blogs, so we were able to keep track of everyone.

And then one day she was writing, then disappeared for a little while.

Then her sister came and said that Emma had died.

And all the support staff she spoke to were really emotional and had such a tough day at the company.

And this was one of the examples where I realized how much blogging affects our relationship and flattens out this kind of world.

This woman was in England and had a life where she would talk about what she was doing.

But the big thing that really impacted us was that her sister wrote me a letter and also wrote about this blog. Writing a blog in the last few months of her life was probably the best thing that happened to her, being able to talk to people, share what was going on, write and receive comments.

And it's been amazing, to see that we've empowered it, and that blogging is something that's easy for her to do, and the idea that blogging doesn't have to be scary, that it doesn't have to be bombarded all the time, that she can be open and willing to help people and talk to people.

It was amazing.

So I printed a PDF of her blog and sent it to her family. The family handed it out at her memorial service and even mentioned her blog in her obituary. Because blogging was such a big part of her life.

This is her legacy and my call to action for all of you is: Think about a blog, think about what it is, think about what you thought about a blog, and then do it. Because it really changes our lives.

Thank you very much.

(applause)

I am a contemporary artist and exhibit my work in art galleries and museums.

We display many photographs and movies, but we also produce TV programs, books, advertisements, etc. with the same concept.

And it speaks to our obsession with celebrities and celebrity culture, and the importance of image. Celebrities are born from photos.

I want to start with how I got started with this concept seven years ago when Princess Diana passed away.

At the moment of her death, there was a kind of stagnation in Britain and people decided to mourn her death in a kind of collective way.

I was fascinated by this phenomenon and wondered if I could actually very roughly and physically erase the image of Diana.

So I got a gun and started shooting at Princess Diana's figure, but I couldn't get it out of my memory, and it certainly wasn't out of the public psyche.

Momentum was building.

The press wrote about her death in a rather pornographic way, like, "Which artery left which part of the body?"

"How did she die in the back seat of the car?"--and I was intrigued by this kind of gang voyeurism, so I created these rather harrowing images.

Then I kept wondering if I could actually replace her image, so I got a Princess Diana look-alike and posed her in the right positions and angles to create something that existed or existed in the public imagination.

So people wondered: Was she going to marry Dodi?

was she in love with him?

Was she pregnant? Did she want his child?

Was she pregnant when she died?

So I created an image of Diana, Dodi, and their imaginary half-breed child, and this image came out and caused a massive public backlash at the time.

After that, I continued commenting further on media and press images and started referencing media images. The images were grainy, filmed from doorways, etc. to further provoke the public and viewers in that they tried to make the viewers more aware of their voyeurism.

This was an image of Princess Diana looking at Camilla kissing her husband, and this was a series of images.

And this will be exhibited as a series of works in art galleries like this one.

And similarly, Didodian's baby image is also an art gallery installation.

I am particularly interested in why we cannot rely on our own perceptions.

For example, this is Jane Smith and Joe Brogs, but you think it's Camilla and the Queen. And it intrigues me that what you think is real isn't necessarily real.

And since the camera can lie, it becomes very easy to tell the truth by feeding it lots of images.

So I continued working on this project exploring how photography fascinates us and is more interesting to look at than the actual subject matter.

And at the same time, it takes us away from the real subject and this acts as a kind of provocation.

So the photo becomes this teaser, stimulating lust and voyeurism. What you can't have, what you want more.

In photography, the lack of a real subject makes us want that person more.

And I think that's how celebrity magazines do it now. The more I look at the photos of celebrities, the more I feel like I know them, but I don't really know them, so I want to know even more.

Of course, the Queen frequently goes to the studs to observe the horses...

look at her horse (laughter).

Then I made some kind of image.

There's an expression in England that says, "I can't imagine the Queen in the bathroom."

That's why I'm trying to permeate it.

Well, here is the image.

All this imagery caused an uproar and I was cited as an offensive artist. The media wrote articles about this and ran full pages about how bad it was.

I found it very interesting to see it come full circle. I was commenting on the press and how we know facts and information only through the media. Because we don't know real people. Few people know the real person. But then it hit the press again, and they were effectively promoting my dirty work.

I mean, these were the big newspapers, the tabloids, all this stuff was discussed, the movie was banned before people actually saw it, politicians were involved, all sorts of big headlines.

Then all of a sudden it started appearing on the front page.

I was asked to write the cover and was paid.

All of a sudden I felt accepted and that was also attractive.

One minute it sucked, journalists lied to me for articles and photos, said my work was great, and the next minute there was a terrible headline about me.

But then things suddenly changed.

After that, I started working for magazines and newspapers.

For example, here's an image that was incorporated into Tatler.

This was an image from another newspaper.

Actually, this was April Fool's Day, but some people still think it's real.

I sat next to someone at dinner the other day and they said they had a great statue of the Queen sitting outside William Hill.

They thought it was real.

At the time, I was exploring the exaggeration of icons like Diana and Marilyn and the importance of celebrities in our lives.

How they invade the collective psyche without our knowledge, and how it should happen.

I actually looked into it myself by pretending to be a celebrity.

There's me as Diana - I think she looks like mass murderer Myra Hindley in this one. (laughter).

and me as a queen.

Then I went on to do a series of pieces about Marilyn, the biggest icon, Marilyn, trying to inspire by filming through doorways, shutters, etc., showing only certain angles to create an apparently fully constructed reality.

Since this is a look-alike, the crafting elements are completely vast.

She doesn't look like Marilyn at all, but she looks so much like Marilyn that by the time we put her in her makeup, wig and makeup, her husband can't recognize her in these photos, or that she's this look-alike. I find this very interesting.

Therefore, all this work is exhibited in art galleries.

Then I made a book.

At the time I was also producing a TV series for the BBC.

Still images from the TV series are included in this book.

But there were real legal issues with it because it looks real, how do you get past that?

Because it's clearly commenting on our current culture, where we can't tell what's true.

When you're looking at something, how do you know if it's real?

So, from my point of view, exposing this is important, but it also causes confusion. It was done on purpose for me, but it's a problem for any medium I work with.

That's why all my actions come with a big disclaimer, and I've made up stories about all the big names in Europe and the UK, as well as comments about our public figures.

What does Tony Blair do in private with the fashion guru?

It also deals with perceived ties to bin Laden, Saddam Hussein, and the pre-Iraq war.

And what about the monarchy?

Because apparently the British public would prefer William to the throne over Charles.

And I think that's what I deal with in my work.

I'm not really interested in celebrities themselves.

I am interested in celebrity recognition.

And some look-alikes are so good that you can't tell if they're real.

I did an advertising campaign for Schweppes, Coca-Cola, so it was very interesting from a legality point of view.

Very commercial.

But it was difficult for me. Because this is my work. Should I advertise? - at the time.

Therefore, we ensured that the work would not be damaged in any way and that the integrity of the work would not be altered.

But the logo changed the meaning in the sense that it closed all interpretations leading up to the sale of the product and was just that.

Removing the logo makes it less definitive when advertising, more open to interpretation, and less definitive in your work.

This image is really interesting. Because I think it was made 3 years ago.

And it's Camilla in a wedding dress. This is also something that was recently about to be reused in advance of a wedding.

Tony Blair and Cherry. And again, we had to be very careful about legality.

The company is clearly a very large for-profit company, so small letters were added next to the image that said, "Shih, it's not actually them."

And Margaret Thatcher visits Jeffrey Archer in prison.

Selfridges then commissioned me to create a series of windows, so I built a sauna bath in one of the windows and created a small scene. There was a look-alike live scene inside the window, and the window was all muggy.

So Tony Blair is reading and practicing his speech. I have Carol Caplin doing yoga there. Sven had an affair with Ulrika Jonsson, who was having an affair at the time.

This was a huge success for them as the image was reported in every newspaper, broadsheet and tabloid the next day.

We had a bit of a problem with some traffic as the police were trying to clear the crowds, but it was great fun. It was great for me to perform.

Also, because people were taking pictures of this, all this images were texted around the world very quickly.

And the press was interviewing me and I was signing books. (laughter).

more images. I'm currently working on a new book with Taschen, which I'm working on for some kind of global market. My previous book was for the UK market only. I think this can be called humor.

Perhaps I come from a kind of humorless background with serious intentions, but suddenly my work is funny.

And I don't think it's very important that my work is considered humorous in some way. I think this is how I approach the importance of images and how we read all the information from them.

It's a very fast way to get information.

There are techniques to build iconic images, though very difficult when constructed correctly.

This image, for example, is kind of out of place because it sums up exactly what Elton does in his private life and what Saddam Hussein or George Bush might be reading the Quran upside down.

For example, George Bush's shooting practice - shooting Bin Laden and Michael Moore.

And if you change the photos he's taking, it might suddenly become pretty brooding and inaccessible. (laughter).

Tony Blair used as a mounting block, Rumsfeld and Bush laughing against the backdrop of Abu Ghraib's photo, and Bush's seriousness or intelligence.

We also comment on what goes on behind the scenes, in prison as we know it now.

And actually, George Bush and Tony Blair are having a lot of fun during all of this.

And what we actually comment on is based on our perception of celebrities.

What Jack Nicholson has in his celebrity life, and the fact that he tried to do it... he recently had a bit of a road rampage and hit a driver with a golf club.

I mean, these look-alikes are very hard to find, so I always approach people on the street and ask them to appear in my photos and movies.

They also mistakenly ask someone who looks like a real celebrity, which is very embarrassing. (laughter).

Also, I work with the Guardian on current affairs, and there is a page a week in the newspaper, which is very interesting, and I work on current affairs.

So Jamie Oliver and school dinner. President Bush and Prime Minister Blair have trouble conforming to Islamic culture. The whole hunting issue and the royal family who never stop hunting. And the tsunami problem. And obviously Harry. I find Blair's take on Gordon Brown very interesting. Condy and Bush.

This image decided to show what I have reservations about it.

I made it a year ago. And how the meaning changes, and something terrible happened, but that fear lurks in our minds even before then.

Why was this image created a year ago and what does it mean today?

Now I would like you to watch these clips. (Music) Chris Anderson: Thank you.

Recently I flew over a crowd of thousands playing the music of George Frederick Handel in Brazil.

Also, I drove through the streets of Amsterdam and played music by this same composer again.

Let's see.

(Music: George Frédéric Handel "Allegro", performed by Daria van den Berken) (Video) Daria van den Berken: I live there on the third floor.

(in Dutch) I live on the corner there.

I actually live around the corner there.

You are most welcome.

Man: (in Dutch) That sounds fun? Child: (in Dutch) Yes!

[(in Dutch) 'Handelhaus concert'] (applause) Daria van den Belken: All this was a truly magical experience, for hundreds of reasons.

Now you may be wondering why I did this.

They are not very typical for a musician's daily life.

Well, I fell in love with music and wanted to share it with as many people as possible, so I did this.

It started several years ago.

I was sitting on the couch at home with the flu and browsing the internet for a bit when I learned that Handel was writing for keyboards.

Well, I was surprised. I do not know about this.

So I downloaded the sheet music and started playing.

What happened next was that I entered a state of pure, unbiased amazement.

It's been a long time since I've had the experience of being completely in awe of music.

It may be easier to imagine when you hear this.

The first song I played started like this.

(music) Well, this sounds very melancholic, doesn't it?

And when I turned the page, this was what came out next.

(music) Hmmm, you're feeling really good.

So the piece isn't finished yet, but within minutes I was experiencing two very contrasting characters: beautiful melancholy and pure energy.

And I consider these two elements to be important human expressions.

And the purity of the music makes it sound very effective.

I've done a lot of children's concerts for 7 and 8 year olds, and they're open to hearing anything I play, be it Bach, Beethoven, Stockhausen, or some kind of jazzy music, they really enjoy it and don't mind doing it.

And when 11- and 12-year-olds just a few years older come to class, I already felt that it can be difficult to reach them in that way.

The complexity of music certainly matters, and the opinions of others – parents, friends, media – start to matter.

But young people do not question their opinions.

They are in a state of constant wonder and we strongly believe that we can continue to listen like these seven-year-olds into adulthood.

That's why I've been playing not only in concert halls, but on the streets, online, in the air. To feel that state of amazement, to truly listen, to listen without prejudice.

And I urge you to do so now.

(Music: Georg Frédéric Handel, Chaconne in G major. Performed by Daria van den Berken) (Applause) Thank you.

(applause)

I am very happy to be here tonight.

So, for the past 15 years, I have been working on the history of income and wealth distribution. One interesting lesson to be learned from this historical evidence is that in the long run the return on capital actually tends to outpace economic growth, which tends to lead to a high concentration of wealth.

Wealth is not infinitely concentrated, but the larger the gap between r and g, the higher the level of wealth inequality that society tends to concentrate.

This is the key force we are going to talk about today, but let me say right away that this is not the only important force in the dynamics of income and wealth distribution, there are many other forces that play important roles in the long-run dynamics of income and wealth distribution.

Also, there is still a lot of data that needs to be collected.

Today we know a little more than we used to, but we still know too little. Indeed, there are many different processes, economic, social, political, etc., that need further study.

So, although we will focus on this simple force today, that does not mean that other important forces do not exist.

Therefore, most of the data I present comes from this database available online, the World Top Income Database.

In short, it is the largest historical database of inequalities in existence, born of the efforts of over 30 academics from dozens of countries.

After presenting some facts from this database, we return to r being greater than g.

The first is that there has been a major reversal in the order of income inequality between the US and Europe over the past century.

So while income inequality was actually much higher in Europe than in the US in 1900 or 1910, it is much higher in the US today.

So, to be clear, the main explanation for this is not that r is greater than g.

It has to do with changing supply and demand for skills, competition in education and technology, globalization, and perhaps more unequal access to skills in the United States. The US has very good top universities, but the bottom part of the education system is not so good, resulting in very unequal access to skills. And the unprecedented rise in U.S. executive compensation is hard to explain with education alone.

There's a lot more going on here, but I don't want to talk too much about this today because I want to focus on wealth inequality.

So I would like to give you a very simple indicator for the income inequality part.

In other words, this would be the percentage of total income in the top 10 percent.

So a century ago it was 45-50 percent in Europe and just over 40 percent in the United States, so we know there was even more inequality in Europe.

Then there was a sharp decline in the first half of the 20th century, and we find that the US has become even more unequal than Europe in the last decade. This is the first fact we talked about earlier.

Now, the second fact is more about wealth inequality, and the central fact here is that wealth inequality has always been much greater than income inequality, and that while wealth inequality has also increased in recent decades, it is still not extreme today, even though aggregate wealth relative to income has now recovered from the enormous shocks caused by World War I, the Great Depression, and World War II.

So here are two graphs showing facts 2 and 3.

First, looking at the level of wealth inequality, which is the percentage of total wealth that the top 10 percent of the wealthy make up, we see a similar reversal between the US and Europe that we have seen before for income inequality.

So while wealth was more concentrated in Europe than in the United States a century ago, today the opposite is true.

But we can also show you two things: First, the general level of wealth inequality is always higher than income inequality.

Recall, therefore, that for income inequality the share of the top 10 percent is between 30 and 50 percent of total income, whereas for wealth the share is always between 60 and 90 percent.

Now, this is the first fact, which is very important for the rest of the discussion.

Wealth concentration is always much higher than income concentration.

Fact number two is that the rise in wealth inequality in recent decades is still not enough to bring us back to 1910.

The big difference today is that wealth inequality is still very high, with the top 10 making up 60, 70 percent of total wealth, but the good news is that it is actually better than a century ago when 90 percent of Europe was in the top 10.

What you have now is what I call the 40 percent of the middle class, people who are not in the top 10 or bottom 50, who can be viewed as the wealthy middle class who own total wealth, 20-30 percent of the national wealth, whereas a century ago they were poor when the wealthy middle class was basically non-existent.

So this is an important change, and it is interesting that wealth inequality has not fully recovered to pre-World War I levels, even though total wealth has recovered.

have understood? This is the total wealth relative to income, and we can see that, especially in Europe, it is almost back to pre-World War I levels.

So there are really two different parts to the story here.

One has to do with the amount of wealth we accumulate, and of course accumulating a lot of wealth is not a bad thing per se, especially if it is more diffuse and less concentrated.

So what we really want to look at is the long-term evolution of wealth inequality and what will happen in the future.

How can we explain the fact that wealth inequality was so high, even rising to even higher levels, until the First World War, and how can we think about the future?

So let me give you some explanations and speculations about the future.

Let me start by saying that the best model for explaining why wealth is so much more concentrated than income seems to be a dynamic, dynastic model in which individuals take a long view and accumulate wealth for all sorts of reasons.

If people were accumulating wealth solely for life cycle reasons so that they could consume it in old age, the level of wealth inequality would roughly match the level of income inequality.

But a pure life-cycle model makes it very hard to explain why wealth inequality is so much greater than income inequality, so we need stories that people are also interested in accumulating wealth for other reasons.

So usually they want to pass on their wealth to the next generation or children, and sometimes they want to accumulate wealth for fame, the power that comes with wealth.

Therefore, there must be other reasons for accumulating wealth besides lifecycles to explain what we see in the data.

Now, in a large class of dynamic models of wealth accumulation with such dynastic wealth accumulation motives, all sorts of random and multiplicative shocks are bound to occur.

For example, some families have so many children that the wealth is divided.

Some families have fewer children.

Profitability is also impacted.

Some families get huge capital gains.

Some have made bad investments.

So you always have some mobility in the process of gaining wealth.

Some go up, some go down.

The important point is that in such a model, if the variance of such shocks is constant, the equilibrium level of wealth inequality is a steeply rising function of r minus g.

And intuitively, the reason why the difference between the rate of return to wealth and the rate of growth matters is that the larger the value of r minus g, the faster the initial wealth inequality grows.

So let's take a simple example. If r equals 5 percent and g equals 1 percent, wealth holders only need to reinvest one-fifth of their capital income to increase their wealth as fast as the size of the economy.

So, assuming zero taxes, four fifths can be spent and only one fifth reinvested, making it easier to build and perpetuate huge fortunes.

Of course, some households will spend more than that, and some will spend less, so there will be some liquidity in the distribution, but on average only one-fifth will need to be reinvested, thus maintaining high wealth inequality.

Now, don't be surprised by the statement that r can be infinitely larger than g. Because, in fact, this has happened for most of human history.

And this is, in a way, very clear to everyone, for the simple reason that growth has been close to zero percent for most of human history.

Growth rates were probably 0.1, 0.2, 0.3 percent, but population and output per capita were growing very slowly, while return on capital was of course not 0 percent.

For land assets, the traditional form of wealth in pre-industrial societies, it was typically 5%.

Any Jane Austen reader will know that.

If you want an annual income of £1,000, you need a capital value of £20,000 so that 5% of 20,000 equals 1,000.

And in a way, this was the very foundation of society. Because r being greater than g was what allowed wealth and property owners to live off their capital income and not only care about their own survival, but to do other things with their lives.

Now, one of the key conclusions of my historical research is that modern industrial growth has not changed this basic fact as much as might be expected.

Of course, post-industrial growth rates typically rose from zero to 1-2 percent, but the return on capital also rose at the same time, so the difference between the two didn't really change.

The 20th century had a very unique combination of events.

First, the very low rates of return from the war shocks of 1914 and 1945, the destruction of wealth, inflation, and bankruptcies during the Great Depression all reduced the rate of return to private wealth to unusually low levels in 1914-1945.

And after the war, it achieved an abnormally high growth partly due to reconstruction.

As you know, Germany, France and Japan recorded growth rates of 5 percent between 1950 and 1980. This is mainly due to reconstruction and also due to the very large population growth, the baby boomer effect.

Well, it looks like this won't last very long, at least population growth is expected to decline in the future, and the best projection we have is that long-term growth will be closer to 1-2 percent instead of 4-5 percent.

Looking at this, these are the best estimates we know of global GDP growth and return on capital, average return on capital. So it turns out that for most of human history the rate of growth was very small and much lower than the rate of return. Then, in the 20th century, we actually had population growth, which was very high after the war, and the reconstruction process narrowed the gap between growth and profitability.

We are using UN population estimates here, so they are of course uncertain.

In the future we may all start having more children and grow at a higher rate, but going forward this is the best projection we have and this will lead to lower global growth and a wider return differential.

Now, another extraordinary event of the 20th century, as I said earlier, was the destruction and taxation of capital. So this is the pre-tax rate of return.

That's the after-tax, post-disruption rate of return, and that's why the average post-disruption after-tax rate of return has been below the growth rate for a long period of time.

But without destruction and taxation, none of this would have happened.

Therefore, it can be said that the balance between return on capital and growth depends on many different factors, such as technology and development of capital-intensive technologies, which are very difficult to predict.

The most capital-intensive sectors of the economy today are the real estate, housing and energy sectors, but in the future many sectors will likely introduce more robots, making robots a larger share of the total capital stock than today.

Well, we're far from this, but going forward, what's happening in the real estate sector and the energy sector will be much more important for total capital stock and capital share.

Another important issue, along with financial complexity and financial deregulation, is that portfolio management has scale effects, making it easier to achieve higher returns on larger portfolios. This seems especially true for billionaires and large capital funds.

To give just one example, this is taken from the Forbes Billionaires Rankings from 1987 to 2013, which shows that the top wealth holders outperformed inflation by 6-7 percent per year in real terms, while average global income and average global wealth grew by only 2 percent per year.

And we see the same thing about large university endowments. The larger the initial donation, the greater the return.

Well what can you do?

First of all, I think we need to increase financial transparency.

Since we know so little about global wealth dynamics, the international transmission of banking information is necessary.

We need a global registry of financial assets, and we need further adjustments on wealth taxes. Moreover, even a low-rate wealth tax can be a vehicle for generating information, allowing policies to be adapted to whatever we observe.

And to some extent, fighting tax havens and automated transmission of information is pushing us in this direction.

Now, there are other ways to redistribute wealth, and you may be tempted to take advantage of them.

Inflation: It's very tempting because it's much easier to print money than it is to write tax code, but sometimes you don't know what to do with your money.

This is a problem.

Expropriation is very attractive.

When you feel that some people have become too wealthy, you just expropriate them.

But this is a less efficient way of organizing the regulation of wealth dynamics.

So I tend to favor progressive taxation because war is an even more inefficient method, but of course history — (laughter) — history invents its own best methods, and probably includes a combination of all of these things.

thank you.

(Applause) Bruno Giussani: Thomas Piketty. thank you.

Thomas, I'd like to ask you a couple of questions, because it's impressive how you manage your data, of course, but basically what you're suggesting is that increasing wealth concentration is kind of a natural tendency of capitalism, and if left unchecked it could threaten the system itself, so you need to act to implement policies that redistribute wealth. That includes what we just saw, progressive taxation, and so on.

How realistic are they in the current political climate?

How likely do you think they will be implemented?

Thomas Piketty: Well, if you look back in time, I think the history of income, wealth and taxes is full of surprises.

So I'm less impressed with people who know in advance what will or won't happen.

A century ago, many would have said that a progressive income tax would never happen, and it has.

And even five years ago, many would have thought that banking secrecy would live forever in Switzerland, that Switzerland was too strong for the rest of the world, but suddenly, it took the US several rounds of sanctions against Swiss banks to make a big change, and now it is looking to increase financial transparency.

So I don't think it would be too difficult to better coordinate politically.

We will be sitting around the table with the United States and the European Union to conclude a treaty with half the world's GDP, but if half the world's GDP is not enough to advance financial transparency and minimal taxation of multinational profits, what will it take?

So I don't think these are technical issues.

I think we can move forward if we can take a more pragmatic approach to these issues and put appropriate sanctions on those profiting from financial uncertainty.

BG: One objection to your view is that economic inequality is not only a feature of capitalism, but actually one of its drivers.

So while we take steps to reduce inequality, we are potentially stifling growth.

what would you say to that?

TP: Well, I don't think inequality per se is a problem.

I believe that some degree of inequality can actually help innovation and growth.

The problem is that it's a matter of degree.

When inequality becomes too extreme, it becomes useless for growth and can even worsen over time as inequality tends to be highly persistent and less liquid.

And I don't think, for example, the kind of concentration of wealth that was practiced in almost all European countries from the 19th century to the First World War was conducive to growth.

This was wrecked by a combination of tragic events and policy changes, but that didn't stop growth.

I also believe that the impact of private money in U.S. politics is currently a concern, as extreme inequality can have detrimental implications for our democratic institutions if it leads to highly unequal access to political voice.

Therefore, we do not want to return to the extreme inequality that existed before the First World War.

Having a substantial share of the national wealth in the middle class is not bad for growth.

In fact, this is useful for both fairness and efficiency reasons.

BG: At the beginning, I said that your book has been criticized.

Some of your data have been criticized.

Some of the selected datasets have been criticized.

You are being accused of picking data to make your case. what would you say to that?

TP: Well, I answer that I am very happy that the book is stimulating discussion.

This is part of its purpose.

The reason I put all the data online, including the detailed calculations, is so that we can have an open and transparent discussion about this.

So I answered every concern point by point.

Let me tell you, if I were to rewrite this book today, I would conclude that the rise in wealth inequality, especially in the United States, was actually greater than I report in the book.

A recent study by Saez and Zucman, using new data I didn't have at the time of writing this book, shows that wealth concentration in the United States is higher than I report.

And other data will come out in the future.

Some of them will go in different directions.

See, we're putting a new, up-to-date series of World Top Income Databases online almost every week, and we'll continue to do so, especially in emerging markets. We welcome all who wish to contribute to this data collection process.

In fact, I certainly agree that there is not enough transparency about wealth dynamics, and a good way to get better data is to introduce a low wealth tax from the start. Then we can all agree on this important evolution and adapt our policies to what we observe.

So taxation is a source of knowledge, and that's what we need most right now.

BG: Thank you very much, Thomas Piketty.

thank you. TP: Thank you. (applause)

For nearly 20 years, I've been helping people improve their luck by observing what makes them luckier than others.

As you know, I teach entrepreneurship, but we all know that most new businesses fail and innovators and entrepreneurs need all the luck they can get their hands on.

So what is luck?

Luck is defined as success or failure apparently caused by chance.

Apparently.

That's the valid word.

It looks like an opportunity because we rarely see all the levers working to make people lucky.

But after watching it for so long, I've come to realize that luck is seldom something like an isolated, dramatic lightning strike.

It is more like the wind, blowing constantly.

Sometimes it's calm, sometimes it's gusty, and sometimes it comes from unexpected directions.

So how can you catch the wind of fortune?

Simple, but not obvious.

So here are three things you can do to set sail to catch the wind of good fortune.

The first thing to do is change your relationship with yourself.

Be willing to take small risks to step out of your comfort zone.

Well, we do this all the time when we're kids.

If you're going to learn how to walk, talk, ride a bike, or even quantum mechanics, you have to do this. right?

I need to go from being a non-cyclist one week to a bicyclist next week.

And that requires us to step out of our comfort zone and take some risks.

The problem is that as we age, we do this less and less.

We kind of lock in our sense of who we are and don't stretch anymore.

Now I spend a lot of time encouraging my students to get out of their comfort zone and take risks.

What should I do?

Well, start by having them fill out a risk-o-meter.

Now this is basically the fun of planning what risks you are willing to take that we developed in class.

And for them, it quickly turns out that taking risks is not an either/or.

There are intellectual risks, physical risks, economic risks, emotional risks, social risks, ethical risks, and political risks.

And when you do this, you compare your risk profile to others and quickly realize they are all really different.

Then I encourage them to stretch or risk stepping out of their comfort zone.

For example, you might ask them to take an intellectual risk and try a problem they've never tried before. Or social risk, talking to the person sitting next to you on the train. Or, if you're at emotional risk, you might tell someone you really care about how you feel.

I do this myself all the time.

About 12 years ago, I was on an early morning flight to Ecuador.

And normally, I would just put on my headphones, go to bed, wake up, and go to work, but I decided to take a little risk and started a conversation with the guy sitting next to me.

After introducing myself, I learned that he was a publisher.

interesting.

We ended up having an interesting conversation.

I learned about the future of the publishing industry.

So, about three-quarters of the way through the flight, I decided to take another risk, opened up my laptop, and shared with him the book proposal I had put together for what we were doing in class.

And he was very polite and read it and said, "Tina, this isn't right for us, but thank you so much for sharing."

fine. That risk didn't pay off.

I closed my laptop.

After the flight ended, we exchanged contact information.

A few months later, I reached out to him and said, "Mark, would you like to come to my class?"

I am working on a project to reinvent the book, the future of publishing. ”

Then he said, "It's wonderful. I really want to go."

So he came to my class. I had a great experience.

A few months later I wrote to him again.

This time I sent him a ton of video clips from another project my students did.

He was so intrigued by one of the projects the students had done that he thought there might be a book in it and wanted to meet the students.

I must say, I was a little hurt.

(Laughter) I mean, he wanted to write a book with my students, not me, but that's okay.

So I invited him to come with a colleague to Stanford to meet with the students and then have lunch together.

And one of his editors said to me, "Hey, have you ever thought about writing a book?"

I said, "That's strange, you should ask."

And I pulled out the exact same proposal I showed his boss a year ago.

Within two weeks we had a deal, and within two years the book had sold over a million copies worldwide.

(Applause.) Now, you might say, "Oh, you're so lucky."

Of course I was lucky, but that luck was born from the accumulation of small risks that started with greetings.

And this can be done by anyone, anywhere in life, anywhere in the world. You can do this by taking a few risks and stepping out of your comfort zone, even if you consider yourself to be the most unlucky person.

Start sailing to get lucky.

The second thing I want to do is change my relationships with others.

You need to understand that everyone who helps you on your journey plays a big role in helping you reach your goals.

And if you don't show gratitude, you're not only failing to close the loop, you're missing out on opportunities.

When someone does something for you, that person is taking away time that could be spent on themselves or someone else, so you need to acknowledge what they are doing.

Currently, I run three fellowship programs at Stanford University, and I know it's very competitive to get in, and I know there will always be some disappointment when it comes to writing to students who didn't get in.

Some disappointed people have sent me notes of dissatisfaction.

Some even send me notes about what they can do to be more successful next time.

And from time to time, someone writes me a letter thanking me for the opportunity.

This happened about 7 years ago.

A young man named Brian sent me a beautiful letter. "I know I was turned down from this program twice, but I would like to thank you for giving me the opportunity.

I learned a lot through the application process. ”

I was very impressed with the politeness of his message, so I invited him to come see me.

Then we chatted for a while and worked out ideas for an independent research project together.

He is on the Stanford University football team and decided to do a project to look at leadership in that context.

We got to know each other incredibly well during that quarter. And so he turned the project, which he began as an independent researcher, into a company called Play for Tomorrow. There he teaches children from disadvantaged backgrounds how to essentially create the life they dream of.

Now, the point of this story is that we both got lucky thanks to his letter of appreciation.

However, it was a wind that I did not expect from the beginning.

Over the last few years, I've come up with a few tactics for my life to really cultivate gratitude.

My favorite is to look at my calendar at the end of each day, reflect on everyone I've met, and send everyone a thank you note.

It only takes a few minutes, but at the end of each day, you will feel an incredible sense of gratitude. And I promise it has improved my luck.

So first, you have to take some risks and get out of your comfort zone.

Second, you need to show your gratitude.

And third, we want to change our relationship with ideas.

Most people see and judge new ideas that come out of it.

"That's a great idea" or "That's a terrible idea".

But it's actually more subtle.

Ideas are neither good nor bad.

And in fact, the seeds of bad ideas are often really amazing.

One of my favorite exercises in my creativity classes is helping my students develop an attitude of seeing bad ideas through the lens of possibilities.

So I give them the task of coming up with a completely new restaurant idea.

They have to come up with the best and worst ideas for a new restaurant.

Therefore, a restaurant on a mountaintop with a beautiful sunset or a restaurant on a boat with a great view is the best choice.

And a bad idea is a restaurant in a dump, a really dirty restaurant with bad service, or a restaurant that serves cockroach sushi.

(Laughter) So they give me all the ideas, and I read the great ideas out loud and then tear them up.

Then take that awful idea and redistribute it.

Each team has an idea that the other team thought was terrible, and their task is to turn it into something great.

what happens here?

Within about 10 seconds, someone says, "This is a great idea."

Then you have about 3 minutes to present the idea to the class.

What about the restaurant in the garbage dump? what will it turn into?

Well, they collect all the extra food that was going to be scrapped from the Michelin star restaurant and use all the leftovers to run another restaurant that costs much less.

pretty cool?

Or a dirty restaurant with terrible service?

Yes, it will be a restaurant that will serve as a training ground for future restaurateurs to find ways to avoid any pitfalls.

And a restaurant with cockroach sushi?

It turns into a sushi bar with all sorts of really interesting and exotic ingredients.

Look around you at the truly innovative companies and ventures around you, the companies that have changed our lives and that we now take for granted.

They all started with crazy ideas.

They started with the idea that when I suggested it to other people, most people said, "That's crazy, it never works."

Well, sometimes people are born into terrible circumstances, and sometimes luck is a bolt of lightning that strikes us with something great or terrible.

But the winds of luck are always there, and if you're willing to take some risks, if you're willing to really go out there and show your appreciation, and if you're willing to seriously consider ideas through the lens of possibilities, even if they're crazy, then you can set a bigger sail to catch the winds of luck.

thank you.

(applause)

This is my niece Stella.

She is one year old and just started walking.

And she has a really cool walk like a one-year-old does. A sort of staggering gait that moves the body too fast for the feet.

Really great.

And one of the things she wants to do most right now is look at herself in the mirror.

she loves how she looks

She giggles, screams, and gives herself a big, wet kiss.

That's beautiful.

Apparently all her friends do this and my mom said I used to do it too. That got me thinking. "When did you stop?"

When did loving the way you look suddenly stop working?

Because apparently not.

10,000 people google "Am I ugly?" every month.

It's Faye. Faye is 13 and lives in Denver.

And like any teenager, she just wants to be liked and fit in.

It's Sunday night.

She is preparing for the week at school.

And she's a little bit afraid of it and a little confused because every day at school someone says she's ugly even though her mother always says she's beautiful.

She doesn't know who to believe because there is a difference between what her mother tells her and what her friends and colleagues at school tell her.

There she shoots a video of herself. She posted it on YouTube and asked people to leave comments, "Am I beautiful or ugly?"

Well, so far Fay has received over 13,000 comments.

Some of them are too troublesome to think about.

This is an average, healthy-looking teenage girl receiving this feedback during the most emotionally vulnerable time of her life.

Thousands of people are posting videos like this, mostly teenage girls, reaching out in this way.

But what drives them to act like this?

Well, today's teens are rarely alone.

They are under constant pressure to be online, to converse, message, like, comment, share, post, and it never ends.

Never before have we been connected so continuously, so instantly, so young.

One mother told me that there seems to be a party in her bedroom every night.

There is simply no privacy.

And the social pressure that comes with it is relentless.

This always-on environment trains children to evaluate themselves based on the number of likes they receive and the types of comments they receive.

There is no distinction between online and offline life.

It is very difficult to tell what is real and what is not.

And it's also very difficult to tell the difference between the real thing and the digital one.

Highlights of someone's life and ordinary things in everyday life.

And where do they look for inspiration?

Well, we see what kind of images are in the news feeds of the girls today.

Size zero models still dominate our catwalks.

Airbrush painting has become a daily routine.

Trends like #thinnation, #thighgap, #bikinibridge and #proana.

For those who don't know, #proana means anorexia advocate.

These trends are tied to the stereotyping and blatant objectification of women in today's popular culture.

It's not hard to see what girls measure themselves against.

But boys are not immune to this either.

We've longed for chiseled jawlines and ripped six packs of superhero-like sports stars and Playboy music artists.

But what's wrong with all this?

Indeed, we want our children to grow up to be healthy, balanced human beings.

But in an image-obsessed culture, we train our children to devote more time and mental effort to their appearance at the expense of all other aspects of their identity.

As a result, relationships, physical development, and studies begin to become difficult.

Now, 6 out of 10 girls choose not to do something because they don't think they look good enough.

These are not easy activities.

These are fundamental activities for growing as human beings and as contributors to society and the workforce.

31%, or nearly one in three teens, withdraw from classroom discussions. They can't participate in classroom discussions because they don't want to draw attention to their appearance.

1 in 5 people don't attend class at all on days when they aren't feeling well.

And when it comes to exams, if you think you don't look good enough, or specifically thin enough, you'll get a lower grade point average than your other friends who don't care.

And this is consistent both in Finland and in the United States.

This is true regardless of your actual weight.

Let me be clear, we're talking about how you see yourself here, not what you actually look like.

Lack of body confidence undermines academic performance.

But it also has negative effects on health.

Insecure teens experience less physical activity, less fruit and vegetable intake, and more unhealthy weight management habits that can lead to eating disorders.

they have low self-esteem.

They are easily influenced by the people around them and are at increased risk of depression.

And for all these reasons, we think they're taking more risks with things like alcohol and drug use. crash diet. cosmetic surgery; unprotected early sex; and self-harm.

The quest for the perfect body puts pressure on the healthcare system and costs governments billions of dollars each year.

And we don't grow from it.

Women who consider themselves overweight also have higher absenteeism rates, regardless of whether they are overweight.

17% of women don't show up for interviews on days when they don't feel confident about how they look.

Consider what this means for our economy.

If we can overcome this, what are the chances?

It is in the interest of each of us to unlock this potential.

But how do we do that?

Well, just talking can only have some effect.

That's not enough.

If you really want change to happen, you have to do something.

And we've learned that there are three important ways. The first is that we need to educate people to feel confident in their bodies.

We need to help teenagers develop strategies to overcome image-related pressures and build self-esteem.

Well, the good news is that there are many programs available to do this.

The bad news is that most of them don't work.

I was shocked to learn that so many well-meaning programs actually make things worse, unintentionally.

Therefore, we need to ensure that the programs our children are undergoing not only have a positive impact, but have a lasting impact.

And according to research, the best programs address six key areas. The first is the influence of family, friends and relationships.

The second is media and celebrity culture, then how we deal with teasing and bullying, how we compete and compare each other based on our looks, talking about our appearance (some people call this "body talk" or "fat talk"), and finally, the foundation of respecting and taking care of ourselves.

These six things are important starting points for anyone serious about providing effective physical self-confidence education.

Education is important, but tackling this problem requires each of us to step up and be a better example for women and girls in our lives.

It challenges the status quo of how women are seen and talked about around us.

It is unacceptable to judge a politician's contribution by her hairstyle or breast size, or to speculate that an Olympian's determination or success depends on her not being seen.

We need to start judging people by what they do, not by how they look.

We can all start by taking responsibility for the types of photos and comments we post on our social networks.

We can compliment people based on their efforts and actions, not their appearance.

So let me ask you, when was the last time you kissed a mirror?

Ultimately, we need to work together as a community, as a government, and as a company to really change this culture so that our children can grow up valuing their whole selves and cherishing their individuality, diversity and inclusion.

We need to put on pedestals the people who are making a difference in the real world and making real change.

Give them airtime. Because only then can we create another world.

A world where children are free to be their best selves and where the way they look doesn't stop them from being who they are and achieving what they want in life.

Consider what this means for someone in your life.

Who do you think of?

is your wife

your sister?

your daughter?

is it your niece?

your friend? It could be the woman a few seats away from you today.

What does it mean if she is freed from her inner critic telling her to have longer legs, thinner thighs, a smaller belly, and shorter legs?

If we overcome this and unlock her potential in that way, what does it mean for her?

Our culture's image obsession is holding us all back now.

But let the children see the truth.

Show them that your looks are only part of your identity, and that the truth is you love them for who they are, what they do, and how they make us feel.

Incorporate self-esteem into your school curriculum.

Let each of us change the way we talk about comparing ourselves to others.

And let's work together as a community, from grassroots to government, to help today's happy 1-year-olds become tomorrow's confident change makers.

let's do this

(applause)

sleepy.

This is what we spend about 1/3 of our lives doing, but does anyone really understand what it is all about?

Two thousand years ago, Galen, one of the ancient world's most prominent medical researchers, proposed that while we are awake, the brain's powerhouse, the juice, would flow to all other parts of the body to energize them, but the brain would remain all dry. And he thought that when we are asleep, all this water that fills the rest of our bodies rushes back in, rehydrating our brains and refreshing our minds.

Now, that sounds downright silly to us right now, but Galen was simply trying to explain something about sleep that we all deal with every day.

See, we all know, based on our own experience, that sleeping clears our minds and not sleeping leaves us groggy.

But while we know a great deal more about sleep than we did in Galen's time, we still do not understand why sleep has this amazing restorative function in all our activities.

So today I want to talk about recent research that may shed new light on this question.

We have found that sleep may actually be some kind of elegant design solution to some of the brain's most basic needs, a unique way for the brain to meet its high demands and narrow margins that separate it from all other organs of the body.

Almost all biology we observe can therefore be thought of as a series of problems and corresponding solutions, and the first problem that every organ must solve is the continuous supply of nutrients to fuel every cell of the body.

In the brain, this is especially important. Even though the brain comprises only about 2 percent of the body's mass, its intense electrical activity consumes a quarter of the body's total energy supply.

The circulatory system therefore solves the problem of nutrient delivery by feeding blood vessels and supplying nutrients and oxygen to all parts of the body.

You can see it in action in the video here.

Here, we image blood vessels in the brain of a living mouse.

Blood vessels form a complex network that occupies the entire brain.

They start at the surface of the brain, then burrow into the tissue itself, spreading and supplying nutrients and oxygen to every cell in the brain.

Now, just as all cells need nutrients to provide energy, all cells also produce waste products as by-products. Removal of that waste product is the second fundamental problem that each organ must solve.

This diagram shows the body's lymphatic system evolved to meet this need.

This is a second parallel network of blood vessels that spreads throughout the body.

It takes up proteins and other waste products from intercellular spaces, collects them, and makes them available for disposal in the blood.

However, a closer look at this diagram reveals that it doesn't make much sense.

If you zoom in on this man's head, you'll see that there are no lymphatic vessels in his brain.

But that doesn't make much sense, does it?

In other words, the brain is a very active organ and accordingly produces a large amount of waste products that must be removed efficiently.

However, the brain does not have lymphatic vessels, so the approaches that other parts of the body take to get rid of waste products do not work in the brain.

So how does the brain solve the problem of waste removal?

Well, that seemingly mundane question was where our group first jumped into this story, and when we dug deep into the brain, between neurons and blood vessels, we discovered that the brain's solution to the waste removal problem was really unexpected.

It was original, but beautiful at the same time.

Let's talk about what we found.

Therefore, the brain has a large pool of clean, clear fluid called cerebrospinal fluid.

We call it CSF.

CSF fills the space surrounding the brain, and waste products in the brain go out to the CSF and are discharged into the blood along with the waste products.

In that sense, it is very similar to the lymphatic system.

Interestingly, however, fluids and waste products from within the brain do not just randomly permeate these CSF pools.

Instead, there are specialized plumbing networks that organize and facilitate this process.

You can see it in these videos.

Here we again image the brain of a living mouse.

The left frame shows what is happening at the surface of the brain, and the right frame shows what is happening below the brain surface within the tissue itself.

Blood vessels are labeled in red and the CSF surrounding the brain is shown in green.

Now, what surprised us was that the fluid on the outside of the brain didn't stay outside.

Instead, CSF was pumped into the brain along the outside of the blood vessels, pumped back through the brain, and as it flowed into the brain along the outside of these vessels, it actually helped clear and clean the intercellular spaces of the brain of waste products.

Come to think of it, using the outside of the vessel in this way is a very clever design solution. Because the brain is surrounded by a hard skull, and because the brain is so full of cells, there is no extra space inside the brain to accommodate a whole second blood vessel like the lymphatic system.

However, blood vessels extend down from the surface of the brain to reach every cell in the brain. This means that fluid traveling along the outside of these blood vessels can easily access the entire brain. So, in fact, reusing one set of vessels, the blood vessels, to take over and replace the function of a second set of blood vessels, the lymphatics, so that you don't need them is a very smart move.

And what's surprising is that no other organ uses this approach to remove waste products from between cells.

This is a completely unique solution to the brain.

But our most surprising discovery was that all this, all that I just told you, all this fluid rushing through the brain, is only happening in the sleeping brain.

Here, the video on the left shows how much CSF moves in the brain while a live mouse is awake.

Almost nothing.

However, in the same animal, if you wait a little while before falling asleep, you will find that cerebrospinal fluid is circulating in the brain. It turns out that as soon as the brain falls asleep, the brain cells themselves shrink, opening up the spaces between them, allowing fluid to flow in and remove waste products.

So it seems likely that Galen was actually kind of on the right track when he wrote about the fluid that flows through the brain when sleep sets in.

Now, 2,000 years later, according to our own research, what's happening is that when the brain is at its busiest when it's awake, it puts off removing waste from the intercellular spaces, and then when it goes to sleep and doesn't need to be so busy, it goes into a sort of cleaning mode, removing the waste that has accumulated throughout the day from the intercellular spaces.

So, it's actually a bit like you and I putting the housework on the backburner during the week when we don't have time, and then catching up on the cleaning that needs to be done on the weekends.

Now, while we've talked a lot about waste removal, we haven't been very specific about what kinds of waste your brain needs to remove during sleep to stay healthy.

The waste product that has received the most attention in these recent studies is amyloid beta, a protein that is constantly made in the brain.

My brain is now producing amyloid beta, and so is yours.

However, in patients with Alzheimer's disease, amyloid beta accumulates and aggregates in the intercellular spaces of the brain rather than being cleared as it should. This accumulation of amyloid beta is thought to be one of the key steps in the development of this dreaded disease.

So we measured the rate of amyloid-beta clearance from the brain during wakefulness and sleep, and indeed found that amyloid-beta was cleared much faster from the brain during sleep.

So if sleep is part of the brain's solution to the waste elimination problem, it could dramatically change the way we think about the relationship between sleep, amyloid beta, and Alzheimer's disease.

A series of recent clinical studies suggest that poor sleep quality and sleep duration are associated with increased accumulation of amyloid-beta in the brain in patients who have not yet developed Alzheimer's disease. It is important to note that these studies do not prove that sleep deprivation or lack of sleep causes Alzheimer's disease, but they do suggest that the brain's dysfunction in keeping homes clean by removing waste products such as amyloid beta may contribute to the development of Alzheimer's-like symptoms. .

What this new research tells us is that what you already knew about sleep, and even Galen understood, that it refreshes and clears your mind may actually be a big part of what sleep is all about.

You see, you and I sleep every night, but our brains never rest.

While our bodies stand still and our minds walk somewhere in a dream, the elegant machines of our brains quietly work hard to cleanse and maintain this unimaginably complex machine.

Much like our household chores, it's dirty and thankless work, but it's also important work.

In the case of your home, if you stop cleaning the kitchen for a month, it will quickly become completely uninhabitable.

But for the brain, the impact of being late for work may be far greater than being embarrassed by a dirty countertop. Because when it comes to cleaning the brain, the very health and functioning of the mind and body are at stake. That's why understanding the very basic housekeeping functions of the brain today may be crucial to preventing and treating mental illnesses tomorrow.

thank you.

(applause)

This is me at 7 years old.

And this is me too.

(Applause and cheers) It feels so surreal to be standing here in Kakuma Refugee Camp and it's very emotional.

This very site is where I was born and spent the first seven years of my life.

I think many people are surprised to hear that I received an excellent education here in Kakuma.

But I was happy, smart, had friends, and most of all, I had hope for a brighter future.

That doesn't mean we were without obstacles.

In other words, there was a conflict there.

I would get malaria from time to time and always didn't know where my next meal would come from.

But the sense of community here at Kakuma and the pride that everyone here has is unparalleled.

I remember conflicts erupting when I was young.

This tends to happen when people come from different backgrounds and don't speak the same language.

Eventually, Swahili, the main language here, became our common ground.

I made friends with the children at the camp, became embracing their culture, and celebrated holidays such as Christmas even though I was raised Muslim.

Other children embraced my culture and sometimes prayed next to me.

As a child, it was easy for us to unite and blend all our beliefs to form our own unique multicultural environment.

My name is Halima Aden, I am a Black, Muslim, Somali-American from Kenya.

(Applause.) Some people call me a trailblazer. I was the first returning Muslim queen in high school, the first Somali student senator in college, and the first woman to wear a hijab in many places, including the Miss Minnesota USA beauty pageant, the runways of Milan and New York Fashion Weeks, and even the historic cover of British Vogue.

As you can see, I'm not afraid to be the first, to take the initiative myself, to take risks and seek change. Because that's what it means to be in the minority.

It's about using yourself as a vessel for change and expressing the power of diversity as a human being.

And now I am using my platform to spread an important message of acceptance.

But it wasn't always easy.

When we first arrived in America and returned to St. Louis, Missouri, I remember asking my mom, "Is this really America?"

There have been sadly familiar events such as gunshots heard at night and the city looking impoverished.

But there were also significant differences.

I noticed how the kids were playing in groups just like when I moved up to first grade.

In America they are called "cliques".

We came back here and we all played together.

Gender never mattered, race never mattered.

I remember asking myself, "Why can't they understand Swahili?"

Swahili is a language that brings people together. ”

To make matters worse, the school I attended did not have an English immersion program.

So every day I got up and went to school and sat at my desk and learned nothing.

At this point I started to lose hope and only wanted to return to Kakuma, a refugee camp.

My mother soon learned that many Somalis had taken refuge in a small town in Minnesota.

So when I was eight, we moved to Minnesota.

Meeting other Somali-speaking students, going to a school with an English immersion program, meeting teachers who stayed after school and lunch breaks, and went above and beyond to help me succeed in the classroom changed my life.

Being a refugee child has taught me that one can be deprived of everything: food, shelter, clean drinking water, and even friendships. But the only thing that no one can ever take away from you is education.

So I made studying my top priority and soon became active in the classroom.

As I've gotten older, I've become more aware of other people and how they view my race and background.

Specifically, when I started wearing a scarf called a hijab.

I was thrilled when I first started wearing them.

I remember admiring my mother's beauty and wanted to imitate her beauty.

However, when I entered middle school, I was teased by my students for not having hair, so to prove them wrong, I started showing them my hair. This went against my beliefs, but I felt pressured to do so.

At that time, I had a strong desire to blend in with society.

Many painful memories come to mind when I think about issues of race, religion, and identity.

It's easy to blame people from other cultures for the pain I felt, but on a deeper level, I also recognize that some of the most impactful, positive, and life-changing events that have happened to me are due to people who are different from me.

At this point, I decided to step outside my comfort zone and enter the contest wearing a hijab and burkini.

I saw it as an opportunity to speak for women who, like me, felt undervalued.

I didn't get the crown, but the experience opened many doors for me.

I have received emails and messages from women all over the world. She told me she inspired women by just staying true to herself.

Other “firsts” were born one after another.

Fashion icon Karine Roitfeld invited me to New York City to shoot her first editorial.

It was also around this time that I became a hijab-wearing model for the first time and was on the cover of nine fashion magazines in my first year.

It was a whirlwind, to say the least.

But despite the overnight success, one thing remained constant. The idea is that this might be the catalyst that brings me back to the place I call home, Kakuma.

And just a few months ago something incredible happened to me.

When I was in New York City for a photo shoot, I happened to meet South Sudanese model Adut Akech, who was born here in Kakuma.

That experience itself is the definition of hope.

Please try to imagine. Two girls born in the same refugee camp meet for the first time on the cover of British Vogue.

(Applause and cheers) It gave me a special pleasure to partner with UNICEF, knowing firsthand what it does for children in need.

And remember, these children may be refugees, but they are children.

They deserve every opportunity to thrive, hope, dream and succeed.

My story began here in Kakuma Refugee Camp, a place of hope.

thank you.

(applause)

We feel we can all agree that we are moving towards a new model of state and society.

But we have no idea what this is or what it should be.

It seems that in this day and age we need to talk about democracy.

Think of it this way. We are 21st century citizens and we do our best to interact with a 19th century designed system based on 15th century information technology.

Let's take a look at some of the features of this system.

First and foremost, it is designed for information technology that is over 500 years old.

And the best system that can be designed for that is one in which the few make decisions on a day-to-day basis in the name of the many.

And many people can vote once every few years.

Second, the cost of participating in this system is incredibly high.

Either you have to have a lot of money and influence, or you have to devote your whole life to politics.

You must become a member and slowly begin to climb the ranks, working until one day you can sit at the table where decisions are made.

And last but not least, the language of the system is incredibly cryptic.

It's done for lawyers, by lawyers, and no one else can understand.

That is, a system that allows us to choose an authority, but completely ignores how that authority comes to its decisions.

So today, with new information technologies enabling us to participate in any conversation globally, our information barriers have been completely lowered, allowing us to express our desires and concerns more than ever before.

Our political system has not changed in the last 200 years and expects us to be content to simply passively receive monologues.

So it's not entirely surprising that this kind of system can only produce two kinds of results. silence or noise.

Silence is silence in the sense that citizens do not participate, or simply do not want to participate.

There are common thoughts that I really, really hate. The idea is that we, the people, are by nature indifferent. That we avoid commitments.

But can we really blame those of us who didn't jump at the chance to go downtown during the working day to physically attend a hearing that had no impact?

Conflict is inevitable between a system that is no longer representative and has no capacity for dialogue and a population that is increasingly accustomed to representing itself.

And then there is noise. Chile, Argentina, Brazil, Mexico, Italy, France, Spain, USA, these are all democracies.

Their citizens have access to the ballot box. But they still feel the need and need to take to the streets to be heard.

It seems to me that the 18th-century slogan "No taxation without representation", which was the basis for the formation of modern democracy, could now be updated to "No representation without dialogue".

we want to sit at the table

And rightly so.

But to participate in this dialogue, you need to know what you want to do next. Because political activity is moving from agitation to construction.

My generation has made very good use of protests that have used new networks and technology to successfully organize protests, impose agendas, repeal highly damaging laws, and even overthrow authoritarian governments.

And we should be very proud of this.

But we must also admit that we have not been very good at articulating alternatives to what we see, finding consensus, and building the necessary coalitions to make it happen, using the same networks and technologies.

The risk we face, therefore, is that such a huge power vacuum will be created and quickly filled by de facto powers such as the military and generally highly motivated and already organized groups on the extremes.

But our democracy is not just a matter of voting every few years.

But neither is it the ability to summon millions of people to the streets.

So the question I want to pose here, and I believe it is the most important question we need to answer. This is, if the Internet is the new printing press, what is democracy in the Internet age?

What kind of system do we want to build for the society of the 21st century?

No answer, just in case.

I don't think anyone thinks so.

But I truly believe that this issue cannot be ignored any longer.

So, we'd like to share our experience and what we've learned so far, and hopefully contribute our two cents to this conversation.

Two years ago, together with a group of friends from Argentina, we started thinking: How can we get our representatives, our elected representatives, to represent us?

Marshall McLuhan once said that politics solves today's problems with yesterday's tools.

So the question that motivated us was, can the tools we use every day solve some of today's problems?

Our first approach was to design and develop software called DemocracyOS.

DemocracyOS is an open source web application designed to bridge the gap between citizens and their elected representatives, making it easy for us to participate from our daily lives.

First of all, you can get information so that every new project introduced in Congress is immediately translated and explained in plain language on this platform.

But we all know that social change comes not only from knowing more information, but from doing something with it.

So better access to information should spark conversations about what to do next, and DemocracyOS enables that.

Because we believe that democracy is not just a matter of accumulating tastes, but that our healthy and grounded public debate should be one of the core values ​​of democracy.

So DemocracyOS is about persuading and being persuaded.

Reaching consensus is just as important as finding the right way to resolve disagreements.

And finally, you can vote how you would like your elected representatives to vote.

And if you don't feel comfortable voting on a particular issue, you can always delegate your vote to others, enabling dynamic new social leadership.

It suddenly became very easy to simply compare these results with the votes of MPs.

But it was also very clear that technology wouldn't help.

What we had to do was find actors who could take this distributed knowledge and use it to make better and fairer decisions.

So we reached out to the traditional parties and gave them DemocracyOS.

We said, "Look, here's a platform that you can use to build two-way conversations with voters."

And yes we failed.

We made a big mistake.

We were sent to play outside like little kids.

Above all, we were told that we were naive.

To be honest, in retrospect, I think it was.

Because the challenges we face are cultural, not technical.

Political parties never intended to change the way decisions are made.

So it suddenly became clear that if we wanted to move forward with this idea, we would have to do it ourselves.

So we took the plunge and founded our own political party in the city of Buenos Aires last August, El Partido de la Red, or Net Party.

And with even greater conviction, we ran for election last October with the following thoughts. Candidates and representatives will always vote according to what the public decides about DemocracyOS if they want to win a seat in Congress.

All projects submitted to parliament were voted on by citizens on an online platform.

It was our way of hacking the political system.

We understood that in order to participate in conversations or sit at tables, we had to be legitimate stakeholders, and the only way to do that was by following the rules of the system.

But we were hacking it in the sense that it fundamentally changed the way political parties make decisions.

For the first time, we made a decision together with the people directly affected by the decision.

It was a very bold move for a party two months into the city of Buenos Aires.

But it got attention.

He received 22,000 votes, or 1.2% of the vote, and was second in the local elections.

So, even if that wasn't enough to win a seat in Congress, it was enough for us to be part of the conversation in that next month Congress will launch DemocracyOS for the first time in the history of Argentina as an institution to discuss three bills with the public, two on urban transport and one on the use of public space.

Of course, our elected representatives won't say, "Yes, I'm going to vote according to the people's decision," but they're willing to try.

They are willing to open up new spaces for civic engagement, and hopefully they will be happy to hear.

Our political system can be transformed. It can be done not by overthrowing or destroying it, but by rewiring it with the tools the internet now offers us.

But the real challenge is to find, design, create and empower connectors that can innovate, transform noise and silence into signals, and ultimately bring democracy into the 21st century.

I'm not saying it's easy.

However, in our experience, you actually have a chance to make it work.

And in my mind it's definitely worth a try.

thank you.

(applause)

I live in Washington, DC, but grew up in Syndekera, a village in Orissa, India.

My father was a civil servant.

My mother was illiterate, but she used to say, "Kings are worshiped only in their own kingdoms. Poets are respected everywhere."

So when I grew up, I wanted to be a poet.

But I barely went to college until my aunt offered financial help.

I went to study in Sambalpur, the largest town in the region, and I was already in college, but it was there that I saw TV for the first time.

I had a dream to go to America for higher education.

When the opportunity arose, I crossed two oceans with nothing but the money I borrowed for my flight fare and a $20 bill in my pocket.

In the US, I worked part-time at a research center while taking graduate classes in economics.

Then I financed myself with the little money I earned, and then sent money back home to my brother and father.

My story is nothing special.

Millions of people migrate each year.

With the help of their family, they cross oceans, cross deserts, cross rivers, and cross mountains.

They are risking their lives to achieve their dreams, which are simple: find a decent job somewhere, send money home and help their families, which has helped them so far.

There are 232 million international migrants in the world.

These are people living in a country other than their country of birth.

If there was a country made up entirely of international immigrants, its population would be larger than Brazil.

It will be larger than France in terms of economic size.

About 180 million of them come from poor countries and regularly send money back home.

Such money is called remittance.

Here are some facts that may surprise you. $413 billion was remittances sent by immigrants to developing countries last year.

Immigration from developing countries, remittances to developing countries — $413 billion.

This is a notable figure as it is equivalent to three times the total amount of development aid.

Nonetheless, you and I, colleagues in Washington, are endlessly arguing and arguing about development aid, ignoring remittances as pennies.

Indeed, people send on average $200 a month. But with millions of people repeating this every month, these amounts add up like a river of foreign currency.

So India received $72 billion last year, more than IT exports.

In Egypt, remittances are three times as large as revenues from the Suez Canal.

Remittances account for 42% of GDP in Tajikistan.

And in poorer, smaller, fragile and conflict-ridden countries like Somalia and Haiti, remittances are a lifeline.

No wonder these trends have a huge impact on the economy and the poor.

Remittances, unlike private investment funds, do not regurgitate when there are signs of trouble within the country.

It actually works like insurance.

When the family is in trouble, when it is difficult, when the remittance increases, it plays a role like insurance.

That way, immigrants will send more remittances.

Unlike development aid, which must go through public institutions and governments, remittances go directly to the poor and families, often accompanied by business advice.

In other words, in Nepal, the poverty rate was 42% in 1995, which is the percentage of the population living in poverty.

Ten years later, in 2005, during a period of political and economic crisis, the poverty rate fell to 31 percent.

Remittances from India, another poor country, are believed to account for most, or about half, of the reduction in poverty.

In El Salvador, children drop out of school in families that receive remittances.

In Mexico and Sri Lanka, children from households receiving remittances have higher birth weights.

Remittances are carefully wrapped dollars.

Migrants are sending money back home to buy food, buy essentials, build homes, fund education, medical care for the elderly, and invest in businesses for friends and family.

Immigrants repatriate more money for special occasions such as surgeries and weddings. And immigrants, perhaps too often, send money for unexpected funerals they can't attend.

These flows have a very positive effect, but there are barriers to these remittance flows, this $400 billion remittance.

Chief among them is the exorbitant cost of remittances back home.

Remittance companies set fees to squeeze out the poor.

You'll say, "I'll charge you a fixed fee of $30 for anything up to $500."

If you are poor and only have $200 to send, you will have to pay the $30 fee.

Global average remittance cost is 8%.

So if you send $100, the other family will only receive $92.

When sending money to Africa, the cost is even higher at 12%.

When sending money within Africa, the fees are even higher, at 20% or more.

For example, transferring money from Benin to Nigeria.

In the case of Venezuela, you are lucky if you send $100 and the recipient's family receives $10 because of exchange control.

Of course, no one sends money to Venezuela through official channels.

It all fits in a suitcase.

Wherever costs are high, money flows underground.

And to make matters worse, many developing countries have actually banned outbound remittances altogether.

Many wealthy countries have outright banned remittances to certain countries.

So is there no choice, better or cheaper option for sending money?

There is

M-Pesa in Kenya allows you to send and receive money at a fixed cost of just 60 cents per transaction.

The U.S. Federal Reserve has launched a program with Mexico that allows financial services companies to send money to Mexico at a fixed cost of just 67 cents per transaction.

However, these faster, cheaper and better options cannot be applied internationally due to money laundering fears, despite the fact that there is little data to support the relevance or material relevance of money laundering to these low-value remittance transactions.

Many international banks are now wary of hosting money services businesses, especially bank accounts serving Somalia.

Somalia, a country with a per capita annual income of only $250.

The average monthly remittance to Somalia exceeds that amount.

Remittances are the lifeblood of Somalia.

But this is an example of the right hand giving a lot of aid, while the left hand cuts off the vitality of its economy through regulation.

Then there are the village poor people like me.

In the village, the only place where you can get money is the post office.

Most governments around the world allow post offices to have exclusive partnerships with money transfer companies.

So if you have to send money to the village father, you have to do it through that particular money transfer company, even if it costs more.

You can't go for a cheaper option than this.

this has to go.

So what can international organizations and social entrepreneurs do to reduce repatriation costs?

First, loosen restrictions on small transfers of less than $1,000.

Governments should recognize that small transfers are not money laundering.

Second, the government should abolish monopoly partnerships between post offices and money transfer companies.

More to the point, it's between the post office and the nationwide banking system, which has a large network serving the poor.

In fact, they should encourage competition and open up partnerships so they can cut costs the same way we did in the telecommunications industry.

You've seen what happened there.

Third, large non-profit charities should build remittance platforms on a non-profit basis.

We need to create a non-profit remittance platform to serve remittance companies so that they can send money at low cost while complying with all the complex regulations around the world.

The development community should set a goal of reducing remittance costs from the current 8% to 1%.

A 1% cost reduction would save $30 billion annually.

$30 billion is more than the entire bilateral aid budget that goes into Africa annually.

This is greater than or nearly equal to the total aid budget of the United States, the world's largest donor country.

In reality, the savings will be higher than that 30 billion as remittance channels are also used for aid, trade and investment purposes.

Another major obstacle to the reach of remittances to families is the high, prohibitive and illegal costs of recruitment, the fees paid by immigrants, and the costs migrant workers pay to workers who find them jobs.

I was in Dubai several years ago.

I visited a camp for workers.

It was eight o'clock in the evening, dark, hot and humid.

I had a conversation with a Bangladeshi construction worker as they returned from a grueling day at work.

He's obsessed with sending money home and has been doing so for the last few months, but most of that money goes to the recruitment agency, the labor broker who found him the job.

And in my mind, I had an image of my wife waiting for the monthly remittance.

You will receive the remittance.

With her children watching, she took the money and handed it over to a recruitment agency.

This has to stop.

It's not just construction workers in Bangladesh, it's all workers. There are millions of migrant workers suffering from this problem.

Construction workers in Bangladesh pay an average of around $4,000 in recruitment fees for jobs that earn only $2,000 a year.

So for two or three years of his life, he's basically been sending money to pay for hiring.

The family cannot see anything.

It is a dark underground organization not only in Dubai, but in every major city in the world.

It's not just Bangladeshi construction workers, but workers from all over the world.

It's not just men.

Women are particularly vulnerable to recruitment fraud.

One of the most exciting and newest things happening in the remittance space is how we mobilize diaspora relief and diaspora donations through innovation.

Not only do immigrants send money back home, they also save a lot of money wherever they live.

Annual savings from immigrants are estimated at $500 billion.

Most of that money is deposited in bank deposits with zero percent interest.

If a country offered an interest rate of 3% or 4% and said the money would be used to build schools, roads, airports and train systems in the home country, many immigrants would be interested in giving up their money. Because it is not only economic interests that give them the opportunity to remain involved in their country's development.

These bonds can be sold to immigrants using the remittance channel, because when immigrants come to send money each month, they can actually sell bonds to immigrants at that time.

The same can be done to mobilize diaspora donations.

I would like to invest in the bullet train system in India and contribute to the fight against malaria in my village.

Remittances are a great way to share prosperity between locations in a targeted way that benefits those who need it most.

Remittances empower people.

We must do everything we can to make transfers and recruitment safer and cheaper.

And it can.

As for myself, I have been out of India for 20 years now.

My wife is Venezuelan.

My children are American.

I feel more and more like a global citizen.

Still, I grew to miss my country of birth.

I would like to stay in India and America at the same time.

my parents are gone.

My brothers and sisters moved on.

No rush to send money home.

Still, I sometimes send money to friends, relatives, and villages to stay home, stay there, and be involved. That's part of my identity.

And I still strive to be the poet of hardworking immigrants and their struggle to escape the cycle of poverty.

thank you.

(applause)

YouTube has videos of all genres about experiences that everyone in this room has had.

This involves a person who thinks he or she is alone, performs some expressive behavior, such as singing wildly, circling and dancing, or having a gentle sexual act, but is not really alone, but discovers that someone is watching and lurking, and is terrified by the discovery and immediately ceases what he or she was doing.

Their faces show a clear sense of shame and humiliation.

It's a sense of, "This is something I'm only willing to do if no one is watching."

This is at the heart of the research that I have been particularly focused on over the past 16 months, the question of why privacy matters, a question that has arisen in the context of a global debate, made possible by Edward Snowden's revelations that the United States and its partners, without the knowledge of the entire world, have turned the Internet, once touted as an unprecedented vehicle for liberation and democratization, into a realm of unprecedented mass and indiscriminate surveillance.

This argument has generated a very common sentiment even among those who are uncomfortable with mass surveillance, arguing that only those engaged in evil deeds have reason to want to hide and need to care about their privacy, so there is no real harm caused by this mass invasion.

This worldview is implicitly based on the proposition that there are two kinds of people in the world, the good and the bad.

Bad people are those who plan terrorist attacks or commit violent crimes, so they have reasons to want to hide what they are doing, and reasons to care about their privacy.

But by contrast, a good person is someone who goes to work, comes home, raises kids, and watches TV.

They don't use the internet to plan bombings, they use it to read the news, exchange recipes, and plan their kids' Little League games. These people have done nothing wrong, so there is no need to hide and no reason to fear that the government is watching.

Those who actually say so are committing very extreme acts of self-harm.

What they're really saying is, "I've agreed to make myself a harmless, non-threatening, uninteresting human being so I'm not actually afraid that the government will find out what I'm doing."

I found this idea in what I consider to be its purest expression in a 2009 interview with long-time Google CEO Eric Schmidt. When asked about how his company violates the privacy of hundreds of millions of people around the world in various ways, Schmidt replied: "If you're doing something you don't want others to know, maybe you shouldn't have done it in the first place."

Well, there's a lot to be said about that line of thinking, but first of all, people who say privacy isn't that important don't really believe it. And what you can see they don't really believe is that while in words they say privacy doesn't matter, in action they take all sorts of steps to protect it.

They put passwords on their email and social media accounts and lock their bedroom and bathroom doors. All these measures are designed to prevent others from entering your private sphere or from knowing things you don't want others to know.

Google CEO Eric Schmidt has ordered Google employees to stop talking to online Internet magazine CNET after CNET published an article full of personal information about Eric Schmidt that he obtained only through the use of Google searches and other Google products. (Laughter) We see this same split with Facebook CEO Mark Zuckerberg. In an infamous 2010 interview, he asserted that privacy is no longer a "social norm."

Last year, Mark Zuckerberg and his new wife bought not only their own home, but all four adjacent Palo Alto homes for a total of $30 million to ensure they enjoy a privacy zone that keeps others from monitoring what they do in their private lives.

Over the past 16 months, we've been discussing this issue all over the world, and each time someone said to me: "I have nothing to hide, so I'm not too worried about invading my privacy."

I always say the same to them.

I take out my pen and write down my email address.

I said, "This is my email address.

Email me the passwords for all your email accounts when you get home. Please email me passwords for all accounts as well as a great honorable job written in your name. Because I want to be able to take a quick look at what you're doing online, read what I want to read, and publish anything I find interesting.

After all, if you're not a bad person and you've done nothing wrong, you have nothing to hide. ”

No one accepted the offer.

I check — (applause) I diligently check that email account all the time.

It's a very lonely place.

There's a reason for that. That's because we humans instinctively understand the importance of our privacy, even those who deny the importance of it.

Indeed, humans are social animals. That is, we voluntarily publish information about ourselves online because we need others to know what we are doing, saying, and thinking.

But equally important to what it means to be a free and fulfilled human being is having a place to be free from the judgmental eyes of others.

We ask for it for a reason. The reason is that we all have something to hide, not just terrorists and criminals.

There are all sorts of things we do and would be happy to tell doctors, lawyers, psychologists, spouses, and best friends that the world would be embarrassed to know.

Every day, we make decisions about what we say, what we think, what we don't want others to know, and what we don't want others to know.

People can easily claim in words that they don't value their privacy, but their actions deny the credibility of that belief.

Well, there's a reason privacy is so universally and instinctively coveted.

It's not just a reflexive movement like breathing air or drinking water.

The reason is that when we are being watched, being watched, our behavior changes dramatically.

The range of behavioral options you consider when you think you're being watched is greatly reduced.

This is a recognized fact of human nature in the social sciences, literature, religion, and virtually every field.

There are numerous psychological studies that prove that a person's behavior becomes much more accommodating and submissive when they know they may be being watched.

Human shame, like the desire to avoid it, is such a powerful motivator, which is why people, when under surveillance, base their decisions on the expectations others have of them and the obligations of social norms, rather than on the byproducts of their own agency.

This perception was most powerfully exploited for practical purposes by the eighteenth-century philosopher Jeremy Bentham. Bentham set out to solve a key problem posed by the industrial age. In this issue, for the first time, organizations became so large and centralized that they could no longer monitor and control individual members. The solution he devised was an architectural design originally intended to be implemented inside the prison, which he called the Panopticon. Its main feature was the construction of a huge tower in the prison. In the center of the facility, the prisoners could be monitored at any time by the facility administrator, but not everyone.

And important to this design was that the prisoners could not actually see inside the panopticon or the tower and not know if or even when they were being watched.

And what got him so excited about this discovery was that it meant that prisoners had to be assumed to be under surveillance at all times, making them the ultimate enforcers of obedience and compliance.

The 20th-century French philosopher Michel Foucault realized that the model could be applied not only to prisons, but also to schools, hospitals, factories, workplaces, and any institution that seeks to control human behavior.

And he said that this idea, this framework that Bentham discovered, is the key means of social control for modern Western societies that no longer need the weapons of overt tyranny, such as punishing, imprisoning, and killing dissidents, or legally forcing allegiance to a particular political party. Because mass surveillance is a far more subtle means of creating a mental prison and promoting adherence to social norms and social orthodoxy, and far more effective than violent force. is.

The most iconic literary work on surveillance and privacy is George Orwell's novel 1984, which is becoming almost a cliché because we all learn it in school.

In fact, when you bring it up in a discussion about surveillance, people are quick to dismiss it as inapplicable, and they say, ``Oh, in '84,' people had monitors in their homes and were being watched at every moment.

It is actually a fundamental misunderstanding of Orwell's "1984" warning.

His warning was about a surveillance state where people realize they can be monitored at any moment, not everyone.

Orwell's narrator, Winston Smith, describes the surveillance system they faced: "Of course, I had no way of knowing if I was being watched at any given time."

He went on to say, "Anyway, they could plug in your wires whenever they wanted.

You had to live, and have lived, in an instinctive habit, on the assumption that every sound you make is heard and every movement you make is scrutinized except in the dark. ”

Abrahamic religions likewise claim that there is an invisible, all-knowing authority that is always watching what you are doing, that you never have private time, and that you are the ultimate enforcer of obedience to its decrees.

What all these seemingly alien works recognize, and the conclusion they all reach, is that a society that can constantly monitor people is a society that produces conformity and submission and submission, and that is why all tyrants, from the most obvious to the most subtle, covet that system.

Conversely, more importantly, it is the realm of privacy, the ability to go to places where one can think, reason, interact and talk without the judgment of others, where only creativity, exploration and dissent exist. And that is why when we allow the existence of a society that is constantly monitored, we allow the very nature of human freedom to be severely compromised.

The final point I want to make about this line of thinking is the idea that only those who do something wrong have something to hide and therefore have reason to care about their privacy. This is anchoring two very devastating messages, two devastating lessons. The first is that the only people who care about privacy, the only people who want it, are by definition bad people.

This concludes that there should be all sorts of reasons to avoid, the most important of which is that when we say "people doing bad things" we probably mean things like planning terrorist attacks or engaging in violent crimes, which is a narrower notion of what we mean when we say that someone who exercises power is "doing bad things."

To them, "doing bad" usually means doing something that poses a meaningful challenge to our own exercise of power.

A truly devastating and even more insidious lesson to be learned from embracing this mindset is that there is an unspoken deal that those who embrace this mindset are accepting. The deal is something like this: Only if you intend to make yourself sufficiently harmless and sufficiently unthreatening to those who exercise political power will you be free from the dangers of surveillance.

Only dissidents, those who challenge power, are worried about anything.

There are many reasons why we might be tempted to avoid that lesson.

You may not want to act like that now, but you may at some point in the future.

The fact that there are dissidents, journalists, activists, and everyone else who has the will and the ability to resist and be hostile to those in power, even if you've decided you "never want to", is something we all have in common, and something we should hope to maintain.

Equally important, the measure of how liberal a society is is not how it treats its citizens who are good, obedient, and obedient, but how it treats dissidents and those who resist orthodoxy.

But the most important reason is that the mass surveillance system suppresses our own freedom in every possible way.

Any kind of behavioral choice is prohibited without even realizing it has happened.

Renowned socialist activist Rosa Luxembourg once said, "He who does not move does not see his chains."

We can make the chain of mass surveillance invisible and undetectable, but that doesn't make the constraints it imposes on us any less powerful.

thank you very much.

(Applause.) Thank you.

(Applause.) Thank you.

(Applause) Bruno Giussani: Thank you, Glenn.

I have to say this case is pretty compelling, but if you don't mind I'd like to go back in time to the last 16 months and ask Edward Snowden a few questions.

The first one is personal to you.

We've all read about the arrest and other hardships of your partner David Miranda in London, but I don't think the pressure placed on you against the world's largest sovereign organization is so easy in terms of personal involvement and risk.

Tell me a little bit about that.

Glenn Greenwald: You know, I think one of the things that happens in this regard is that people's courage is contagious. So while I and the other journalists I worked with certainly knew the risks, the United States remains the most powerful country in the world and does not want thousands of secrets freely published on the Internet. Watching an ordinary 29-year-old from an ordinary background demonstrate the principled courage of Edward Snowden to take risks. The editor knew he was going to go to jail for the rest of his life or his life was going to fall apart, and I think he inspired me, inspired other journalists, and made people around the world, including future whistleblowers, realize that they too could do such things.

BG: I'm curious about your relationship with Ed Snowden. Because you have been talking to him a lot and certainly continue to do so. But in your book you never call him Edward or Ed, you say "Snowden." Why?

GG: Well, I think that's a question that a team of psychologists should investigate. (laughs) I don't know. One of the main objectives he actually had, and one of his most important tactics, I think, was because he knew that one way to distract attention from the nature of the revelations was to try to focus the focus on himself, so he stayed away from the media.

He's never tried to avoid having his private life investigated, so I think calling him Snowden is simply a way of identifying him as this important historical actor, rather than trying to personalize him in a way that distracts from the essence.

Moderator: His revelations, your analysis, and the work of other journalists really advanced the debate, and many governments, including Brazil for example, have responded with projects and programs that slightly restructure the design of the Internet, etc.

In that sense, many things are happening.

But what is the endgame for you personally?

At what point do you think you have successfully moved the dial?

GG: Well, my end goal as a journalist is very simple. It is to ensure that every document that is newsworthy and should be made public is finally made public, and that secrets that should never have been kept in the first place are finally revealed.

To me, that's what journalism is all about, and that's what I'm all about.

As someone who resents mass surveillance for all the reasons I just talked about and many others, I see this as a never-ending task until governments around the world are unable to subject their entire populations to surveillance and surveillance unless they convince a court or some body that the person they targeted has actually done something wrong.

For me, that's how I get my privacy back.

BG: So, as we saw at TED, Snowden is very clear in presenting and portraying himself as an advocate for democratic values ​​and principles.

However, many find it hard to believe that was his sole motivation.

They find it hard to believe that Kim was not involved and that he did not sell some of those secrets to even China and Russia, who are now clearly not the US' best friends.

And I'm sure many people in the audience have the same question.

Do you think it's possible there's a part of Snowden that we haven't seen yet?

GG: No, I think it's absurd and stupid.

(Laughter) I know you're just playing the devil's mouthpiece if that's what you want to do, but if you want to sell a secret to another country, he might get rich doing it, but what you'd never do is take that secret and give it to a journalist and ask the journalist to publish it. Because it renders those secrets worthless.

People who want to enrich themselves do so covertly by selling secrets to the government, but I think there is one important point worth emphasizing. That is, the accusations come from people in the US government and various government loyal media personnel. When people make such accusations about others, I often think, ``Oh, he really can't be doing this for principled reasons, he must have corrupt and evil reasons. They say more about themselves than they do about themselves. The subjects of their accusations, because—(applause)—the people who make such accusations, who themselves never act for reasons other than corrupt reasons, believe that everyone else is afflicted with the same soulless disease as they are, and that is the assumption.

(Applause) BG: Thank you, Glenn. GG: Thank you.

BG: Glenn Greenwald.

(applause)

54 percent of the world's population lives in our cities.

In developing countries, one-third of the population lives in slums.

Cities account for 75 percent of the world's energy consumption and 80 percent of the gas emissions that contribute to global warming.

So what you and I think of as global problems—climate change, energy crises, poverty—are actually, in many ways, urban problems.

Like most of us, they won't be resolved until people living in cities actually start doing better jobs. Because we are not doing a very good job at the moment.

And that becomes very clear when considering the three dimensions of city life. One is the willingness of citizens to actively participate in democratic institutions. Second is the ability of our cities to truly include all their inhabitants. And finally, our own ability to live a full and happy life.

When it comes to engagement, the data are pretty clear.

Voter turnout around the world peaked in the late '80s and is declining at a pace never seen before, and if the numbers are bad at the country or city level, that's downright disastrous.

Over the past two years, the United States and France, two of the world's oldest and most integrated democracies, have held nationwide local elections.

In France, voter turnout hit a record low.

Nearly 40% of voters decided not to attend.

In the United States, the numbers were even scarier.

In some American cities, voter turnout has reached nearly 5 percent.

Let's think about it.

We are talking about a democratic city where 95% of people have decided that electing a leader doesn't matter.

Los Angeles, a city of four million people, elected a mayor with just over 200,000 votes.

This was the lowest voter turnout in the city in 100 years.

Here in the city of Rio, where I live, nearly 30 percent of voters in the last mayoral election chose to void their votes or stay home and pay fines, even though voting is compulsory.

When it comes to inclusivity, our cities aren't the best examples of success either. Again, you don't have to look far to find that evidence.

The city of Rio is incredibly unequal.

It's LeBron.

Leblon is the wealthiest neighborhood in the city.

And this is the Complexo de Alemán.

This is where over 70,000 of the city's poorest residents live.

LeBron's Human Development Index, HDI, is .967.

This is higher than Norway, Switzerland and Sweden.

The HDI for Complexo do Alemão is .711.

It is located halfway between the HDIs of Algeria and Gabon.

So Rio, like many cities in the Global South, is within 30 minutes from Northern Europe to Sub-Saharan Africa.

If you drive a car, yes.

It takes about 2 hours by public transport.

And finally, and perhaps most importantly, cities, with the incredible richness of relationships they enable, can be ideal places for human well-being to thrive.

We like being close to people.

we are social animals.

Rather, it seems to me that the countries where urbanization is already at its peak are the ones where cities no longer make us happy.

This is the main reason why the US population has suffered from declining overall well-being over the last 30 years.

The way American cities are built has virtually wiped out quality public spaces in many American cities, resulting in a decline in relationships and what makes us happy.

Numerous studies show increased loneliness and decreased togetherness, integrity, and social and civic participation.

So how do we start building a city that cares about us?

What city cherishes its most important asset: the amazing diversity of the people who live in it?

A city that makes us happy?

I believe that if we want our cities to change, we need to really change the decision-making processes that have resulted in our current results.

We need a participatory revolution, and we need it urgently.

The idea of ​​voting as the only means of exercising citizenship no longer makes sense.

People are tired of only being treated as empowered individuals when it comes time to delegate that authority to someone else every few years.

If the protests that swept across Brazil in June 2013 have taught us anything, it's that we are beaten, humiliated and arrested every time we try to exercise power outside of an election.

And this needs to change. Because when that happens, people not only re-engage with the structures of representation, but complement these structures with direct and effective collective decision-making, the kind of decision-making that, by its very inclusive nature, attacks inequalities, the kind of decision-making that can transform cities into places where we can live better.

But there are obvious pitfalls. Enabling widespread participation and redistribution of power can be a logistical nightmare. There are also cases where technology can play an incredibly helpful role by facilitating organization, communication and decision-making, with people not having to be in the same room at the same time.

Unfortunately for us, city governments are failing to use technology to its full potential when it comes to facilitating democratic processes.

So far, most city governments have effectively used technology to turn citizens into human sensors and provide authorities with data about the city (potholes, fallen trees, broken lamps, etc.).

Also, to a lesser extent, they invite people to participate in improving the outcomes of decisions already made. Just like when I was eight, my mother told me I had a choice, I had to be in bed by 8pm, but I could choose between pink pajamas or blue pajamas.

It's not participation. In fact, governments are not very good at leveraging technology to enable them to participate in important things such as how budgets are allocated, how land is occupied, and how natural resources are managed.

These are the kinds of decisions that can really impact the global issues that pop up in our cities.

The good news is, I have good news to share with you, but we don't have to wait for the government to do this.

I have reason to believe that it is possible for citizens to build their own participation structures.

Three years ago, I co-founded an organization called Meu Rio. We aim to make it easier for Rio City people to organize around causes and places of interest in their city and influence those causes and places every day.

Over the past three years, Meu Rio has grown into a network of 160,000 Rio citizens.

About 40% of our members are young people between the ages of 20 and 29.

That is now the equivalent of 1 in 15 young people of the same age in Rio.

Among our members is also the adorable girl Bia on your right. Bia was just 11 when she started a campaign using one of our tools to save a model public school from demolition.

Her school actually ranks among the best public schools in the country and, no joke, it was scheduled to be demolished by the state government of Rio de Janeiro just before the World Cup to make way for a parking lot.

Bia launched a campaign and we monitored her school 24/7 through webcam surveillance, but months later the government changed its mind.

Beer's school remained intact.

I have a Jobita.

She is an amazing woman who lost her daughter about 10 years ago and has been looking for her ever since.

In the process, she first realized that she was not alone.

Last year, 2013 alone, 6,000 people went missing in Rio state.

However, despite this, it also turns out that Rio does not have a centralized information system to solve missing persons cases.

In other Brazilian cities, these systems have helped solve up to 80% of missing persons cases.

She launched a campaign, and after receiving 16,000 e-mails from people requesting this, the security chief responded by initiating the creation of a police force to specialize in those cases.

It opened to the public at the end of last month, and Mr. Jobita also responded to the interview and was very flashy.

And then there's Leandro.

Leandro is an amazing guy in the slums of Rio who has set up a recycling project in the slums.

Late last year, on December 16, he received an eviction order from the state government of Rio de Janeiro and was ordered to vacate the space he had been using for two years for two weeks.

The plan was to turn it over to a developer and use it as a construction site.

Leandro started the campaign with one of our tools, a pressure cooker (the same one used by Bia and Jovita). And the state government changed its mind before Christmas Eve.

These stories make me happy, and not just because they have a happy ending.

They make me happy because they are happy beginnings.

Bia's school's teacher and parent community are exploring other ways the space can be improved even further.

Leandro has ambitious plans to bring his model to other low-income neighborhoods in Rio, while Jovita volunteers with the police unit she helped create.

Bia, Giovita and Leandro are living examples of what citizens and city governments around the world need to know. "We are ready".

As citizens, we are ready to decide our common destiny. Because we know that how power is distributed says a lot about how we actually value everyone. And because we know that enabling and participating in local politics is a sign that we really care about our relationship with each other. We are ready to do this now in cities around the world.

Through the Our Cities network, the Meu Rio team wants to share what we've learned with others who are starting similar initiatives in their cities.

We have already started this initiative in São Paulo with great results. We want to bring it to cities around the world through a network of citizen-centered, citizen-led organizations that can inspire, challenge and remind us to seek true participation in urban life.

Schools or parking lots, community-led recycling projects or construction sites, loneliness or unity, cars or buses, it is up to us to decide, and it is our responsibility to do it now, for ourselves, for our families, for those who make our lives worth living, and for the incredible creativity, beauty and wonder that, despite all the problems, make our cities the greatest inventions of our time.

thank you. thank you.

(applause)

Now imagine a plane about to crash with 250 children and babies on board. And if you knew how to stop it, would you?

Now imagine that 60 planes with babies under the age of 5 crash every day.

That is the number of children who do not reach their fifth birthday.

6.6 million children will not be able to reach their 5th birthday.

Most of these deaths are preventable, but it makes me angry and determined as well as sad.

Diarrhea and pneumonia are among the top two killers of children under five, and what we can do to prevent these diseases is not a smart new innovation.

It is one of the world's oldest inventions, bar soap.

Washing your hands with soap, a habit we all take for granted, can cut diarrhea by half and respiratory infections by a third.

Handwashing with soap has been shown to be effective in reducing influenza, trachoma, SARS, and more recently in the case of cholera and Ebola outbreaks, one of the key interventions is handwashing with soap.

Handwashing with soap keeps children in school.

It prevents the death of babies.

Handwashing with soap is one of the most cost-effective ways to save children's lives.

More than 600,000 children can be saved each year.

That's the equivalent of not crashing 10 jumbo jets with babies and children on board every day.

I think you will agree that this is a very beneficial public health intervention.

Please wait a moment.

I think you need to know your neighbors.

Why don't you shake hands?

please shake hands

All right, let's get to know each other.

It looks really clean.

have understood.

So what if the person you just shook hands with actually said they didn't wash their hands when they came out of the bathroom? (laughs) You don't look that cute anymore, do you?

Sounds pretty awful, you'll agree with me too.

Statistics show that 4 out of 5 people around the world don't wash their hands after leaving the bathroom.

And in the same way, we don't do that when we have fancy toilets, running water, and soap. This is also true in countries with very high child mortality rates.

what is that? Don't you have soap?

I actually have soap.

90% of households in India and 94% of households in Kenya have soap.

Even countries with the lowest soap usage, like Ethiopia, reach 50%.

Why?

Why don't people wash their hands?

Why doesn't this boy I met in India, Mayank, wash his hands?

Well, in the Mayank family, soap is used for bathing, soap is used for washing, soap is used for washing dishes.

His parents sometimes consider it valuable and keep it in a cupboard.

They keep it away from him so he doesn't waste it.

On average, Mayank's family uses soap to wash their hands at most once a day, sometimes once a week.

What was the result?

Children get sick in the place where they are most loved and protected: at home.

Think about where you learned to wash your hands.

Have you learned to wash your hands at home?

Did you learn to wash your hands at school?

Behavioral scientists will tell you that it's very difficult to change habits you develop early in life.

But we all imitate what others are doing, and local cultural norms shape how we change our behavior, and this is where the private sector comes into play.

Every second in Asia and Africa, 111 mothers buy this bar to protect their families.

Many Indian women will say they learned all about hygiene and disease from this bar of Lifebuoy brand.

Iconic brands like this have a responsibility to do good wherever they sell their products.

Because of that belief and Unilever's scale, we can keep mothers talking about handwashing with soap and hygiene.

Large corporations and brands can change and change these social norms and change stubborn habits.

please think about it. Marketers spend all their time trying to switch us from one brand to another.

And indeed, they know how to turn science and facts into compelling messages.

Imagine for a moment when they put all their energy behind a message as powerful as washing their hands with soap.

The profit motive is changing health outcomes in this world.

But it's been happening for centuries. The lifebuoy brand was launched in Victorian England in 1894 to actually fight cholera.

Last week I visited Ghana with the Minister of Health. In case you didn't know, there is currently a cholera epidemic in Ghana.

118 years later, the solution is exactly the same. So to make sure people have access to this bar soap and to ensure they are using it. Because that's the best way to actually stop the spread of cholera.

I think this desire for profit is very powerful, sometimes stronger than even the most ardent charities and governments.

Governments are doing all they can, especially at this time regarding pandemics and epidemics such as cholera and Ebola, but there are competing priorities.

You don't always have a budget.

When we think about this and what it takes to make handwashing a daily habit, we need sustained funding to improve this behavior.

So those who fight for public health are actually dependent on soap companies to keep promoting handwashing with soap.

We have friends like USAID, the global public-private partnership for handwashing with soap, the London School of Hygiene and Tropical Medicine, Plan and WaterAid, all of whom believe in win-win-win partnerships.

We help the public sector achieve its goals, so the public sector benefits.

It will be a win for the private sector as we build a new generation of future hand washing machines.

And most importantly, the most vulnerable win.

On October 15th, we celebrate Global Handwashing Day.

Schools, communities, friends in the public sector, and friends in the private sector—yes, our competitors included—on that day, we all join hands to celebrate the world's most important public health intervention.

What is needed, and here again where the private sector can make a big difference, is to generate this big, creative thinking that drives advocacy.

Join us in our Help a Child Reach 5 campaign and we've created an amazing film that brings the message of handwashing with soap to everyday people in a way that resonates with them.

It has been played over 30 million times.

Most of these discussions are still taking place online.

Please take 5 minutes to watch these movies.

I am from Mali, one of the poorest countries in the world.

I grew up in a family where dinner conversations were all about social justice.

I was trained in Europe's leading public health schools.

I am probably one of the only women in this country in such good health, and one of the only women with a PhD in handwashing with soap.

(Laughter.) (Applause.) Nine years ago, I was on the cusp of a successful career in public health and decided I could make the biggest impact by selling and promoting soap, the world's greatest public health invention.

We currently have the world's largest handwashing program by public health standards.

We have served over 183 million people in 16 countries.

My team and I have ambitions to reach 1 billion people by 2020.

Over the past four years, the business has seen double-digit growth and reduced child mortality wherever soap use has increased.

Some may find it uncomfortable to hear the same words for business growth and lives saved, but business growth is what allows us to continue to do more.

Without it, and without talking about it, we cannot achieve the change we need.

Last week, my team and I spent time visiting mothers who had the same experience with the death of their newborn baby.

i am a mother I can't imagine anything more powerful and painful than this.

This one is from Myanmar.

She had the most beautiful smile. I think it's the smile that life gives when you're given a second chance.

Her son, Mio, is her second son.

She had a daughter who died three weeks after birth. We know that the majority of children who do die do so within the first month of life. We also know that giving all skilled midwives bars of soap and using the soap before touching the baby can reduce that number and make a difference.

And that is what inspires me and motivates me to continue on this mission, to know that I can provide her with the most beautiful job in the world: what it takes to raise a newborn baby.

And the next time you're thinking about gifts for new moms and their families, don't look far and buy soap.

This is public health's greatest invention.

We hope you will join us in making handwashing part of our daily routines and routines, and help more children like Myo reach their 5th birthday.

thank you.

(applause)

Almost a year ago, my aunt started having lower back pain.

She went to see a doctor, who told her it was a normal injury for someone who had played tennis for nearly 30 years.

Doctors advised her to get some treatment, but after a while she didn't feel better, so they decided to do more tests.

They did an x-ray and found that her lungs were damaged. At the time, they thought the injury was a muscle and tendon injury between her ribs, but after several weeks of treatment, she was again unwell.

So in the end they decided to do a biopsy and two weeks later the biopsy results were back.

It was stage 3 lung cancer.

Her lifestyle was risk-free.

She doesn't smoke, doesn't drink alcohol, and has spent almost half of her life in sports.

Perhaps that's why it took her almost six months to be properly diagnosed.

Unfortunately, my story may sound familiar to most of you.

1 in 3 in this audience will be diagnosed with some form of cancer, and 1 in 4 will die from it.

Not only did the cancer diagnosis change our family's lives, but the process of new tests coming and going, different doctors explaining symptoms, and truncating the disease over and over was stressful and frustrating, especially for my aunt.

And that's how cancer diagnosis has been done since the beginning of history.

We have 21st century medicines and drugs to treat cancer, but we still have 20th century procedures and processes when it comes to diagnosis.

Today, most of us have to wait for symptoms to show that something is wrong.

Even though we know that detecting cancer early is basically the closest thing to a silver bullet for cancer, the vast majority of people today still have no access to early detection of cancer.

We know we can change this while we are still alive. That's why my team and I decided to embark on this journey to make early-stage cancer detection and monitoring of appropriate responses at the molecular level easier, cheaper, smarter and more accessible than ever before.

The background, of course, is that we live in a time when technology is destroying our present at an exponential rate, and the biological realm is no exception.

Today, biotechnology is said to be advancing at least six times faster than the growth rate of computer processing power.

However, biotechnology progress is not only accelerating, it is also becoming more democratized.

Just as personal computers, the Internet, and smartphones have leveled the playing field for entrepreneurship, politics, and education, recent advances have also leveled advances in biotechnology, thus enabling interdisciplinary teams like ours to approach and consider these issues with new approaches.

We are a team of scientists and engineers from Chile, Panama, Mexico, Israel and Greece, and based on recent scientific discoveries, we believe we have discovered a reliable and accurate method for the very early stage detection of several types of cancer through blood samples.

It does this by detecting a series of very small molecules called microRNAs that circulate freely in the blood.

To explain what microRNAs are and their important role in cancer, we need to start with proteins. This is because when cancer exists in our body, protein modification is observed in all cancer cells.

As you may know, proteins are large biomolecules that perform a variety of functions in the body, such as catalyzing metabolic reactions, responding to stimuli, and replicating DNA, but before proteins are expressed or produced, relevant parts of the genetic code present in DNA are copied into messenger RNA. So while this messenger RNA has instructions on how to build a particular protein, potentially hundreds of them, it is the microRNA that directs when to build and how many to build.

Therefore, microRNAs are small molecules that control gene expression.

Unlike DNA, which is largely stationary, microRNAs change in response to internal and environmental conditions at the moment, telling us which genes are actively expressed at that particular moment.

As we all know, cancer is a disease of altered gene expression, which is why microRNAs are promising biomarkers for cancer.

It is the uncontrolled regulation of genes.

Another important point to consider is that no two cancers are the same and there are patterns at the microRNA level.

Several scientific studies have shown that the expression levels of aberrant microRNAs vary, creating specific patterns unique to each cancer type, even in the early stages, reflecting disease progression and response or remission to drug therapy, making microRNAs perfect and sensitive biomarkers.

However, the problem with microRNAs is that they are very short nucleotide sequences and much smaller than DNA, so they cannot be reliably detected using existing DNA-based techniques.

Also, all microRNAs are very similar to each other, but have minor differences.

So imagine trying to distinguish between two very similar but very small molecules.

We believe we've found a way to do so, but this is the first time we've shown it publicly.

Please allow me to demonstrate.

The next time you see your doctor and have standard blood tests, a lab technician will extract your total RNA. This is very easy today, put it in a standard 96 well plate like this.

Each well of these plates has a specific biochemistry that we assign to look for specific microRNAs. It acts like a trap that closes only when microRNAs are present in the sample, glowing green when microRNAs are present.

To run the reaction, place the plate inside such a device and place your smartphone on top of it.

I can set up a camera here so you can see my screen.

A smartphone is both a connected computer and a camera, which is good enough for our purposes.

The smartphone takes a picture, and when it's done reacting, it sends the picture to an online database for processing and interpretation.

The entire process takes about 60 minutes, but once the process is finished, the glowing wells are matched to specific microRNAs and analyzed for amount and rate of glow.

And when this whole process is complete, something like this happens.

This chart shows the specific microRNAs present in this sample and how they react over time.

We can then take a specific pattern of microRNAs in this person's sample and compare it to existing scientific documents that correlate microRNA patterns with the specific presence of disease to see what pancreatic cancer looks like.

Inside this is a real sample of pancreatic cancer that has just been detected.

(Applause.) Another important aspect of this approach is collecting and mining data in the cloud. This allows results to be retrieved in real time and analyzed using contextual information.

If we want to better understand and decipher diseases like cancer, we need to stop treating them as acute, isolated episodes and permanently consider and measure everything that affects our health.

This entire platform is a working prototype.

Using cutting-edge molecular biology, low-cost 3D-printed devices, and data science, we are tackling one of humanity's toughest challenges.

We believe that early cancer detection should be truly democratized, which is why we are open sourcing the design of our device because we know the cost of this entire solution is at least 50 times less than currently available methods and the community can help accelerate this even further.

(Applause.) Let me be clear, we are still in the very early stages, but so far we have been successful in identifying microRNA patterns in pancreatic, lung, breast and liver cancers.

And now, in collaboration with the German Cancer Research Center, we are conducting a breast cancer clinical trial with 200 women.

(Applause.) This is a single noninvasive, accurate, and affordable test that could dramatically change the way cancer is treated and diagnosed.

We're always looking for microRNA patterns in the blood, so we don't need to know which cancer we're looking for.

It doesn't have to be symptomatic.

All you need is one milliliter of blood and a relatively simple set of tools.

Currently, cancer detection is primarily done when symptoms appear.

So at stage 3 or 4, I think it's too late.

Too expensive for our family.

It is too expensive for mankind.

We cannot lose the battle against cancer.

Not only does it cost us billions of dollars, it also costs people we love.

Today, my aunt is fighting valiantly and going through this process with a very positive attitude.

But I would like to see very few such battles.

We hope that one day cancer will be easier to treat because it can be routinely diagnosed at a very early stage. I also believe that this discovery and other breakthroughs we see every day in the life sciences will fundamentally change the way we look at cancer in the near future.

It gives us the opportunity to detect it early, understand it better and find a cure.

thank you very much.

(applause)

This is your conference. I think you have a right to know a little bit about this guy who is going to take care of you a little bit at this transitional time.

So I'm going to sit on the chair here.

Two years ago at TED, I came to this conclusion and wondered if maybe I was suffering from a strange delusion.

At that time, I think I may have subconsciously believed that I was something of a business hero.

I spent 15 years building this company. It is called "Future". I was a magazine publisher.

It recently went public, and the market apparently said it was worth $2 billion, but that number wasn't very clear to me.

My latest magazine, Business 2.0, was thicker than a phone book and pumped hot air into the bubble.

(Laughter) And I was the 40 percent owner of a dot-com that was on the verge of going public and was definitely worth over billions of dollars.

And all this came out of nothing.

Fifteen years ago, when I was a science journalist and said, "I really want to start my own computer magazine," people just laughed.

Fifteen years later, with 100 employees and 2,000 staff, it was a hectic time.

The date was February 2000.

I thought the little graph of my business life was like Moore's Law, always up, right, and forever.

I mean, I had to. right? I was quite surprised.

The dotcom, ironically called Snowball, was the last consumer web company to go public the month after the NASDAQ skyrocketed, sending me into 18 months of business hell.

I saw everything I had built crumbling down, and it seemed like everything would disappear and 15 years of work would go to waste.

And it was heartbreaking.

It took eight years of blood, sweat and tears to grow to 350 employees. This was something I was very proud of in the industry.

February 2001 -- I laid off 350 people in one day and 1,000 people were out of work at my company before the bloodshed ended. I felt sick.

I watched my net worth go down by about $1 million a day every day for 18 months.

And worse than that, my self-esteem was evaporating.

I used to walk around with a big “LOSER” sign on my forehead.

(Laughter.) And, looking back, I think the thing that bothers me most is how in the world did I tie my personal happiness to this business so much?

Well, I was able to save Future and Snowball in the end, but at that point I was ready to move on.

Long story short, this is where I ended up.

And the reason I'm telling this story is because, from many conversations, I believe that a lot of people in this room have been going through a similar kind of roller coaster over the last few years: an emotional roller coaster.

This is a big turning point, and I believe this conference can play a big role in helping us all take the next step.

Next year's theme is "regeneration".

It was at the same TED two years ago that Richard and I agreed on the future of TED.

At about the same time, and I think that's part of the reason, I started doing things I had forgotten about while focusing on my business. That's when I started reading again.

And while I was busy with my business game, I realized that there was an incredible revolution taking place in so many fields of interest: cosmology, psychology, evolutionary psychology, anthropology... all of this was changing.

And it's been incredibly exciting, changing the way we think about us as a species and as a planet.

And what was really most exciting, I think Richard Wurman discovered this at least 20 years before I did, is that all of this is connected.

it is connected. Everything is intertwined with each other.

We talk about this a lot, but I thought I'd give this example. So just an example. Madame de Gaulle, wife of the President of France, was once famously asked, "What do you most desire?"

She replied, "Penis."

Come to think of it, that's just true. What we all want most is a penis, or in English, happiness.

(Laughs) And then... good luck in the Japanese translation room.

(Laughter.) (Applause.) But something as basic as happiness, which 20 years ago would have been just discussed in churches and mosques and synagogues, today, it turns out there are dozens of TED-like questions you can ask about it, and they're really interesting.

You can ask about biochemical causes, neuroscience, serotonin, etc.

What is its psychological cause, is it natural?nurture? What is the current situation?

The research done on it turned out to be quite astonishing.

You can see this as a computing problem, an artificial intelligence problem. Does it have to have some kind of analogue of happiness built into its brain for it to function properly?

One could look at this from a sort of geopolitical perspective and say why a billion people on this planet are so hopelessly destitute that they can never be happy, while nearly everyone else is, on average, about the same happy regardless of how much money they have, whether it's $2 a day or whatever.

Alternatively, you can view this as something like evolutionary psychology. Did our genes invent this as a kind of trick to make us do certain things? Could it be parasitizing the brains of ants and making us do certain things in order to multiply the genes?

Are we victims of a mass delusion?

etc.

Understanding even what is as important to us as happiness requires branching in many different directions, and nowhere else I have found so many questions in so many different directions can be asked, but at TED.

So what Richard is talking about is profound. To understand something, it is enough to understand only a small part of it. A little bit about everything that surrounds it.

So, gradually over the next three days, I started to try to understand, "Why am I hearing so much irrelevant stuff?"

And at the end of the four days, your brain is humming, you feel energized, alive and excited. That's because it's a combination of all the different elements.

It's a whole-brain experience, we're about to...

It is mentally equivalent to a full body massage.

(Laughter) Every mental organ was taken away. It really is.

Enough theory, Chris. Tell me what you actually do, okay?

I think so too. This is TED's vision.

Number one: do nothing. It's not broken, so I'm not going to fix it.

Jeff Bezos kindly said to me, "Chris, TED is a really great conference.

You'd have to do really bad things to make it worse. ”

(Laughter) So I've given myself the title of TED custodian for a reason, and I'm here to assure you that the core values ​​that make TED so special won't get in the way.

Truth, curiosity, diversity, no sales, no corporate bullshit, no bandwagonism, no platforms.

Across all the areas shown here, just pursue your interests wherever they may be.

It doesn't change at all.

Number 2: We're going to have a great line-up of speakers next year.

TED's timescale is truly amazing, as it's a departure from the magazine business with monthly deadlines.

We have a year to do this, but already -- and I'll show you later -- about 25 amazing speakers have signed up for next year.

And I get great help from the community. This is just a great community. And when combined, our contacts reach nearly anyone of interest within, if not on the planet, our country.

That's true.

Third: If possible, I'd like to find ways to extend the TED experience a little bit over the course of the year.

One of the key ways we do this is by introducing this book club.

Books have saved me over the last few years, so it's a gift I want to pass on.

This means that if you sign up for TED2003, you will receive one or two books every six weeks and a care package with why you are linked to TED.

It could be from a TED speaker, so we can move the conversation forward this year and come back next year on the same intellectual and emotional journey.

I think it's going to be great.

And fourth, I would like to mention the new owners of TED, the Naegi Foundation.

Ownership of the saplings means that all TED proceeds go to the cause the saplings represent.

And more importantly, I think the ideas exhibited and realized here are ideas that the Foundation can use because they have great synergies.

Already, in the last few days alone, so many people have been talking about what they care about, what they're passionate about, what they can do to make a difference in the world, and the idea of ​​bringing this group of people together. I truly believe that the combination of some of the causes we believe in, such as the funding and ideas raised at this conference, will create change over time.

I am very excited.

In fact, overall, I don't think I've ever been this excited in my life.

I'm working on this for the long term. I would be very honored and excited if you would join me on this journey.

So I started working with refugees because I wanted to make a difference. Making a difference starts with telling their story.

So when I meet refugees, I always ask questions.

who bombed your house?

who killed your son

Did the rest of the family survive and survive?

How are you living in exile?

But there is one question that has always been the most provocative to me. That is the question, "What did you shoot?"

What was the most important thing you had to take with you when a bomb exploded in your town and armed men approached your home?

A Syrian refugee boy I know told me that he never hesitated even when his life was in immediate danger.

He received his high school diploma and later told me why.

"I received my high school diploma because my life depended on it," he said.

And he would risk his life to get that diploma.

On his way to school he was dodging a sniper.

The classroom occasionally shook with the sound of bombs and artillery fire, and her mother said, "I used to tell him every morning, 'Honey, don't go to school.'

However, he told his mother, "We are all afraid, but our determination to graduate is stronger than our fears."

But one day, the family received terrifying news.

Honey's aunt, uncle, and cousin were murdered in their home for refusing to leave.

their throats were slit.

It's time to escape.

They left immediately by car that day. Facing a checkpoint from threatening soldiers, Honey hid in the back.

And they will cross the border into Lebanon and find peace there.

However, they begin a life of hardship and monotony.

Reluctantly, they built a hut on the side of a muddy field, and this is Honey's brother Ashraf playing outside.

And on that day, they joined the world's largest number of refugees in the tiny country of Lebanon.

Although it has a population of just 4 million, it is home to 1 million Syrian refugees.

There is no town, city or village that has not hosted Syrian refugees.

This is amazing generosity and humanity.

Let's consider this proportionally.

It would be as if the entire population of Germany, 80 million, fled to the United States in just three years.

Half of Syria's population is now displaced, most of them inside the country.

6.5 million people are fleeing for their lives.

Well over three million people crossed the border and found refuge in neighboring countries, but as you can see, only a fraction emigrated to Europe.

My biggest concern is that half of Syrian refugees are children.

I took a picture of this little girl.

It was just two hours after she had arrived after a long journey from Syria to Jordan.

And most troubling of all, only 20 percent of Syrian refugee children attend Lebanese schools.

Yet Syrian refugee children, all refugee children, tell us that education is the most important thing in life.

why? Because it allows us to think about our future, not the nightmares of our past.

This will help them think about hope instead of hate.

I remember a recent visit to a Syrian refugee camp in northern Iraq. So I met this girl and I thought, 'She's beautiful,' so I approached her and asked, 'Can I take a picture of her?

She said yes, but didn't smile.

I don't think she could do it. Because I think we have to understand that she represents the Syrian refugee children of a lost generation, an isolated and disaffected generation.

Yet look at what they escaped: utter destruction, buildings, industry, schools, roads, housing.

Honey's house was also destroyed.

This needs to be rebuilt by architects, engineers and electricians.

Communities will need teachers, lawyers and politicians who are concerned with reconciliation, not revenge.

Shouldn't this be rebuilt by those with the greatest stakes, the exile community, the refugees?

Refugees have a lot of time to prepare for their return.

You might imagine that refugees are only a temporary condition.

Well, far from there.

As the war continues, the average length of time refugees spend in exile is 17 years.

Honey was in her second year when I visited him recently, and all conversations were in English. He confessed that he learned English by reading all of Dan Brown's novels and listening to American rap.

We also had a good time of laughter and fun with his beloved brother Ashraf.

But I will never forget the words he said to me when we ended our conversation that day.

He said to me, "If I am not a student, I am nothing."

Honey is one of the 50 million people displaced in the world today.

Never before have so many people been forced to relocate since World War II.

So while we are making great strides in human health, technology, education, and design, we are doing dangerously little to help our victims, and far too little about stopping and preventing the wars that drive them out of their homes.

And the number of victims is increasing.

By the end of today, an average of 32,000 people, or 32,000 people, will be evicted from their homes every day.

They escape across the border like this.

We shot this on the Syrian-Jordanian border, which is a typical day.

Or they flee in overcrowded, unseaworthy ships, in this case risking their lives, just to reach the safety of Europe.

The Syrian youth survived one of the capsized boats and most drowned. and he told us “Syrians are just looking for a quiet place where no one will be hurt, no one will be humiliated, no one will kill you.”

Well, I think it should be the bare minimum.

How about a place of healing, a place of learning, and even a place of opportunity?

Americans and Europeans have the impression that a proportionately large number of refugees are coming to their countries, but the reality is that the vast majority of refugees, 86 percent, live in developing countries, countries that have their own problems of insecurity and helping their own populations and poverty.

Therefore, the wealthy nations of the world should recognize the humanity and generosity of countries hosting so many refugees.

And all nations should ensure that no one flees war or persecution to reach closed borders.

(Applause.) Thank you.

But we can do more than just help refugees survive.

We can help them thrive.

We should think of refugee camps and communities as more than temporary population centers where people suffer while waiting for war to end.

Rather, it is a center of excellence where refugees can overcome trauma and train for the day they can return home as agents of positive change and social change.

It makes a lot of sense, but I am reminded of the terrible war in Somalia that has been going on for 22 years.

And imagine life in this camp.

I visited this camp.

It's in Djibouti, next to Somalia, but it was so remote that you had to take a helicopter to get there.

It was dusty and very hot.

Then we started visiting schools and talking to children. Then, across the room, there was a girl who looked the same age as my daughter, so I approached and spoke to her.

And I asked her questions like adults ask children. "What is your favorite subject?"

"And what do you want to be when you grow up?"

And at this time, her face turned white and she said to me: "I have no future.

My school days are over. ”

So I thought there must be some misunderstanding, so I consulted with my colleague, who confirmed that there is no funding for secondary education in this camp.

And at that moment I wish I could have said to her, "We will build you a school."

And I thought it was a waste.

She should be, she is the future of Somalia.

A boy named Jacob Atem had another chance, but before that he suffered a terrible tragedy.

He saw his village burn to the ground, here in Sudan, and when he was only seven years old, he learned that his mother and father and the whole family had been killed that day.

Only his cousin survived, and the pair walked for seven months, pursued by wild animals and armed men – these are the same boys as him – and finally reached a refugee camp, where they found safety. He spent the next seven years in a refugee camp in Kenya.

But his life changed when he got the chance to resettle in the United States. I found love in foster care and was able to attend school. He asked me to tell him about this proud moment when he graduated from college.

(Applause.) I had a Skype conversation with him the other day, and he was pursuing his PhD at a new university in Florida. He holds a PhD in public health and proudly tells us how he was able to raise enough money from the American public to set up a clinic in his home village.

So I want to take you back to Honey.

When I told him I would have the opportunity to speak with you here on the TED stage, he let me recite a poem he had emailed me.

“I miss myself, my friends, the birds and morning tea when I was reading novels and writing poetry.

My room, my books, myself and everything that made me smile.

Oh, oh, I had so many dreams about to come true. ”

My point here is that not investing in refugees is a huge opportunity loss.

Left unchecked, they risk exploitation and abuse, leaving them unskilled and uneducated, delaying their country's return to peace and prosperity for years.

I believe that how we treat displaced people will shape the future of our world.

Victims of war can hold the key to lasting peace and it is refugees who can stop the cycle of violence.

Honey stands at a tipping point.

We want to help him go to college and become an engineer, but our funding takes precedence over the basics of life: tents, blankets, mattresses, kitchen sets, food rations, and a small amount of medicine.

College is a luxury.

But leave him to languish in this muddy field and he will become part of a lost generation.

Honey's story is a tragedy, but it doesn't have to end that way.

thank you.

(applause)

I know a man who flies over the city every night.

In his dreams, he spins around as he kisses the earth with his toes.

He claims that everything, even paralyzed bodies like his own, has movement.

This man is my father.

Three years ago, when I learned that my father had suffered a severe stroke to his brain stem, I entered his room in the intensive care unit at the Montreal Neurological Institute and found him lying dying on a respirator.

The paralysis slowly covered his body, starting in his toes and continuing down his legs, torso, fingers and arms.

It ran down his neck, blocking his ability to breathe, and stopped just below his eye.

He never lost consciousness.

Rather, he watched from the inside as his body failed limb by limb, muscle by muscle.

In the ICU room, I walked over to my father's body and began reciting the alphabet with a trembling voice and tears.

A、B、C、D、E、F、G、H、I、J、K。

K blinked his eyes.

I started again.

A、B、C、D、E、F、G、H、I。

He blinked again at the letter I, then T, then R, then A: Kitora.

He said, "Kitora, my beauty, don't cry.

this is a blessing. ”

I couldn't hear my voice, but my father called my name forcefully.

Only 72 hours after his stroke, he had already accepted the full picture of his condition.

Despite his extreme physical condition, he was with me completely, guiding, nurturing, and fathering my father more than ever before.

Locked-in syndrome is many people's worst nightmare.

In French, it is sometimes called "lively disease".

Literally, "a disease surrounded by living walls."

For many, perhaps most, paralysis is an unspeakable terror, but my father's experience of losing all the tissues in his body was not one of feeling trapped, but rather one of turning his mind inward, turning off the outer chatter, going deep inside himself, where he fell in love with life and his body anew.

As a rabbi and spiritual man wandering between mind and body, life and death, paralysis gave him a new realization.

He realized that he no longer needed to look outside the material world to find God.

"Paradise is in this body.

It is in this world," he said.

For the first four months, I slept by my father's side and attended to his discomfort as best I could while understanding the deep human fear of not being able to call for help.

My mother, sister, brother and I wrapped him in a healing cocoon.

We became his mouthpiece, spending hours each day reciting the alphabet as he blinked and whispered back sermons and verses.

His room became our healing temple.

His bedside became a place for those seeking advice and spiritual counsel, and through us he was able to speak and comfort, word for word, blink by blink.

Everything in our world slowly became kinder as the hustle and bustle of the ward, the drama, and death faded into the background.

I would like to read to you one of the first sentences we transcribed the week after the stroke.

He wrote a letter to the synagogue congregation, concluding with the following sentence:

The universe is constantly opening and closing.

Many people stop growing when their stamina drops.

Last week I was treated badly, but I felt my father's hand around me and he brought me back. ”

When we weren't his voice, we were his legs and arms.

I moved them the way I wanted my arms and legs to move if I stayed still all day.

I remember holding his fingers close to my face and bending each joint to keep them soft and flexible.

I asked him many times to visualize the movement, observing from the inside the curling and stretching of his fingers, and to mentally move accordingly.

And then one day, out of the corner of my eye, I saw his body slide like a snake, involuntary jerks passing through his limbs.

At first I thought this was my own hallucination. Having spent so much time caring for this one body, I was desperate to see something react automatically.

But he told me he felt an electric spark flickering and tingling just below the surface of his skin.

The following week he began to show very little muscle resistance.

A connection was established.

Limb by limb, muscle by muscle, cramp by cramp, my body slowly and gently awakened.

As a documentary photographer, I felt the need to capture every single of his first movements, like a mother holding a newborn baby.

I filmed him on his first artificial respiration, the moments of celebration after his first muscle resistance, and how newly adapted techniques enabled him to become more and more independent.

I photographed the care and love that surrounded him.

But my photos only told the outside story of a man lying in a hospital bed, chained to a respirator.

Unable to paint his story from within, I began looking for a new visual language to express the ephemeral nature of his mental experiences.

Finally, I would like to present a series of videos in which I am trying to represent the slow, intermediate existence that my father experienced.

As he began to regain his ability to breathe, I began recording his thoughts. So the voice you hear in this video is his voice.

(Video) Ronnie Kahana: To play a quadriplegic role, you have to believe that you are paralyzed.

I don't

In my mind, and every night in my dreams, I am Chagall Man, kissing the floor with my toes, twirling above the city.

I know nothing about motionless human speech.

Everything has movement.

heart beats.

My body throbs.

Mouth moves.

we never stand still.

Life triumphs up and down.

Kitora Kahana: Most of us have muscle spasms and movements long before we are conscious, but my father tells me that his privilege is to live far outside of human experience.

Like an astronaut who sees a perspective most of us never share, he wonders, watches, and dreams of crawling back home as he takes his first breaths.

So life begins at 57, he says.

Infants have no attitude to their existence per se, but humans assert their world every day.

Few people will have to face physical limitations like my father, but everyone will experience a numbing moment in their life.

I know that I often face walls that feel completely unscalable, but my dad insists there are no dead ends.

Instead, he invites me into his co-healing space to give my best and he also gives me his best.

Paralysis was the gateway for him.

It was an opportunity to sit quietly with myself long enough to awaken, rekindle my life force, and fall in love with the full continuum of creation.

Today my father is no longer locked up.

He moves his neck comfortably, removes the feeding rod, breathes with his own lungs, speaks slowly in his quiet voice, and strives daily to move his paralyzed body more.

But the work never ends.

As he says, "I live in a broken world and have sacred work to do."

thank you.

(applause)

I'm here to talk about First Principles and the communities I love, especially East Palo Alto, California, where there are so many amazing people.

It's also a community oddly separated by Highway 101, which runs through Silicon Valley.

On the west side of the highway in Palo Alto, there are “haves” in every aspect imaginable: education, income, access to water.

There are "have-nots" on the east side of the highway.

Even if you don't know East Palo Alto, you may be familiar with the story of the East's disparity: railroad separation in East Pittsburgh or Gross Point Gate in East Detroit, East St. Louis, East Oakland, East Philadelphia.

Why do communities on the social, economic and environmental margins tend to be located on the eastern side of a place?

After all, it's the wind.

If you look at the Earth from the North Pole, you will see that it rotates counterclockwise.

The effect of this is that the northern and southern hemisphere winds blow in the same direction as the earth's rotation, i.e. east.

A way to think about this is to imagine yourself sitting around a campfire.

It has to seat 10 people and keep everyone warm.

The question is, who is sitting with the smoky wind in their face?

The answer is "the weak people".

This campfire dynamic is happening in cities around the world, not just in the United States. This is the east side of Paris. East Jerusalem.

There is also a marginalized community in East Vancouver just down the street from where we are sitting now.

I'm not the only one noticing this.

I worked hard on this for years.

And finally I found a group of British economic historians who modeled the dispersion of chimneys in the Industrial Age.

And they came to the same mathematical conclusions as I as an anthropologist. That said, wind and pollution are driving marginalized communities east.

The dominant logic of the industrial age is about inequality.

It's a matter of haves and have-nots, and it's become part of our culture.

So if someone says they're on the "wrong side" you know exactly what I'm talking about.

The phrase comes from the direction the wind blows away the dirty smoke from trains, usually east.

I'm not saying all communities in the East are marginal or all communities in the margin are in the East, but I'm trying to make a bigger point about the design divide.

So when you find yourself talking about basic directions like highways, rivers, railroad tracks, etc., you're talking about communities on the east side.

Now, wind is clearly a natural phenomenon.

But the human design decisions we make to isolate ourselves are not natural.

Consider the fact that all eastern U.S. communities were built during an era of legal segregation.

We weren't clearly trying to design for everyone's benefit, so we ended up dealing with issues like redlining.

This is literally where the government drew up maps to tell bankers where not to lend.

They are part of the actual map.

And you can see that red tends to concentrate on the east side of these cities.

These financial design decisions became self-fulfilling prophecies. Without financing, the property tax base was lower, which led to poorer schooling, an underprepared workforce, and, oh my God, lower incomes.

This means that you cannot get a loan.

A vicious cycle indeed.

And that is exactly the case with loans.

We've made equally evil design decisions on everything from water infrastructure to where to locate grocery and liquor stores, to how and for whom we design and fund technology products.

Taken together, this list of harms is a product of our more primitive selves.

I don't think we'd like to be remembered this way, but that's basically what we've done to East Side communities over the last century.

The good news is that it doesn't have to be this way.

We got into this eastern dilemma because of bad design, but good design can get us out of this dilemma.

And I believe that the first principle of good design is actually quite simple. That means we must start by designing for the benefit of all.

So remember the campfire metaphor.

If we want to benefit everyone, we might just sit in a horseshoe so no one gets smoke in their faces.

Gentrifiers have to be careful, because the whole point of this image is not to just roll into the Eastern community and move people out of the way.

(Applause.) But the point is, if you start with this first principle of benefiting everyone, elegant solutions may be more apparent than you think.

What would be an elegant solution to bridge this gap between Palo Alto, Silicon Valley and Palo Alto East?

I think there is a high possibility of starting with EPA (East Palo Alto).

We are located in the heart of Silicon Valley, the epicenter of innovation and wealth creation.

If this problem could be solved anywhere, it would be here.

And if we can solve the EPA problem, we can apply that solution to other East Side communities.

Come to think of it, this is actually a huge investment opportunity, an opportunity to drive policy change and philanthropy.

But at the heart of it all is this fundamental design principle, the choice to consider everyone or not.

And it's a choice we can make, dear ones.

We got the capital.

We have the technology, and it keeps getting better all the time.

Today, the building and community are home to some of the world's best entrepreneurs.

But the fundamental question is: What are we designing for?

More haves and have-nots? More disparities?

Or parity, the choice to unite.

Because the reality is that this is not the industrial age.

We are not living in an age of legal segregation.

So the punchline is that there's no wrong side to the track.

My point is that we should design our economies and communities with that in mind.

thank you.

(applause)

Technology has brought us so much, from the moon landing to the internet to the ability to read the human genome.

But it also applies to many of our deepest fears. About 30 years ago, the cultural critic Neil Postman wrote a book called Fun Until You Die that does a pretty good job of explaining this.

And here's what he said, comparing the dystopian visions of George Orwell and Aldous Huxley.

Orwell, he said, was afraid we would become a captive culture.

Huxley was worried that we would become a boring culture.

Orwell feared the truth would be hidden from us, Huxley feared we would drown in a sea of ​​irrelevance.

In a nutshell, it's a choice between Big Brother watching over you or you watching Big Brother.

(Laughter) But it doesn't have to be this way.

We are not passive consumers of data and technology.

We shape the role it plays in our lives and how we derive meaning from it, but to do that, we need to pay as much attention to how we think as we how we code.

Beyond counting things, we need to ask questions, and hard questions, to understand them.

We are constantly buzzing about how much data there is in the world, but when it comes to big data and the challenges of interpreting it, size is not everything.

There is a wide variety of movement speeds and types of data. Here are just a few examples of images, text, video, audio, etc.

And what unites this different kind of data is that they are created by people and need context.

The University of Illinois at Chicago now has a group of data scientists called the Health Media Collaboration. They are working with the Centers for Disease Control to better understand how people are talking about quitting smoking, how they are talking about e-cigarettes, and what they can do collectively to help them quit.

The interesting thing is that if you want to understand how people talk about smoking, you first have to understand what they mean when they say "smoking."

Twitter has four main categories. Number one is smoking. The second is smoking marijuana. 3. Smoke the spare ribs. And number four is a hot woman who smokes.

(Laughter) So the question is, what do people say about e-cigarettes?

There are so many different ways to do this and if you look at the slides you will see that this is a complex kind of query.

And what it reminds us is that languages ​​are made by humans, humans are messy and humans are complex, they use metaphors and slang and jargon, and they do this 24/7 in so many languages ​​and change it as soon as they find out.

So did these ads run by the CDC, very graphic, very offensive TV ads featuring a woman with a hole in her throat, actually influence whether people would quit?

And while respecting the limitations of the data, the Health Media Collaborative was able to conclude that those ads—and you may have seen them—have the effect of shaking people up into thought processes that can influence future behavior.

And what I admire and appreciate about this project, apart from the fact that it's based on real human needs, is that this is a great example of courage in the face of a sea of ​​irrelevance.

Big data isn't the only thing that poses interpretation problems. Because let's be honest, we humans have a very rich history of taking and messing with any amount of data, no matter how small.

You may remember many years ago that former President Ronald Reagan was heavily criticized for saying that facts are stupid.

In all fairness, it was a gaffe.

He was actually going to quote John Adams' defense against the British soldiers at the Boston Massacre Trial that the facts were stubborn.

But I think there's actually a bit of accidental wisdom in what he said. Because facts are stubborn and sometimes stupid.

I want to give you a personal story as to why this is so important to me.

I need to breathe.

My son Isaac was diagnosed with autism when he was 2 years old and was a very happy, cheerful, affectionate and affectionate little boy, but his developmental level was at par with a 9-month-old baby on developmental assessments such as word count (zero at this point), communicative gestures and minimal eye contact.

And while the diagnosis was factually correct, it didn't tell the whole story.

And about a year and a half later, one day when he was nearly four, I caught him doing a Google image search for women in front of his computer. It was spelled "w-i-m-e-n".

And I did what a preoccupied parent would immediately start hitting the back button to see what else they were looking for.

And they were, in order, men, schools, buses and computers.

And I was stunned, because I didn't know he could write, let alone read, so I asked, "Isaac, how did you do this?"

Then he looked at me seriously and said, "I typed it in the box."

He was self-taught in communication and we were looking in the wrong place. This happens when assessment and analysis overestimate one metric (in this case, verbal communication) and underestimate others, such as creative problem-solving.

Communication was difficult for Isaac, so he found a workaround to find out what he needed to know.

When you think about it, it makes a lot of sense. Because creating questions is a very complicated process. But he was able to get there quite a bit by typing a word into the search box.

And this little moment had a really deep impact on me and our family. Because it helped us change our standards for what was going on with him, worrying a little less and appreciating his resourcefulness more.

Facts are stupid.

And, whether intentionally or not, they are susceptible to abuse.

I have a friend, scientist Emily Willingham, who recently wrote an article in Forbes magazine titled “The 10 Weirdest Things Ever Related to Autism.”

Quite a list.

It's all because of the internet, right?

And of course mothers do too.

And actually, wait. There's a lot here in the "mothers" category.

It turns out to be a very rich and interesting list.

I personally love getting pregnant near the highway.

The last explanation is interesting. Because the term "mother with a refrigerator" is actually the first hypothesis about the cause of autism, meaning a cold and unloving person.

And at this point, you might be thinking, "Okay, Susan, okay. We can take the data and make any sense of it."

This is true and absolutely true, but the challenge is that, frankly, data does not create meaning, so we have the opportunity to try to make sense out of data ourselves. that's right.

Therefore, as business people, as consumers, as patients, and as citizens, I believe we have a responsibility to spend more time on critical thinking skills.

why?

Because at this point in our history, as we've heard time and time again, we'll be able to process exabytes of data at lightning speed, allowing us to make erroneous decisions with far greater impact, much faster and more efficiently than we have in the past.

That's amazing?

So what we need to do instead is spend a little more time in the humanities, sociology, social sciences, rhetoric, philosophy and ethics. Because they give us a very important context for big data. Also, they help us become better critical thinkers.

After all, if you can find a problem in an argument, it doesn't really matter whether it is expressed in words or numbers.

And this means teaching yourself how to spot confirmation bias and false correlations so you can spot naked emotional attraction from 30 yards away. Because just because something happened after something doesn't necessarily mean it happened because of it. Just in case you're curious, the Romans called this a "post-mortem ergopropter hoc".

And that means questioning areas such as demographics.

why? Because these are based on assumptions about who we are all based on gender, age and where we live, rather than data about what we really think and do.

With such data, we need to treat it with appropriate privacy controls and consumer opt-in, and be clear about our assumptions, the methodology we use, and our confidence in the results.