At an excavation site surrounded by emerald green paddy fields, I found an intact pot.

When I turned it over, I discovered a human thumbprint left by the person who made it.

For a moment, time stopped.

Because in that moment we realized that when we dig, we're digging people, not things.

We are never more present than in the midst of our great past.

I don't know how many times I stood in front of the Pyramids of Giza, but I was speechless.

I feel that I am the luckiest person in the world.

They are monuments to all of our human brilliance and potential.

Many people are unable to process their talents as humans and think aliens made them.

But this is funny.

All you have to do is get up close and personal and see the human hands hidden in the flea marks left by the tools that built them.

The Great Pyramid of Giza was built stone by stone using 2.3 million blocks with astonishing bureaucratic efficiency.

It's not a pyramid that will stand the test of time. It's human ingenuity.

That is our common human brilliance.

History may cycle, but we are single.

we love what we do Because it turns out we haven't changed.

You can read about a 3,500-year-old Mesopotamian mother-in-law joke.

(Laughter) I hear stories of neighbors yelling at each other in Egypt 4,600 years ago.

And my absolute favorite is the 3,300-year-old inscription in Luxor about schoolboys who skipped class and went drinking.

(laughs) Kids these days.

(Laughter) I get to see some of the most incredible architecture and see stunning sculptures. So this is basically a stone selfie. And make sure we always shine seriously.

Besides, we've been posting on walls and obsessed with cats for thousands of years (laughs).

(Laughter) (Applause) Archaeologists are the preservers of cultural memory, the voices of billions of people and thousands of cultures that have come before us.

Good science, imagination, and leaps of faith are the three ingredients we use to bring the dead back to life.

Last year, archaeologists made the following astonishing discoveries: A new human ancestor from South Africa. Tools 3.3 million years old - these are the oldest tools found in Kenya.

And this is from a set of medical instruments found on Blackbeard's ship in 1718.

What you are looking at is a medical device used to treat syphilis.

ah!

(Laughter) For each of these, there are thousands of other, non-headline-making, incredibly important discoveries made by colleagues.

But I believe the most important thing we do as archaeologists is to acknowledge that people in the past existed and had lives worth learning about.

Can you imagine what the world would be like today if we accepted all humans this way?

Drilling therefore presents the following challenges:

I can't see anything.

Where do we start digging?

This is from a location south of Cairo.

Let's take a look from space.

Again, it doesn't really look like much.

What you are looking at is a WorldView-3 satellite image with a resolution of 0.3 meters.

This means you can zoom in and see your tablet from 400 miles in space.

How can I know about this?

Because I'm a space archaeologist.

I repeat.

I'm a space archaeologist.

So -- (Applause) Thank you.

That means taking satellite imagery, processing it with algorithms, and observing subtle differences in the spectrum of light that show what is buried under the ground where you will go to drill and survey.

By the way, NASA has a space archaeology program, so this is serious work.

(laughs) So let's look at it again.

We are back at the scene just south of Cairo.

I can't see anything.

Notice the red rectangle.

Think of it like a space-based CAT scan and you'll see this when you process the image with an algorithm.

This rectilinear form is a hitherto unknown and unexcavated burial mound that you will be seeing for the first time in thousands of years.

(Applause.) I think we've just scratched the surface of what we have yet to discover.

In the Egyptian Delta alone, less than 1/1000th of 1% of the total volume of Egyptian sites has been excavated.

On top of that, considering the thousands of other sites my team and I have discovered, what we thought we knew pales in comparison to what has yet to be discovered.

Looking at the amazing work my colleagues are doing around the world and what they are discovering, I believe there are millions of remains still to be discovered.

Discovering them is nothing less than maximizing the potential of our existence.

But we have our challenges.

In the last year we've seen horrific headlines about incredible destruction in ruins and massive looting by people like ISIL.

ISIL destroyed the temples of Palmyra.

Who blew up the temple?

They destroyed Jonah's tomb.

And we witnessed rampant looting in what appeared to be craters on the moon.

Knowing ISIL's desire to destroy modern life, it is no surprise that they also destroy cultural identities.

Countless invading armies throughout history have done the same.

We know ISIL is profiting from looting strongholds, but we don't know the scale.

This means that anything currently purchased on the market from the Middle East can be terrorist financing.

It's like when a site is looted, the rest of a puzzle that was already missing 90% of the pieces is hidden beyond recognition.

This is an ancient identity theft on a grand scale.

We know there are two types of looting going on. One is looting by criminal elements like ISIL and the other is more local looting by cash-strapped people.

We would all do the same to support our families. I don't blame local looters.

I condemn intermediaries, unethical traffickers, and the international art market for their abuse of often obscure or non-existent laws.

We know that looting is happening worldwide and increasing, but there is currently no way to stop it.

This is starting to change.

My team and I have just completed an investigation into looting in Egypt.

We examined open-source data to map the full picture of looting across Egypt from 2002 to 2013.

We found evidence of looting and vandalism at 267 locations and mapped over 200,000 looting sites.

Amazing.

And when you put that data together, you can see the loot holes marked here.

In one place, looting became so bad from 2009, 2011 and 2012 that there were hundreds of pits.

Putting all the data together, we find that, contrary to popular belief, looting in Egypt began to worsen in 2009 after the global recession, not in 2011 after the Arab Spring.

Thus, we have shown with big data that looting is fundamentally an economic problem.

If nothing is done to stop this problem, by 2040 all parts of Egypt will be subject to looting.

Thus, we are at a tipping point.

We are a generation with all the tools and technology to stop looting, but not fast enough.

Sometimes I am amazed at the resilience of ruins.

I have just returned from the field where I co-led a joint mission with the Egyptian Ministry of Antiquities at an archaeological site called Risht.

The ruins date back to the Middle Kingdom of Egypt, from 2000 to 1750 BC.

The Middle Kingdom was the Renaissance period of ancient Egypt.

After a period of intense civil strife and environmental problems, Egypt has bounced back with a remarkable revival in art, architecture and literature.

This is a popular time to study in Egypt. Because this time of year can teach us a lot about how to survive and thrive after a catastrophe.

Well, at this location, we had already mapped countless loot pits.

Risht is a royal place. Thousands of people who lived and worked in the Pharaoh's court would have been buried there.

To install North Lisht.

When we first visited the place, we could see the tombs of many looted dignitaries.

Let's put in perspective what was filmed.

Imagine a 2 meter square area full of coffins, jewels and incredible statues.

Multiply it by 1000.

I got it.

So when we started working, the Egyptian co-director, Mohamed Yousef, approached me and said, 'We have to work on this particular tomb.

being attacked by looters.

If we do nothing, they will come back. ”

Of course I agreed, but I didn't expect to find anything.

I thought the looters stole everything.

What we began to find was the most amazing remedy.

Look at this picture -- it's really nice.

We began to find carved inscriptions.

And even the titles of the tomb owners had titles such as "Army Inspector" and "Treasurer Inspector".

I started to have hope.

Maybe we can find his name.

For the ancient Egyptians, their goal was to have their name immortalized.

And then one day this appeared.

This is the name of the tomb owner: Intef.

You can see it written in hieroglyphs here.

Working with a team in Egypt, we have restored someone's name from 3,900 years ago.

(Applause.) Together with our Egyptian colleagues, we celebrated this moment of shared discovery.

What we were doing together was right and true.

We found this incredible fake door almost intact.

It is written about Intef and his epitaph.

You can actually see him sitting here.

What I realized was that everything I thought about the looted site was proven wrong.

Every day in the field, we worked with 70 Egyptians as colleagues and friends.

In the face of so much hatred and ignorance of the people of the Middle East, every moment felt like a protest for peace on the ground.

When you work with people who look nothing like you, think like you, and speak like you, your common mission of archaeological discovery erases all superficial differences.

What I've learned this season is that archeology isn't about what you find.

It is important to be able to prove what is possible.

When I travel, I sometimes find long-lost family members. Not a family that shares genes, but a common entry in the book of life.

This is Omer Farouk, my brother.

Omer is a Gufti from a village called Guft just north of Luxor.

Gufti is part of the famous tradition of Egyptology.

They help with drilling and organizing workers.

Omer is my COO and CFO.

I couldn't do my job without him.

One day many years ago, when I was a young graduate student and Omer was a young Gufti who didn't speak much English, we found out quite by chance that we were born in the same year, same month, same day, six hours apart.

twins.

(Laughter) Although separated by the sea, for ancient Egypt our Mother is forever connected.

I knew then that we would always work together. Not in my head, but in the part of your soul that knows that not everything can be explained.

(Arabic) Brother Omer, I will always love you.

(English) Omer, my brother, I will always love you.

So, just before the first excavations in Egypt, my mentor, the very famous Egyptologist Professor William Kelly Simpson, called me into his office.

He gave me a check for $2,000 and said, "This is to cover your expenses.

Enjoy great adventures this summer.

Someday you will do this for others. ”

So my TED Award wish is some repayment and interest for great human generosity and kindness (laughter).

So my wish.

I hope to discover millions of unknown sites around the world.

Create a global army of 21st century explorers to discover and protect the world's hidden heritage that contains clues to humanity's collective resilience and creativity.

(Applause.) Thank you.

(Applause.) So how do we do that?

We plan to use the TED Prize to build an online, crowdsourced citizen science platform that allows anyone in the world to participate in discovering archaeological sites.

We space archaeologists are only a few hundred in the world.

My dream is to get the world involved in finding and protecting sites.

What you do here is sign in and create a username. Please note that this particular username is already taken.

(laughter) Take a tutorial and start working.

The first thing to note is that GPS data and site map data are never shared.

We treat them like human patient data and don't want to reveal their location.

Next, cards are dealt from a 20 x 20 meter or 30 x 30 meter deck to look for features.

My team and I can do really good science as you batch large amounts of satellite data using algorithms to find something for you.

Then you start looking.

what do you see? can you see the temple?

Can you see the grave? Can you see the pyramids?

Is there any possibility of damage or looting to the site?

Then start marking what's there.

And next to that, there's always a wealth of examples showing exactly what you're looking at to help guide you.

Any data you help us collect will be shared with vetted authorities to help create a new global alert system to protect our sites.

But it doesn't stop there.

Share your finds All archaeologists use Periscope, Google Plus, and social media to take you with you when you start excavating.

100 years ago, archeology was for the rich.

Fifty years ago it belonged to men.

Currently, it is mainly for academics.

Our goal is to democratize the process of archaeological discovery and allow everyone to participate.

Ninety-four years ago Howard Carter discovered the tomb of King Tutankhamun.

Who will be the next Howard Carter?

it could be you

By creating this platform, you can discover millions of places where billions of people lived before us.

If we want to answer the big question of who we are and where we come from, the answer is not in the pyramids and palaces, but in the cities and villages of those who came before us.

If you want to know about the past, it's time to turn the pyramid upside down.

There is more to acknowledging that the past is worth salvaging.

That means we deserve to be saved too.

And the greatest story ever told is the story of our shared human journey.

But the only way we can write it is if we write together.

come with me.

thank you.

(applause)

In 2003 the UK government conducted a study.

And it was a survey that measured the level of computing power of the population.

And they were shocked to learn that 47 of every 100 working-age adults in the country lack Level 1 numeracy.

Now for level 1 math skills -- this is a low end GCSE score.

Ability to work with fractions, percentages and decimals.

As such, this figure has caused much debate within Whitehall.

Policy was changed, investments were made, and another survey was conducted in 2011.

So, do you know what happened to this number?

It went up to 49.

(Laughter) And in fact, when I reported this number on the FT, one of our readers joked, "This number is just shocking to 51 percent of the population."

(Laughter) But I actually liked the way the kids reacted when I presented this information at school. They raised their hands and said: "How do you know you're not one of the 49 percent who came up with that number?"

(Laughter) Clearly there's a math problem. Because these are important skills for life, and many of the changes we want to introduce in this century involve us becoming more comfortable with numbers.

Now, this is not just an English problem.

The OECD has released several figures on young people's numeracy this year, with the United States leading the way. Nearly 40 percent of young Americans have low numeracy.

Well, the UK is there, but there are seven OECD countries with figures above 20 percent.

It doesn't have to be, so that's a problem.

If you look at the far end of this graph, you can see that the Netherlands and South Korea are in the single digits.

So there are certainly numerical problems that we want to solve.

Now, studies like this are useful, but I think we run the risk of misclassifying people into one of two categories. There are two types of humans: those who are used to numbers, those who can handle them, and those who are not.

And what I'm going to talk about here today is to say that I believe it's a false dichotomy.

It's not an immutable pairing.

I don't think you have to have a very high level of computing power to be inspired by numbers. It should be the starting point for your future journeys.

And for me, one way to start that journey is by looking at the stats.

Well, I was the first to admit that the stats have some image issues.

(Laughter) This is the part of mathematics that even mathematicians don't particularly like. Because the rest of mathematics is all about precision and certainty, whereas statistics is pretty much the opposite.

However, I myself was slow to make the transition to the world of statistics.

If you asked my undergraduate professors which two subjects I was most likely to excel in after college, they would have said statistics and computer programming. Still, I'm here to show you the statistical graphics I programmed.

So what caused that change in me?

Why do you think statistics are actually interesting?

That's precisely because statistics are about us.

If you look at the etymology of the word statistics, it is the science of working with data about the states and communities in which we live.

Statistics are therefore not about us as individuals, but about us as a group.

And I think as social animals we share this fascination with how we relate to our groups and peers as individuals.

And in this way statistics are most powerful when they surprise us.

Over the last few years, Ipsos MORI has conducted some very impressive research.

They surveyed more than 1,000 adults in the UK and found out how many are Muslims per 100 in England and Wales?

Well, the average response for this survey, which was supposed to be representative of the entire population, was 24.

The British believe that 24 out of 100 people are Muslim.

Now, official statistics reveal that number to be around five.

So there is a huge gap between what we think, what we perceive, and what the statistics tell us.

And I think that's interesting.

What could be causing that misunderstanding?

And I got so excited about this research that I started taking questions at my presentation. i was referencing it.

Well, I gave a presentation at St. Paul's School for Girls in Hammersmith, and the audience was pretty much the same, but the audience consisted entirely of girls of the 6th Form.

And I said, 'Guys, how many teenage girls do you think are pregnant in the UK every year?

And the girls were stunned when I told the British public that I thought 15 out of 100 teenage girls would get pregnant in a year.

And they were right to be angry. Because, from what the official numbers tell us, it actually took close to 200 dots to paint.

And like math, this is not just an English problem.

Ipsos MORI has recently expanded its research worldwide.

So they asked Saudis how many people in your country are overweight or obese per 100 adults.

And the average response from Saudi Arabia was just over a quarter.

So they thought.

Just over a quarter of adults are overweight or obese.

Closer to three-quarters actually, according to official figures.

(Laughter) So again, big variation.

And i love this. They were in Japan and asked the Japanese. How many people out of 100 Japanese live in rural areas?

The average was about 50/50, just over half.

They believed that 56 out of 100 Japanese live in the countryside.

The official number is 7.

A very extraordinary variation, surprising to some, but not to those who have read, for example, the work of Nobel Prize-winning economist Daniel Kahneman.

He and his colleague Amos Tversky spent years studying the discrepancy between what people perceive and reality, the fact that people are actually far less intuitive statisticians.

There are many reasons for this.

Certainly, personal experiences can affect our perceptions, but so too can things like the media report things as the exception rather than the norm.

Kahneman mentioned it in a great way.

"We can be blind to the obvious," he said, meaning the numbers can be wrong. "But we can also be blind to being blind about it."

And it has a huge impact on decision making.

So while this was going on at the Statistics Office, I thought this was really interesting.

This is clearly a global problem, but I said geography might be the problem here.

These questions were: How much do you know about your country?

In this case, how well do you know 64 million people?

It turns out not so good. Can not do that.

So I had the idea to think of this kind of approach in a very local sense.

is this a local?

Would your answer be more accurate if you reframed the question to say, How well do you know your hometown?

So I came up with a quiz. "How much do you know about your area?"

It's a simple web app.

Enter your zip code to see questions based on census data for your area.

And I was very conscious in designing this.

We wanted to expose it to as wide a range of people as possible, not just the 49 percent who could know the numbers.

I wanted everyone to be involved.

Therefore, the design of the quiz was inspired by the Otto Neurath isotypes of the 1920s and 30s.

Well, these are ways to represent numbers using repeating icons.

And the numbers are there, but they are in the background.

So it's a great way to express quantities without using terms like "percentage", "fraction" or "ratio".

Now for the quiz.

The quiz layout has repeating icons on the left and a map on the right showing the area to ask questions.

I have seven questions.

Each question has an answer between 0 and 100, and at the end of the quiz you will get an overall score between 0 and 100.

So, since this is TEDxExeter, I thought I'd take a quick look at the first few quizzes on Exeter.

So the first question is, how many are under the age of 16 per 100 people?

Okay, I don't know Exeter very well, so this was a guess, but you can see how this quiz works.

Simply drag the slider to highlight the icon, click "submit" to answer, and the animation will bridge the gap between your answer and reality.

And as it turns out, my guess was pretty bad. Five.

What about the next question?

This asks what the average age is, i.e. the age at which half the population is young and half the population is old.

And I thought I was 35. It sounds middle aged to me.

(Laughter) In fact, Exeter is incredibly young, so I underestimated the impact of the university on the area.

The questions get harder as you progress.

So this time I'm asking about home ownership. For every 100 households, how many households have mortgages or loans?

And I've hedged my bet here. I didn't want the answer to differ by more than 50.

(Laughter) And actually, these questions are even harder. Because when you're in a community, when you're in a community, things like age are clues to whether the population is old or young.

You can tell just by looking around.

Things like homeownership are much harder to see, so we go back to our own heuristics: our prejudices about how many people think they own their homes.

In fact, when we published this quiz, the underlying census data was already several years old.

For years we have provided an online application that allows you to enter your zip code and get your stats.

So in a way, this was all a little old, not necessarily new.

But I was interested in seeing what kind of response we could get by gamifying the data the way we do, using animation and taking advantage of the fact that people have their own preconceived notions.

After all, the reaction was, hmm...

It exceeded my expectations.

It has long been my ambition to shut down the statistics website in response to public demand.

(Laughter) This URL contains the words "statistics," "government," and "UK," which are the three words I hate most in URLs.

And surprisingly, people were actually using their personal time to interact with this data of their own free will, which is why the website was down between 15:00 and 10:00 at night.

We were very excited to see that 250,000 people took the quiz within 48 hours of its launch.

And while it sparked a massive debate online and on social media, mostly dominated by people reveling in their own misunderstandings, in some ways I don't think it could have been any better.

I also liked the fact that people started sending messages to politicians.

How well do you know the region you claim to represent?

(Laughter) And finally, coming back to the two types of people, I thought it would be very interesting to see what the numbers-savvy people would do with this quiz.

John Pringer, national statistician for England and Wales, would be expected to be a pretty good man.

He scored 44 in his area.

(laughter) Jeremy Paxman -- yes, after a glass of wine -- 36 years old.

Worse.

It shows that numbers can inspire us all.

They can surprise us all.

That's why statistics are often said to be the science of uncertainty.

My parting thought today is that statistics is science to us.

That's why we should be fascinated by numbers.

thank you very much.

(applause)

On a summer afternoon in 2013, Washington, D.C. police detained, questioned, and searched a man they thought was suspicious and potentially dangerous.

To be fair, this is not what I wore on the day of my detention, but I have a picture of it as well.

I know it's very scary, but please calm down.

(Laughter) At this time, I was an intern with a public defender in Washington, D.C., and I was visiting the police station on business.

I was on my way out and before I got to my car, two police cars stopped blocking my exit and a police officer approached me from behind.

He told me to stop, drop my backpack, and put my hand on the police car parked next door.

After that, a dozen or so police officers gathered near us.

All had handguns, some with assault rifles.

They slipped through my backpack.

they patted me.

They took pictures of me spread out in a police car and laughed.

And when all of this was happening, as I was riding in the police car trying to ignore the trembling in my legs and trying to think clearly what I was supposed to do, something stuck with me as strange.

If I were to look at myself in this picture and describe myself, I would say something like '19 year old Indian man, bright T-shirt, wearing glasses'.

However, those details were not included at all.

As they picked me up on the police radio, they said, "Middle Eastern man with a backpack.

A Middle Eastern man with a backpack. ”

And this explanation carried over to the police report.

I never expected to be described by the words 'lurker', 'villain' and 'terrorist' from my own government.

And the detention was thus prolonged.

They sent dogs trained to smell explosives to clear the area I was in.

They called the federal government to see if I was on the watch list.

They sent several detectives to cross-examine me as to why I didn't agree to a search of the car when I claimed I had nothing to hide.

And while I could see that they weren't happy with me, I felt there was no way of knowing what they wanted to do next.

At one point, the police officer who thrashed me scanned the side of the police station to see where the surveillance cameras were and to see how much of this was being recorded.

And when he did that, I really knew I was at their mercy.

We've all taken for granted the concepts of cops, arrests, and handcuffs from an early age, so I think it's easy to forget how humiliating and coercive it can be to take control of someone else's body.

I know it sounds like the point of my story is how I was treated badly because of my race, but I certainly wouldn't have been detained if I was white.

But actually, I have something else in mind today.

What I have in mind is that if I wasn't wealthy, things might have been worse.

I mean, they thought I might be planting an explosive device and spent an hour and a half investigating the possibility, but I was never handcuffed or taken to a cell.

If I was from a poor community of color in Washington, D.C., and they thought I was endangering the lives of police officers, things might have ended differently.

In fact, in our system, I think it's better to be a rich man suspected of trying to blow up a police station than a poor man suspected of far fewer charges.

I would like to give an example from my current job.

I currently work for a civil rights organization called Equal Justice Under the Law in Washington DC.

First of all, let me ask you a question.

How many people in your life have gotten a parking ticket?

Please raise your hand.

yes. I was the same.

And when I had to pay, it was annoying and uncomfortable, but I paid and moved on.

I'm sure many of you have already paid for your ticket.

But what if you can't afford the cost of your airline ticket and your family has no money?

Well, one thing that shouldn't happen under the law is that you shouldn't be arrested and jailed just because you can't afford to pay.

It's illegal under federal law.

But that's what local governments across the country are doing to the poor.

And many of our lawsuits in equality before the law target these modern debtor prisons.

One of our lawsuits is against Ferguson, Missouri.

And when I say Ferguson, many people think of police violence.

But today I want to talk about another aspect of the relationship between the police and the public.

Ferguson issued an average of more than two arrest warrants per person per year, mostly for outstanding court debt.

It makes me a little sick to imagine what it would feel like if every time I left my house, a police officer could look at my license plate, look at my warrant for outstanding debts, seize my body like they did in Washington, DC, and possibly take me to jail.

I have met many people in Ferguson who have experienced this and have heard some of their stories.

In Ferguson's prison, each small cell has a bunk bed and a toilet, but each cell is crammed with four people.

So there are two people in the bunk, two people on the floor, and one person has nowhere to go but right next to a dirty, uncleaned toilet.

In fact, the entire cell was never cleaned, so the floor and walls were covered in blood and mucus.

No water is drinkable except from the faucet connected to the toilet.

The water looked and tasted dirty, there was not enough food, and there was no shower. Women menstruated without sanitary products, and there was no medical care at all.

When I asked the woman about medical care, she laughed and said:

The security guards there only pay attention to sexual matters. ”

So they brought the debtor here and said, "Don't leave here until you pay the debt."

And if you could — if you could call a family member who could somehow find the money, you probably would have run away.

With enough money, you are out.

But if you don't, you'll be there for days or weeks, with a guard coming to your cell every day to negotiate with the debtor about the price of your release that day.

You will stay there until at some point the jail is full and they want to book someone new.

And at that point, they'll think, "Okay, this guy is unlikely to raise money, this new guy is more likely to raise money."

You're out, they're in, and the machine just keeps going.

I met a man who was arrested for begging at Walgreens nine years ago.

He could not afford the fines and legal costs from the lawsuit.

When he was young, he survived a house fire by jumping out of a third-floor window and escaping.

However, the fall left him with injuries to several parts of his body, including his brain and legs.

As a result, he is unable to work and relies on Social Security payments to survive.

When I met him at his apartment, he had nothing of value there - not even food in the fridge.

He is chronically hungry.

There was nothing of value in his apartment except a small piece of cardboard with the child's name on it.

He valued this very much. He was happy to show it to me.

But he can't pass the fines and fees because he can't pass anything.

Over the past nine years, he has been arrested 13 times and spent a total of 130 days in prison for the begging case.

One of them lasted 45 days.

From now until some point in June, imagine spending time in the place I just described.

He told me of all the suicide attempts he witnessed in Ferguson prison. Around that time, a man found a way to hang himself out of reach of the other prisoners, so all they could do was scream, scream, scream, and try to get the attention of the guards to come down and cut him down.

He told me it took more than five minutes for security to respond and that the man was unconscious when they arrived.

So they called the paramedics, and the paramedics went to the cell.

They said, "He's fine," and left him on the floor.

I've heard a lot of stories like this and it didn't surprise me. Suicide is the only leading cause of death in local prisons.

This is related to the lack of mental health care in prison.

I met a single mother of three who earned $7 an hour.

She relies on food stamps to feed herself and her children.

About ten years ago, she was fined several traffic tickets and petty theft charges, but can't afford the fines and fees for those cases.

Since then, she has been incarcerated about 10 times for these cases, but she suffers from schizophrenia and bipolar disorder and needs medication every day.

She can't get those drugs because nobody can get them in Ferguson Prison.

She told me about spending two weeks in a cage, seeing hallucinations of people and shadows, hearing voices, and what it was like begging for drugs to stop it all, but being ignored.

And this is nothing out of the ordinary. Thirty percent of women in local prisons have the same serious mental health needs as she does, yet only one in six receives mental health care in prison.

So, I had heard all about this grotesque dungeon that Ferguson had run for his debtors, and it was time to actually see it and visit Ferguson's prison, I don't know what I was expecting, but this was not.

It's a normal office building.

It could be a post office or a school.

I was reminded that these illegal extortion schemes are not being carried out in the shadows somewhere, they are being carried out openly by public officials.

Those are public policy issues.

And this was a reminder that, even outside of debtor's prisons, poverty prisons in general play a very visible and central role in our justice system.

What I have in mind is the bail policy.

In our system, whether you are in custody or released, whether a trial is pending is not a question of how dangerous you are or how risky you are to escape.

The question is whether you can pay bail.

So Bill Cosby, whose bail was set at $1 million, quickly wrote a check and never spent a single second in his cell.

But Sandra Bland, who died in prison, was only there because her family couldn't raise $500.

In fact, there are 500,000 Sandra Brands across the country, and 500,000 are currently in jail simply because they can't post bail.

Our prisons are said to be places for criminals, but statistically they are not. Three out of five people currently in prison are in prison before trial.

They have not been convicted of any crime. They have not pleaded guilty to any crime.

Here in San Francisco, 85 percent of inmates in San Francisco prisons are pretrial detainees.

That means San Francisco spends about $80 million each year to fund pretrial detention.

Many people in prison simply because they can't pay bail have charges so minor that they spend more time awaiting trial than they would receive if convicted. In other words, just pleading guilty is guaranteed to get you out of prison sooner.

So the choice now is, should I leave my family and dependents, stay in this horrible place where I am almost certain to lose my job, and then fight the charges?

Or should he be found guilty and released as the prosecution wants?

And at this point they are pretrial detainees, not criminals.

But once they agree to a plea bargain, we will call them criminals, even though a wealthy person would not have been in this situation. Because if you're wealthy, you're just getting bailed out.

At this point, you might be wondering, "What is this guy doing in the inspiration department -- (laughs)?" "This is very depressing. I want my money back."

(Laughter) But I actually think talking about prison is a lot less depressing than the other options. Because if we don't talk about these issues and collectively change how we think about prisons, I think at the end of life prisons will be full of poor people who don't belong there.

It's really depressing.

But what's interesting to me is the idea that these stories can inspire us to think about prisons in a different light.

In human terms, not in barren policy terms like "mass incarceration" or "sentence of non-violent criminals."

What are we doing to our minds and bodies when we keep them in cages for days, weeks, months, or years?

Under what conditions are we really going to do that?

So if we can start with the few hundred of us in this room and work on thinking about incarceration in this different light, then we can undo the normalization I just mentioned.

If I have anything to say to you today, I hope that if we want to change anything fundamentally, it will be with the idea that not only will we reform our policies regarding bail, fines and fees, but that the new policies that replace them will not punish the poor and marginalized in their own new ways.

If we want that kind of change, we need a mindset shift in each of us.

thank you.

(applause)

Many of you may have seen the movie "The Martian".

But for those who don't, this is a movie about an astronaut stranded on Mars and his efforts to survive until Earth can send a rescue team to bring him back to Earth.

Luckily, they at some point re-establish communication with the character, astronaut Watney, to keep him from being alone on Mars until he is rescued.

So while you're watching the movie, or even if you're not watching it, when you think of Mars, you're probably thinking about how far it is, how far away it is.

And what you might never have guessed is what the logistics of actually working on different planets—living on two planets when you have people on Earth and people on rovers and Mars?

So think if you have friends, family or colleagues in California, the West Coast, or other parts of the world.

When you try to communicate with them, one of your first thoughts is probably "Wait, what time is it in California?"

Shall we wake them up? Is it okay if I call you?

So even if you're dealing with a colleague in Europe, immediately think: What does it take to coordinate communication when people are far away?

So there are no people on Mars right now, but there are rovers.

And actually it's 6:10 in the morning here at Curiosity.

That is, 6:10 in the morning on Mars.

Mars has four rovers.

The United States has had four rovers on Mars since the mid-1990s, and I have had the privilege of working with three of them.

So I'm a spacecraft engineer, or spacecraft operations engineer, at NASA's Jet Propulsion Laboratory in Los Angeles, California.

And these probes are our robotic messengers.

So they are our eyes and ears, and they see the earth for us until we can send man.

Therefore, we learn how to operate on other planets through these rovers.

So before you dispatch humans, dispatch robots.

Now, the time difference between Mars and us is because the days on Mars are longer than the days on Earth.

A day on our planet is 24 hours. Because that's the time it takes for the earth to rotate, that is, the time it takes to complete one revolution.

So our day is 24 hours.

Mars takes 24 hours and 40 minutes to complete one orbit.

This means that a day on Mars is 40 minutes longer than a day on Earth.

So the team of people operating the rover on Mars, like this team, what we're doing is living on Earth and working on Mars.

So we have to think as if we were actually on Mars with our rover.

Our job, and this team's job, which I'm part of, is to send commands to the rover telling it what to do the next day.

Like driving a car, doing a drill, or telling her what she should do.

So while she sleeps, and at night because the rover needs to recharge its batteries and survive the cold Martian nights.

and she sleeps

So while she sleeps, we work on the program for the next day.

So I'm on the Mars night shift.

(Laughter) So in order to go to work on Earth at the same time every day on Mars, let's say I need to go to work at 5:00 p.m., and this team needs to go to work at 5:00 p.m. Every day on Mars time, we have to come to work on Earth 40 minutes late every day to stay in sync with Mars.

It's like moving between time zones every day.

That is, you arrive at 8:00 one day, 40 minutes later at 8:40 the next day, 40 minutes later at 9:20 the next day, and 10:00 the next day.

That means you'll be on the move for 40 minutes each day, and eventually you'll be at work at midnight, the midnight of Earth's night.

right? So you can imagine how confusing it would be.

Hence the Mars Watch.

(Laughter) The weights on this watch are mechanically adjusted to move more slowly.

right? And we didn't start from scratch. I got this watch in 2004, when it was a Rover at the time, Spirit and Opportunity.

We never thought we would need a Mars clock from the beginning.

right? We thought, 'Okay, spending time on the computer and mission control screens should be enough.'

Eh, not so much.

Because we were not just working to Martian time, we were actually living Martian time.

And for a moment we were confused as to what time it was.

So I needed something on my wrist that said, "What time is it on Earth?" What time is it on Mars?

And it wasn't just the time on Mars that was confusing. We also needed to talk to each other about it.

So a "sol" is a day on Mars, or 24 hours and 40 minutes.

So when we talk about what is happening on Earth, we would say today.

Therefore, Mars is called "Tosol".

(Laughter) Yesterday was "Yester Sol" for Mars.

Again, we didn't start with the idea of ​​inventing a language.

I was so confused.

I remember someone coming up to me and saying, "Tomorrow I would like to do this activity with a vehicle, a rover."

And I said, "Tomorrow, tomorrow, or Mars, tomorrow?"

We started the term because we needed a way to talk to each other.

(laughs) Tomorrow will be 'Next Sol' or 'Solo Row'.

This is because different people have different tastes in the words they use.

Some people say "soda", others say "pop".

So some people call it "Next Sol" or "Solo Law".

And what I've noticed after working on these missions for a few years is the people who work on the rover, we call them "Tosols."

Those who engage in landing missions that do not move around are called "Two Souls".

So your Mars accent really told you what kind of mission you were on.

(Laughter) So you have a clock and a language, and you've detected a theme here?

Don't get confused.

But even the sunlight on Earth can confuse us.

Now, if you're at work and it's midnight on Mars and you think there's light coming in through the window, this will also confuse you.

You can see from this control room image that all the blinds are down.

So that there is no light to distract us.

The blinds for the entire building were lowered about a week before landing and were not raised until after we departed from Mars time.

So this works both at home and at home.

I've been to Mars Time three times so far, and my husband says, "Okay, I'm ready for Mars Time."

And because it affects his family as well, he covers all the windows with foil and puts dark curtains and shades.

So I was living in a kind of dark environment here, and so was he.

And he was used to it.

But then I started getting these sad emails from him while he was at work.

Should I go home? Are you awake?

What time is it on Mars?

And I decided, "Okay, he needs a Mars clock."

(Laughter) But of course, it's 2016, so there's an app for that.

(Laughter) So now I can use my cell phone instead of my watch.

But the impact on the family was all-encompassing. We weren't the only ones working on the rover, so were our families.

This is one of our flight directors, David Oh. He's on the beach in Los Angeles with his family at 1am.

(Laughter) So we landed in August and his kids didn't have to go back to school until September, so we actually stayed with him on Mars for a month.

They got up 40 minutes late every day.

And they fit in with Dad's work schedule.

There they lived on Mars time for a month and had great adventures, like going bowling in the middle of the night and going to the beach.

And one thing we've all discovered is that if there's no traffic, you can get anywhere in Los Angeles at 3am.

(Laughter) So we finished work, didn't want to bother my family and went home, and we were hungry, so instead of going out to get something locally, I said, 'Wait, there's a great all-night deli in Long Beach. I'll be there in 10 minutes!'

So we drove down. It was like the 60's and there were no traffic jams.

As we drove there, the restaurant owners said, "Who are you?"

So why are you in my restaurant at 3am? ”

There they find that at midnight on Earth night there is a swarm of Mars prowling the highways of Los Angeles.

And we actually started calling ourselves Martians.

Therefore, those of us who were in the Mars era call ourselves Martians, and others call us Earthlings.

(Laughter) Because when you're moving through time zones every day, you start to feel really isolated from other people.

You are literally in your own world.

So there's a button that says "I survived the Martian era. Sol 0-90".

Then the picture is projected on the screen.

The reason we have these buttons is because we are working on Mars time to work as efficiently as possible on our Mars rover and make the most of our time.

But we stay on Mars time no more than 3-4 months.

There will eventually be a transition to corrected Mars time, which is currently being worked on.

Because it's hard on your body and your family too.

In fact, it's so unusual for humans to try to extend their days that there were sleep researchers who were actually studying us.

And they got about 30 of us together to do the sleep deprivation experiment.

So I came home and took the test and fell asleep every time.

Because, again, this ultimately takes its toll on the body.

It was a lot of fun.

It was a bonding experience with the rest of the team, but it's hard to sustain.

These rover missions are therefore our first steps into the solar system.

We are learning how to live on multiple planets.

We are changing our perspective to become multiplanetary.

So next time you watch a Star Wars movie and people make their way from the Dagobah system to Tatooine, think about what it really means for people to spread out there.

What that means in terms of the distance between them, how they start to feel distant from each other, and just about the situation at the time.

We haven't sent people to Mars yet, but we would like to.

And with companies like SpaceX and NASA and the International Space Agency around the world, we want to do that within the next few decades.

Soon Mars will be inhabited and there will indeed be multiple planets.

And the boy or girl who will go to Mars may be in this audience today or listening.

I have wanted to work on these missions at JPL since I was 14 and am honored to be a part of it.

And this is a remarkable time in the space program, and we are all on this journey together.

So the next time you find yourself short on time in your day, remember that it's all about your global perspective.

thank you.

(applause)

[This talk contains graphic language and descriptions of sexual violence. I advise you to use your judgment wisely.] Tom Stranger: In 1996, when I was 18, I had the great opportunity to participate in an international exchange programme.

Ironically, being an Australian who prefers a moderately cold climate, I was thrilled and in tears when I boarded the plane to Iceland right after saying goodbye to my parents and siblings.

I was welcomed into the home of a beautiful Icelandic family who took me on a hike and helped me understand the melodious Icelandic language.

I struggled a bit with my early homesickness.

After school, I snowboarded and slept well.

Two hours of chemistry class in a language you don't fully understand yet is a pretty good sedative.

(laughter) My teacher wanted me to be a little more social and suggested I try participating in the school play.

In the end, I wasn't able to attend the play, but it was through it that I got to know Thordis.

We shared a lovely teenage romance, gathering at lunchtime to hold hands and strolling through old downtown Reykjavik.

I met her welcoming family and she met my friends.

We had been in a relationship for a little over a month when our school's Christmas ball was held.

Trudis Elba: I fell in love for the first time when I was 16.

Going to the Christmas dance together was a public proof of our relationship and made me feel like the luckiest girl in the world.

I am no longer a child, but a young woman.

As a newly matured me, it felt natural to try rum for the first time that night.

that was a bad idea.

I became very ill, going on and off in between spasmodic vomiting.

The guards tried to call an ambulance for me, but Tom said he would act as my knight in shining armor and drive me home.

It was like a fairy tale as his strong arms wrapped around me and put me to the safe bed.

But when he took off my clothes and climbed on top of me, the gratitude I felt for him quickly turned to fear.

My head cleared, but my body was still too weak to fight back, and it was a dizzying pain.

I thought I would be cut in half.

To keep my sanity, I silently counted the seconds on my alarm clock.

And since that night, I've learned that there are 7,200 seconds in two hours.

After days of limping and weeks of crying, this incident did not align with my thoughts about rape as I saw it on TV.

Tom wasn't an armed madman. he was my boyfriend

And it didn't happen in a shady alley, it happened in my bed.

He was completing an exchange program and leaving for Australia when I realized what had happened to me was rape.

So I told myself it was pointless to deal with what had happened.

Besides, it must have been my fault somehow.

I grew up in a world where we were taught that girls were raped for a reason.

Their skirts were too short, their smiles were wide, their breath smelled of alcohol.

And I was guilty of all those things, so the shame had to be mine.

It took me years to realize that the only thing that could have stopped me from raping her that night was neither her skirt nor her smile nor her childish trust.

Only the man who raped me could have stopped me from being raped that night - if he had stopped himself.

TS: I have a vague recollection of the next day. The aftereffects of drinking, a kind of emptiness I tried to suppress.

Nothing more.

But I didn't show up at Trudis' house.

It is important to state here that I did not see my actions as they were.

The word “rape” didn’t reverberate in my head for granted, nor did I crucify myself in the memory of the previous night.

Rather than consciously rejecting it, it was more like being forbidden to perceive reality.

My definition of behavior completely denied any recognition of the immense trauma I inflicted on Thordis.

To be honest, I refused the entire act for days afterward, and during the crime.

I denied the truth by convincing myself it was sex, not rape.

And this is a lie that has made me sick to my core.

A few days later I broke up with Trudis, but I saw her many times during the rest of my time in Iceland, and each time I felt a sharp sting.

Deep down, I knew I had done something immeasurably wrong.

But without planning, I sunk deep into the memory and attached a stone to it.

The ensuing nine years were aptly called "denial and flight."

When I got the chance to identify the real pain I caused, I couldn't stop long enough to do so.

Whether through distractions, drug use, thrill-seeking, or scrutinizing my inner language, I refused to be static and silent.

And along with this noise, I also greatly consulted other parts of my life to build an image of who I was.

I was a surfer, a social science student, a friend of good people, a loving brother and son, an outdoor recreation guide, and eventually a youth worker.

I held fast to the simple idea that I was not a bad person.

I never thought I would have something like this.

I thought I was made of something else.

Because of my upbringing, my loving relatives, and my role models, those close to me showed a warm and sincere respect for women.

It took me a long time to look into the dark parts of my heart and ask questions.

TE: Nine years after the Christmas dance, I was 25 and had a nervous breakdown.

My self-esteem was buried under the weight of soul-crushing silence, isolating me from those who cared about me, and haunted by misplaced hatred and anger directed at myself.

One day, after an argument with a loved one, I burst out the door crying and wandered into a cafe where I asked the waitress for a pen.

I always carried a notebook with me, claiming it was for jotting down ideas in moments of inspiration, but in reality, I had to be fidgeting all the time. Because, in a moment of stillness, I found myself counting the seconds again.

But that day, I watched in wonder as the words streamed out of my pen to form the most important letter I have ever written to Tom.

The words "I want to find forgiveness" stared back at me, along with a description of the violence he had endured on me, and surprised no one more than me.

But deep down, I realized that this was the way out of my suffering. Because whether he deserves forgiveness or not, I deserve peace.

My days of shame are over.

Before sending the letter, I was prepared for any kind of negative reaction, or most likely, no reaction at all.

The only result I didn't prepare myself for was the result I received afterwards. It was a typed confession from Tom, full of informal regret.

After all, he too was caught in silence.

And this was the beginning of an eight-year correspondence, but God knows it will never be easy and it will always be sincere.

When I was relieved of the burden I had unfairly carried, he also genuinely acknowledged what he had done.

Our written correspondence provided a platform for analyzing the results of the night, which ranged from gut-wrenching to healing beyond words.

Still, it didn't end for me.

Perhaps because the email format didn't feel personal enough? Perhaps it's because it's easier to be brave when you're hiding behind a computer screen on the other side of the world.

But we were starting a dialogue and felt it was necessary to explore it to the fullest.

So, after eight years of writing, and almost sixteen years after that harrowing night, I mustered up the courage to come up with a wild idea. It was to meet face-to-face and face the past once and for all.

TS: Iceland and Australia are like this geographically.

South Africa sits in the middle of the two.

We decided on a city called Cape Town and met there for a week.

The city itself turned out to be a surprisingly powerful environment to focus on reconciliation and forgiveness.

Nowhere has healing and intimacy been more tested than in South Africa.

As a nation, South Africa has tried to sit in the truth of its past and listen to the details of history.

Knowing this made Cape Town's impact on us even greater.

Over the past week, we have literally told each other our life stories from start to finish.

And this was to analyze our own history.

We followed a strict policy of honesty, but this also came with a certain degree of exposure—proud vulnerability.

There were moments of painstaking confessions and moments when the experience of the other person was completely incomprehensible.

The profound effects of sexual violence were spoken and felt in person.

But at times I felt a surge of clarity or even a totally unexpected but liberating laughter.

After all, we did our best to listen intently to each other.

And our personal reality was broadcast in unfiltered purity, which was more than lightening the soul.

TE: Wanting revenge is a very human feeling, even an instinctive one.

And all I wanted to do for years was to hurt Tom back as deeply as he hurt me.

But if I hadn't found a way out of my hatred and anger, I wouldn't be standing here today.

That's not to say there weren't any questions along the way.

I remember thinking as the plane bounced off the runway in Cape Town. "Why didn't you have a therapist and a bottle of vodka like everyone else does?"

(Laughter) At times the quest for understanding in Cape Town felt like an impossible quest and all I wanted to do was give up and go home to my loving husband Vidir and our son.

But despite our difficulties, this journey has provided us with a sense of triumph that light can triumph over darkness and build something constructive out of the ruins.

I read somewhere that when you're young you should try to be the person you want.

And when I was a teenager, I would have needed to know, as I share with my husband now, that shame is not mine, that after rape there is hope, that even happiness can be found.

That's why I started writing feverishly as soon as I got back from Cape Town and co-authored a book with Tom. I hope this book will help those on both sides of the spectrum of perpetrators and survivors.

At least, that's the story we probably needed to hear when we were younger.

Given the nature of our stories, we know that the inevitably accompanying words and labels—victim, rapist, etc.—are a way of organizing concepts, but they can also be dehumanizing in their implications.

Once someone is identified as a victim, it is much easier to be filed as victimized, dishonored, or worse.

And similarly, once someone has been branded a rapist, it's much easier to call them a monster, an inhuman.

But if we refuse to recognize the humanity of those who perpetrate violence, how can we understand that violence is produced in human societies?

And how -- (applause) if you're giving survivors an inferiority complex, how can you empower them?

If the very words we use are part of the problem, how do we discuss solutions to one of the greatest threats to the lives of women and children around the world?

TS: From what I've learned, my actions that night in 1996 were selfish.

I felt I deserved the body of Thordis.

There were mostly positive social influences around me and examples of fair behavior.

But in doing so, I decided to take advantage of the negative.

Those who believe that women have little intrinsic value and that men have an unspoken, symbolic claim to their bodies.

However, these influences I am talking about are external to me.

And I was the only one making a choice in that room, no one else.

I think amazing things can happen when you own something and take your responsibilities seriously.

That's what I call the ownership paradox.

I thought I would succumb to the weight of the responsibility.

I thought my identity would be burned.

Instead, I was encouraged to really own what I did, only to find that it didn't own everything about me.

Simply put, what you've been doing doesn't have to make up who you are as a whole.

The noise in my head quieted down.

The indulgent self-pity was starved of oxygen, replaced by the clean air of acceptance. It's an acceptance that you've hurt this wonderful person next to you. Accepting to be part of a shocking number of groups of men who commit sexual violence against their partners every day.

Never underestimate the power of words.

Telling Thordis that I raped her changed not only my agreement with her, but myself.

But most importantly, responsibility has been transferred from Thordis to me.

All too often, the blame falls on the woman who is the victim of sexual violence, rather than the man who perpetrated it.

All too often, denial and flight take all parties too far from the truth.

Public debate is now certainly taking place and, like many, I am heartened that no one has backed down from this difficult but important debate.

We feel a real responsibility to add our voices to it.

TE: What we did was not a formula to prescribe to others.

No one has the right to tell others how to deal with their deepest pains and biggest mistakes.

Breaking the silence is never easy. Depending on where you are in the world, speaking out about rape can be deadly.

I realized that even the most shocking event in my life was a testament to my privilege. Because you can talk about it without being ostracized or killed.

But with the privilege of having a voice comes the responsibility of leveraging it.

That's the least I owe to my fellow survivors who can't.

The story we just told is unique, but very common in a time when sexual violence is a global pandemic.

But it doesn't have to be.

One thing that has helped me in my own healing journey is educating myself about sexual violence.

As a result, I have been reading, writing, speaking, and attending conferences around the world on this issue for over a decade.

And in my experience, the participants in such events are almost exclusively women.

But it's time to stop treating sexual violence as a women's problem.

(Applause.) The vast majority of sexual violence against women and men is perpetrated by men.

But their voices are grossly underrepresented in this discussion.

But here we are all needed.

Imagine how much suffering we could alleviate if we dared to face this problem together.

thank you.

(applause)

Most of us live our lives trying to be the best at whatever we do: work, family, school.

I feel so. i will do my best.

But not long ago, I realized that I wasn't getting much better at what I valued most, whether it was my husband, my friend, my professional, or my teammate. I also noticed that despite spending a lot of time and dedication on those things, I wasn't making much progress at them.

I've since realized from the conversations and research I've had that this kind of stagnation turns out to be pretty common, despite the hard work I do.

So I want to share some insights on why and what we can all do about it.

What I've learned is that the most talented people and teams in any field do what everyone else can do.

They deliberately alternate between two zones in their lives: the learning zone and the performance zone.

The learning zone is when our goal is to improve.

Then focus on what you haven't mastered yet and do activities aimed at improving it. In other words, be prepared to make mistakes and learn from them.

That's very different from what we do when we're in the performance zone, when the goal is to do something the best we can.

Then focus on what you've already mastered and try to minimize mistakes.

Both of these zones should be a part of our lives, but clarifying when and with what goals, focus, and expectations we want to enter each zone will help us perform better and improve.

Performance zones maximize immediate performance, while learning zones maximize growth and future performance.

The reason so many of us don't improve as much as we work hard is that we tend to spend almost all of our time in the performance zone.

This hinders our growth and, ironically, our performance in the long term.

So what is Learning Zone?

Take Demosthenes, the ancient Greek political leader, the greatest orator and lawyer.

To become great, he didn't spend all his time just in his performance zone: the orator and the lawyer.

But instead he took action aimed at improvement.

Of course, he studied a lot.

He studied law and philosophy under the guidance of his mentor, but he also learned to be a good public speaker and performer, realizing that to become a lawyer he needed to persuade others.

In order to correct the habit of unconsciously lifting my shoulders, I practiced my speech in front of the mirror and hung a sword from the ceiling so that it would hurt when I lifted my shoulders.

(Laughter) It was a lisp, but he continued his speech with a stone in his mouth to speak more clearly.

He created a basement where he could practice uninterrupted without disturbing others.

Courts were so noisy in those days that he practiced on the beach, his voice echoing in the roar of the waves.

His activities in the Learning Zone were very different from those in the Courtroom and Performance Zones.

In the learning zone, we did what Dr. Anders Eriksson called intentional practice.

This includes decomposing competence into component skills, clarifying which sub-skills you are trying to improve (e.g. lowering your shoulders), fully focusing on high-level tasks beyond what you can currently do outside your comfort zone, frequent use of feedback with repetition and coordination, and ideally being mentored by a skilled coach. Because activities designed for improvement are domain-specific, and good teachers and coaches know what they are and can provide expert feedback.

This kind of practice in the learning zone leads to real improvements, not just task execution times.

For example, studies have shown that performance typically plateaus during the first few years of working in a particular field.

This has been proven to be true in education, general medicine, nursing, and other fields, and it happens to stop spending time in the learning zone when you consider yourself good enough and fit.

We always focus on just doing our job, doing our performance, but I've found that's not a great way to get better.

But those who continue to spend time in the learning zone will continue to improve.

The best sales reps do improvement activities at least once a week.

They read to expand their knowledge, consult with colleagues and subject matter experts, try new strategies, seek feedback, and reflect.

The best chess players spend a lot of time predicting and analyzing the moves made by the grandmaster, rather than playing the game of chess, which is the performance zone.

We've all spent hours typing on a computer without getting any faster. But if you focus completely on typing 10-20 percent faster than your current reliable speed for 10-20 minutes each day, you'll get faster, especially if you identify the mistakes you're making and practice typing those words.

It's a deliberate practice.

What other part of our lives are we more concerned about working hard but not improving much because we are always in the performance zone?

This is not to say performance zones are worthless.

It's very true.

When I needed knee surgery, I didn't say to my surgeon, "Look around and focus on what you don't know."

(Laughter) "We learn from your mistakes!"

I looked for a surgeon who I thought would do a good job, and I wanted her to do a good job.

Being in your performance zone allows you to achieve the best you can.

It can also be motivating, giving you the information to identify what to focus on next when you're back in your learning zone.

Therefore, the way to achieve high performance is to alternate between learning zones and performance zones, intentionally building skills in learning zones, and applying those skills in performance zones.

Beyoncé is in the performance zone when she's on tour, during concerts, but she's back in the learning zone as soon as she returns to her hotel room each night.

She is watching a video of the show that just finished.

She sees room for improvement for herself, her dancers, and her camera crew.

Then, the next morning, everyone receives a page of notes with what they need to tweak, and they spend the day working on it before their next performance.

It's a spiral of ever-increasing abilities, but you need to know when you're trying to learn and when you're trying to perform. While you want to spend time doing both, the more time you spend in the learning area, the better.

So how can you spend more time in the study zone?

First, you need to believe and understand that you can improve, called a growth mindset.

Second, you must want to improve that particular skill.

It takes time and effort, so there must be an important purpose.

Third, you have to have an idea of ​​how you can improve and what you can do to improve. It's about practicing intentionally, not the way you practiced guitar as a teenager and played songs over and over again.

And fourth, it must be placed in a low-risk situation. Because if a mistake is to be expected, the consequences of that mistake should not be catastrophic, or even very serious.

A tightrope walker won't practice a new trick without a net underneath, and no athlete will be the first to try a new trick during a championship match.

One of the reasons we spend so much time in the performance zone in our lives is that our environment is often unnecessarily high-risk.

We create social risks for each other, even in schools where learning is supposed to be everything. I'm not talking about standardized tests.

In other words, many students, from grade school to college, feel every minute of every day that if they make a mistake, other people will disrespect them.

No wonder they are constantly stressed and do not take the necessary risks to learn.

But if teachers and parents are intent on hearing only the correct answers and rejecting them instead of welcoming them and examining them and learning from them, or if we look for narrow answers rather than encourage more exploratory thinking that everyone can learn from, they will inadvertently learn that mistakes are undesirable.

When all homework and student assignments are marked with numbers and letters and count towards the final grade instead of being used for practice, mistakes, feedback and corrections, we send the message that schools are in the performance zone.

The same is true in our workplace.

In the companies I consult with, I often see impeccable execution cultures that leaders foster to encourage great work.

However, because of this, employees stay within what they know and don't try new things, and companies struggle to innovate and improve, falling behind.

By talking to each other about when you want to enter each zone, you can create even more space for growth.

How would you like to improve?

And when do you want to do it and minimize mistakes?

Doing so will clarify what success is and when and how best to support each other.

But what if you're chronically in a high-stakes situation and feel like you can't initiate those conversations just yet?

Here are three things we can do as individuals.

First, you can create a high-stakes island in a high-stakes ocean.

These are areas where mistakes have little impact.

For example, you might find a mentor or trusted colleague with whom you can exchange ideas, have vulnerable conversations, and do role-plays.

Or you can request a feedback-focused meeting as the project progresses.

Alternatively, you can set aside time to read, watch videos, or take online courses.

These are just a few examples.

Second, we can run and perform as expected, but like Beyoncé, we can reflect on what we can do better next time, and observe and emulate the experts.

Observation, reflection, and adjustment are areas of learning.

And finally, we can lead others and lower risks by sharing what we want to do better, asking questions about what we don't know, asking for feedback, sharing our mistakes and what we learn from them, and empowering others to do the same.

Real confidence is modeling continuous learning.

What if instead of spending your life doing, doing, doing, acting, acting, acting, you spent more time exploring, asking, listening, experimenting, reflecting, striving, becoming?

What if each of us had something that we were always trying to improve?

What if we created less risky islands and sea areas?

And what if you could clarify within yourself and with your teammates when you're going to learn and when you're going to perform so your efforts matter more, you can improve endlessly, and your best work gets even better?

thank you.

Just by putting everything in context and giving some background as to where I'm coming from, you'll understand exactly how and why much of what I'm about to say, what I'm about to do, or what I'm about to tell you is what motivated me to be here.

I graduated from high school in Cleveland, Ohio in 1975.

And just like when my parents finished studying abroad, we went back to Japan.

After completing his university education, he received a medical degree in 1986.

And by the time I became a resident, I was barely able to maintain my mother's 13-year-old car. And I had become a paid doctor.

This brings us to why many of us, professionals, are now in the diaspora as they say.

Now, are we going to make it permanent and leave once everyone is trained and never come back?

Probably not, and I certainly hope not. Because that's not my vision.

Now, for reference, on the map of Africa it's Nigeria, and the delta region is right there that I think everyone has heard of.

People getting kidnapped, where does the oil come from, the oil that sometimes makes us all crazy in Nigeria.

But a critical poverty: This slide is from a presentation I gave a while ago. Gapminder.org talks about the healthcare gap between Africa and the rest of the world.

Very interesting.

How many people do you think are in that taxi?

Believe it or not, this is a Nigerian taxi.

And the capital, yes, Lagos, which used to be the capital of Nigeria, it's a taxi, and it's police.

So tell me, how many police officers do you think are in this taxi? And now? three.

So this kind of people, and believe me, it's not just the police that take these taxis in Lagos. Everyone thinks so. I've ridden this one before, but didn't even have a helmet.

And it brings to mind the idea of ​​what would happen if any of us in a cab like this fell, had an accident, and needed a hospital.

Believe it or not, some of us survive.

Some of us survive malaria. We will survive AIDS.

And what I always tell my family and my wife is, "Every time you go to that country, you risk your life."

and she is right. Every time I go there, I find out, if you really need critical care, if you need critical care of any kind, if you have an accident, there are a lot of accidents, there are accidents everywhere, but where are they going?

Where do they go when they need help with this sort of thing?

I'm not saying AIDS, tuberculosis, malaria, typhoid fever, etc. instead, I'm saying the same thing. The list goes on.

I mean, where are they going if they're like me?

You go home and do things, teach and train, but if one of them is found or becomes chronically ill, where do they go?

What would be the economic impact if one of them died or became disabled?

I think that is very important. This is their destination.

These are not old photographs, nor were they taken in oppressed places. This is a big hospital. In fact, it is from a major teaching hospital in Nigeria.

I've been in the operating room for less than a year now.

It is a Nigerian sterilizer.

Remember that oil?

Yes, sorry if anyone is offended, but I think this needs to be seen. That's the floor, okay?

Part of it can be said to be education.

It is also hygienic. I am not advocating poverty.

I am saying that I need more than just vaccinations, malaria and AIDS, because if something happens to me, I want to be treated in a proper hospital.

In fact, when I started running around saying, "Hey boys and girls, I'm an American cardiologist, can you come back with me and do your job?"

I want you to think, “Well, there is hope.”

Come on, look at it. That's the anesthesia machine.

That's my area of ​​expertise, right?

Anesthesiology and Emergency Medicine -- Look at that bag.

Even in the UK, tapes that have been discontinued are affixed.

Believe me, these are current photos.

Well, if something like this happened in the UK, there they would go. This is the intensive care unit where I work.

Yes, this is a slide from a talk I gave about intensive care units in Nigeria. We jokingly call this "expensive scare".

It's scary, it's expensive, but you have to have it, right?

These are the problems.

There's no prize for telling the problem, right?

I think everyone knows. And a few speakers before and after me will tell us more about the issues.

These are some of them. So what did I do?

Let's go on a mission.

I am planning to have open heart surgery. I was the only British on a team of about nine American heart surgeons, heart nurses and intensive care nurses.

We are all on missions and have completed three of them so far.

Let me tell you, I believe in mission, I believe in aid, and I believe in charity. They have their place, but where are they going to do the things I just talked about?

Because not everyone benefits from the mission.

Health is wealth, in the words of Hans Rosling.

The healthier you are, the faster you will get rich.

Now for the mission. big problem.

Open Heart Surgery in Nigeria -- Big Problem.

It's Mike, Mike is from Mississippi.

does he look happy?

It took us two days just to organize the place, but hey, we worked on it. does he look happy?

Yes, that's medical advice the chairman says. "Yes, I said, you can't, you can't do this, I just know it."

Look, that's our engineer. So yes, please continue, okay?

(Laughter) I had him come with me -- an anesthesia technician -- from England.

OK, let's solve this problem.

You see, that's one of the problems that Nigeria and Africa in general have.

We have donated a lot of equipment.

Equipment that is obsolete, not fully functional, or equipment that functions but cannot be repaired. And there's nothing wrong with that as long as you use it and move on.

However, there was a problem with that. A serious problem arose there.

he had to answer the phone This person was always on the phone.

So what are we going to do now?

All the Americans seem to be here, but yes there is one British guy, but he's not going to do anything -- he actually thinks he's British and he's actually Nigerian, I just thought about it.

It's true that it eventually worked, but that was one of them. Older than what you saw.

The reason I have this picture here, this X-ray picture, is to tell you where and how we observed the X-rays.

do you know where it is? It was above the window.

By the way, what is an X-ray observation box? please.

Well, everything is done in PAX these days anyway.

Look at the x-rays on the screen and do something with them or send them by email. But we still used X-rays and didn't even have an observation box.

And we were doing open heart surgery.

OK, I know it's not AIDS, I know it's not malaria, but we still need this problem. Oh yeah, Echo -- this was just to prepare kids and adults.

People still believe in voodoo. Heart disease, VSD, heart hole, tetralogy.

There are still people who come to believe it.

If your oxygen saturation is 67 percent, the normal value is about 97.

Her illness was open heart surgery, which, according to her wishes, should have been treated when she was a child.

These had to be done for adults. So we were, and still are, successful.

I have completed three. We are planning another event in the north of the country in July. So we're certainly still with an open heart, but I think you can see the contrast with everything that's been shipped. We ship everything, including our instruments. The explosion occurred because the kit was designed and installed by someone unfamiliar with it.

Oxygen tanks were not fully functional.

But how many times have you done the first? 12.

We have successfully performed open heart surgery in 12 patients.

Here is the first patient to come out of the intensive care unit. Just look at that chair, okay?

Here's what I mean about proper technology.

The bed didn't move, so he was propping it up.

Have you seen one of them before?

no? yes? It doesn't matter, it worked.

I'm sure you've seen or heard of it before. "We aspiring people have been doing a lot with very little for so long -- (applause) -- we are now entitled to do anything with nothing."

(Applause.) Thank you. Sustainable Solutions -- This was my first company.

The sole purpose of this is to provide what I think is missing.

So we put our hands in our pockets and said, 'Guys, let's get some stuff.

Build a company that teaches, educates, and gives people the tools they need to keep moving forward. ”

This is a perfect example of that.

Usually when you buy a ventilator for a hospital, you buy another ventilator for your child or for transport. It does it all, costs half the price, and doesn't require compressed air.

If you are in America and don't know about this technology, we do. Because it is our duty to find what is the right technology for Africa – one that works well at the right price. And so we move on. Anesthesia machine: multi-parameter monitor, operating light, suction.

This Little Unit Right Here -- Remember those little 12-volt plugs in your car that charge things like Gameboys and phones?

Outlets are designed just like that.

Yes, you will need a solar panel. Yes, it charges with a solar panel.

However, if you also have mains power, you charge the battery there.

And what do you think? We also have a small pedal charger just in case.

And if all else fails, find a car with a still live battery and plug it in and it will still work. Then you can customize it.

Do you want dental surgery? Looking for General Surgery?

Decide which instruments to use and stock up on consumables.

And now we are working on supplying oxygen on site.

The technology of delivering oxygen is not new.

Oxygen concentrators are a very old technology. What's new, and what I hope to be able to do in the next few months, is that the same renewable energy system can be used to supply and generate oxygen on site. Zeolites -- it's nothing new -- Zeolites remove nitrogen from air, and nitrogen is 78 percent of air.

What is left when the nitrogen is removed? There is quite a lot of oxygen.

So it's nothing new. What we are doing is applying this technology.

These are the basic features of my device, or ours.

This is what makes it special.

Awards aside, it is portable and certified. Registered as MHRA, and for those who don't know, the CE mark is the European equivalent of the US FDA.

Price, size, ease of use, complexity...

This photo was taken last year.

These are my graduates in 1986.

For those familiar with Maryland, it was at this gentleman's house on the Potomac River.

There's a lot of us and everyone out there, but I'll borrow a little bit from Hans -- Hans Rosling, he's my buddy -- if text size represents what gets the most attention, that's a problem. But what we really need are African solutions that fit Africa. Look at the culture, look at the people, look at how much money they have.

I think African people will do it with passion.

And there are a lot of small pieces in there, and sacrifices.

you have to Africans have to do it in collaboration with others.

thank you.

(applause)

"You have cancer."

Sadly, about 40 percent of us will hear these three words in our lifetime, and half will not survive.

This means that 2 out of 5 of your close friends and relatives will be diagnosed with some form of cancer and 1 will die.

Beyond physical hardships, nearly a third of cancer survivors here in the United States will be in medical debt.

And they are at least 2.5 times more likely to declare bankruptcy than those without cancer.

This disease is prevalent.

It is emotionally draining and financially devastating for many.

However, a cancer diagnosis does not always carry the death penalty.

Detecting cancer early and getting closer to its onset is one of the key factors in improving treatment options, reducing psychological impact, and minimizing financial burden.

Most importantly, early detection of cancer (which is one of the main goals of my research) greatly increases the chances of survival.

For example, if we look only at breast cancer, we find that the 5-year survival rate for those diagnosed and treated for stage 1 is nearly 100 percent. If stage 4 is treated, the odds drop to just 22 percent.

A similar trend is also seen in colorectal and ovarian cancers.

We now all know that accurate early diagnosis is critical for survival.

The problem is that many cancer diagnostic tools are invasive, expensive, often inaccurate, and take too long to get results.

Worse, for some cancers, such as ovarian, liver, and pancreatic cancers, the lack of good screening methods often means waiting for physical symptoms to surface, which are already indicators of terminal progression.

Much like a tornado strike in an area without an early warning system, there are no alarms to warn because the danger is already imminent when the chances of survival are greatly reduced.

Affordable, non-invasive, and routine screening options with faster results, convenient and accessible, would be a powerful weapon in the fight against cancer.

With early warning, we can get ahead of this relentless disease, not just follow it.

And this is exactly what I've been doing.

Over the past three years, I have developed technology that can ultimately help clinicians diagnose cancer quickly and early.

And I have been driven by a deep scientific curiosity and a passion to change these statistics.

But this struggle became more personal when my wife was diagnosed with breast cancer last year.

It was an experience that added a powerful and unexpected emotional dimension to these undertakings.

I know firsthand how therapy can change lives. And I am keenly aware of the emotional turmoil that cancer has on families. In our case, the family also included two young daughters.

Early detection of the tumor with routine mammography allowed me to focus primarily on treatment options for localized tumors, reminding me how important early diagnosis is.

Unlike other forms of cancer, mammography offers an early-stage screening option for breast cancer.

Still, not everyone has a mammogram, and some may develop breast cancer in middle age before mammography is recommended.

Therefore, even for cancers with screening options, there is still much room for improvement, and of course, cancers without screening options will also benefit greatly.

A key challenge for cancer researchers is therefore to develop methods to make routine screening for many types of cancer more accessible.

Imagine a scenario where a doctor could take a simple, non-invasive urine sample or other liquid biopsy during a routine checkup and present the results before you even leave the office.

Such technology could dramatically reduce the number of people who slip through the net of early cancer diagnoses.

My research team of engineers and biochemists is working on just this question.

We are working on ways to trigger early cancer alarms more often by allowing regular screenings that can start when you are healthy. This allows us to take steps to stop cancer the moment it develops and before it progresses beyond the early stages.

The silver bullet in this case is tiny escape pods, tiny vesicles that are periodically released from cells called exosomes.

Exosomes are important biomarkers that provide an early warning system for cancer development.

It is also abundant in almost all bodily fluids, including blood, urine, and saliva, making it very attractive for noninvasive liquid biopsies.

There is only one problem.

No automated system is currently available to rapidly classify these important biomarkers.

We have developed a technology called nano-DLD that allows just this. This is an automated exosome isolation that aids in rapid cancer diagnosis.

Exosomes are the latest early warning weapon to come to the forefront of liquid biopsy, so to speak.

And they're really, really small.

They are only 30-150 nanometers in diameter.

They are so small that about 1 million can fit in a single red blood cell.

This is roughly the difference between a golf ball and fine-grained sand.

Once thought to be tiny boxes of unwanted cellular waste, it turns out that cells actually communicate by producing and absorbing exosomes, which contain surface receptors, proteins, and other genetic material collected from the original cell.

When exosomes are taken up by neighboring cells, they can release their contents into the receiving cell, causing fundamental changes in gene expression. Some are good, some get cancer here, some are bad.

They are clothed in the material of the mother cell and contain samples of its environment, thus providing a genetic snapshot of that cell's health and its origins.

All these properties make exosomes invaluable messengers, potentially allowing doctors to eavesdrop on your health at the cellular level.

But to catch cancer early, you'll need to intercept these messages frequently to determine when the cancer-causing troublemakers in your body are going to mount a coup. That's why regular screening is so important, and we're developing technology to make this possible.

Although the first exosome-based diagnostics just hit the market this year, they are not yet part of mainstream medical options.

In addition to its recent emergence, another factor limiting its widespread use is the current lack of automated exosome isolation systems that make routine screening economically available.

The current gold standard for exosome isolation involves ultracentrifugation, a process that requires expensive laboratory equipment, trained laboratory technicians, and approximately 30 hours of sample processing time.

We have devised another approach to achieve automated exosome isolation from samples such as urine.

We use a chip-based continuous flow separation technique called deterministic lateral displacement.

And we've done with it what the semiconductor industry has successfully done over the last 50 years.

We have reduced the dimensions of this technology from micron scale to true nano scale.

So how does it work?

Briefly, a series of small pillars separated by nanoscopic gaps are arranged such that the system divides the fluid into streamlines, and larger cancer-associated nanoparticles are separated from smaller, healthier nanoparticles through a process of reorientation, which in contrast can move around the pillars in a zigzag motion in the direction of fluid flow.

The net result is complete separation of these two particle populations.

This separation process can be visualized as analogous to highway traffic splitting into two roads, one road entering a low tunnel in a crevice under a mountain and the other road bypassing that tunnel.

Here, small vehicles can pass through tunnels, but heavy trucks carrying dangerous goods must take a detour.

Traffic is effectively separated by size and content without impeding its flow.

And this is exactly how our system works on a much smaller scale.

The idea here is that the separation process for screening could be as simple as processing urine, blood, or saliva samples, and this could become possible in the near future within the next few years.

Ultimately, it could be used to isolate and detect targeted exosomes associated with certain types of cancer, sensing and reporting their presence within minutes.

This allows for rapid, virtually painless diagnosis.

Broadly speaking, the ability to separate and enrich biomarkers with nanoscale precision in an automated manner opens the door to a deeper understanding of diseases such as cancer, with applications ranging from sample preparation to diagnostics, drug resistance monitoring to therapy.

Even before my wife had cancer, it was my dream to make this process more automated, to make regular inspections more accessible in the way Henry Ford invented the assembly line and made cars available to the public.

Automation is key to accessibility.

And in the spirit of Hoover's dream of "There's a chicken in every pot and a car in every garage," we're developing a technology that could eventually put an early warning cancer detection system in every home.

This gives every man, woman and child a chance to be tested regularly while they are healthy and have cancer detected when it occurs.

It is my hope and dream to help people around the world avoid the enormous physical, financial and emotional costs facing cancer patients today – the challenges I know all too well.

I am also happy to report that my wife's cancer was diagnosed early, was treated successfully and is now thankfully cancer-free.

(Applause.) This is what I want everyone diagnosed with cancer to see.

My team is already working on the isolation of nanoscale biomarkers for rapid early cancer diagnosis, so I am optimistic that within the next decade this kind of technology will be available to help protect our friends, family and future generations.

Even if you are unlucky enough to be diagnosed with cancer, early warning can be a powerful beacon of hope.

thank you.

(applause)

The last time I heard my son's voice was when he walked out the front door on his way to school.

In the darkness he shouted one word, "Goodbye."

It was April 20th, 1999.

Later that morning, at Columbine High School, his son Dylan and his friend Eric killed 12 students and a teacher, injured more than 20 others, and then killed themselves.

Thirteen innocent people were murdered, leaving their loved ones in a state of grief and trauma.

Some suffered injuries, some disfigured and some permanently disabled.

But the scale of this tragedy cannot be measured by the number of deaths and injuries that have occurred.

There is no way to quantify the psychological damage to those who were at the school or who participated in the rescue or cleanup efforts.

There is no way to assess the scale of a tragedy like Columbine. Especially when this incident could serve as a blueprint for other shooters who commit atrocities in the years to come.

The Columbine disaster was a tsunami, and when the crash was over it took many years for communities and societies to understand the impact.

It took me years to accept my son's legacy.

The cruelty that marked the end of his life showed me that he was a very different person than I knew him.

Afterwards, people asked, "Why didn't you understand?"

What kind of mother were you? ”

I still keep asking myself the same question.

Before the shooting, I considered myself a good mother.

Helping children grow into caring, healthy, and responsible adults has been the most important role of my life.

But this tragedy convinced me that I had failed as a parent. That sense of failure is what brings me here today.

Aside from my father, I was the only person who understood and loved Dylan the most.

If anyone knew what was going on, it should have been me, right?

But I didn't know.

Today, I am here to share my experience of what it is like to be the mother of someone who kills and hurts.

In the years since the tragedy, I have searched my memory and tried to figure out exactly where I failed as a parent.

But there are no simple answers.

I can't give you a solution.

All I can do is share what I have learned.

I have three challenges when talking to people who didn't know me before the shooting.

First of all, when I enter a room like this, I don't know if anyone there has experienced loss because of my son's actions.

I feel the need to acknowledge the suffering caused by family members who are not here for me.

First of all, I am very sorry if my son caused you any pain.

My second challenge is having to seek understanding and even sympathy when speaking of my son's death as a suicide.

Two years before he died, he wrote in a notebook that he cut himself.

He said he was in agony and wanted to get a gun to end his life.

I didn't know anything about this until a few months after his death.

When I speak of his death as a suicide, I am not trying to downplay the ferocity he displayed at the end of his life.

I'm trying to understand how his suicidal thoughts led to his murder.

After reading many books and talking to experts, I'm led to believe that his involvement in the mass shooting was rooted in a desire to die rather than a desire to kill.

The third challenge I have when talking about my son's murder-suicide is that I'm talking about mental health -- excuse me -- mental health, or brain health, because that's more specific.

At the same time, I am also talking about violence.

The last thing I want to do is contribute to pre-existing misconceptions about mental illness.

While only a minority of people with mental illness become violent toward others, it is estimated that about 75 to perhaps 90 percent or more of those who die by suicide have some diagnosable mental health condition.

As we all know, our mental health system cannot help everyone, and not everyone with destructive thoughts fits certain diagnostic criteria.

Many people with persistent fear, anger, and hopelessness are not evaluated or treated.

Often they only come to our attention when they reach a behavioral crisis.

If the estimate that about 1 to 2 percent of all suicides involve the murder of another person is correct, then just as suicide rates are rising in some populations, as suicide rates rise so will rates of homicides and suicides.

I wanted to understand what was going on in Dylan's mind before he died, so I searched for answers from other suicide death survivors.

I've done research, volunteered for fundraising, and talked to people who have survived suicide crises and suicide attempts wherever I could.

One of the most informative conversations I had was with a colleague who heard me talking to someone else in a private office room.

She heard me say that Dylan couldn't have loved me if he was as bad as she was.

Later, when she found me alone, she apologized for overhearing the conversation, but said I was wrong.

She said when she was a young single mother of three young children, she became severely depressed and was hospitalized to keep herself safe.

At the time, she was convinced that her children's lives would be easier if she died, so she made plans to end her life.

She affirmed to me that a mother's love is the strongest bond on earth and loves her children more than anything in the world, but she was convinced that her children would be better off without them because of her illness.

What she said, and what I've learned from others, is that we don't make so-called decisions or choices to die by suicide the same way we choose which car to get in or where to go on a Saturday night.

If someone is experiencing extreme suicidal thoughts, they are in a stage 4 medical emergency.

Their thinking is compromised and they have lost access to the means of autonomy.

They can plan and act logically, but their sense of truth is distorted by the pain filters that interpret their reality.

Some people are very good at hiding this condition, but often there are good reasons for doing so.

Many of us have had suicidal thoughts at one time or another, but continuing suicidal thoughts and figuring out ways to die are symptoms of a pathology that, like many diseases, needs to be recognized and treated before life is lost.

But my son's death wasn't just a suicide.

It involved mass murder.

I wanted to know how his suicidal thoughts turned into murderous thoughts.

But research is scarce and there is no simple answer.

Yes, he probably had depression.

He was a perfectionist, self-reliant, and reluctant to ask for help.

He had a history of causing incidents at school that made him feel mean, humiliated and angry.

And he had a complicated friendship with a boy who shared his anger and alienation, who was severely mentally ill, and had controlling and murderous tendencies.

And in addition to this period of extreme vulnerability and vulnerability in his life, Dylan now has access to guns, even though he never owned one at home.

It was frighteningly easy for a 17-year-old to buy a gun, legal or illegal, without my permission or knowledge.

And somehow, 17 years later and many school shootings, it's still terrifyingly easy.

What Dylan did that day broke my heart and, as trauma often does, it took a toll on my body and mind.

Two years after the shooting I was diagnosed with breast cancer and two years after that I started having mental health issues.

Added to the constant grief was the fear that Dylan would encounter the family of the person he had killed, or be called out by the press or an angry public.

I was terrified of watching the news and terrified of hearing people say I was a bad parent or an asshole.

I started having panic attacks.

The first match began four years after the mass shooting, when I was preparing for a deposition and had to meet the victim's family in person.

The second round began six years after the shooting, when I was preparing to give my first public talk on murder-suicide.

Both episodes lasted several weeks.

Attacks happened everywhere. At the hardware store, at my office, and even while reading in bed.

My mind was suddenly caught in this whirling cycle of fear, and no matter how hard I tried to calm myself down or logically think of a way out of it, I couldn't.

It was as if my brain was trying to kill me, and then fear swallowed up all my thoughts.

It was then that I learned firsthand what it feels like to have a dysfunctional mind, and from that point on I truly became an advocate for brain health.

Treatment, medication, and self-care eventually brought me back to what was considered normal under the circumstances.

Looking back at everything that's happened, I realize that my son's spiral into dysfunction probably spanned about two years. That was enough time to ask my son for help if someone knew he needed help and knew what to do.

It feels like a punch in the gut every time someone asks, "Why didn't you notice?"

It involves blaming and exploits my guilt that no amount of therapy can ever completely remove.

But here's what I learned. If love were enough to stop a suicidal person from harming themselves, suicide would rarely occur.

But love alone is not enough and suicide is rampant.

It is the second leading cause of death for people ages 10 to 34, and 15 percent of young Americans report having made a suicide plan in the past year.

I've learned that no matter how much I want to believe, I can't know or control everything my loved ones think and feel, and that a stubborn belief that there's something wrong with me and that my loved ones never want to hurt me or others can make me miss what's hidden in plain sight.

And when the worst-case scenario becomes a reality, we must learn to forgive ourselves for not knowing, not asking the right questions, and not finding the right treatment.

We should always assume that our loved ones may be suffering regardless of what they say or how they act.

We should listen wholeheartedly without judging or offering solutions.

I know I will be living with this tragedy and these tragedies for the rest of my life.

In many people's minds, I know that what I have lost is nothing compared to what other families have lost.

I know my struggle won't make theirs easier.

I think some even think that I am not entitled to any pain, but only to a life of eternal repentance.

Ultimately what I know comes down to this. The tragic fact is that even the most vigilant and responsible among us may not be able to help. But for the sake of love, we should never stop striving to know the unknown.

thank you.

(applause)

So I'm here to talk about walkable cities.

What is a walkable city?

Well, it doesn't need a better definition, but a city where the car is not a prosthetic, but an optional means of freedom.

And I would like to talk about why we need walkable cities and how we can achieve walkable cities.

Most of the talks I give these days are about why you need it, but you guys are smart.

Also, I gave that talk just a month ago. You can watch it at TED.com.

So today I would like to talk about how to do that.

After spending a lot of time thinking about this, I came up with what I call the general theory of walkability.

It's a bit of a hyperbole, a bit of a joke, but it's something I've been thinking about for a long time, and I'd like to share what I've come up with.

In an American city, it's a typical American city. The quintessential American city is not Washington, DC, New York, or San Francisco. Be it Grand Rapids, Cedar Rapids, or Memphis. In a typical American city where most people own a car and are always tempted to drive, if you want your car to walk, you have to offer as much or more of a walk than a drive.

what do you mean?

That means you have to provide four things at the same time. There must be a good reason to walk, the walk must be safe and secure, the walk must be pleasant, the walk must be interesting.

All four of these things must be done at the same time. Here's the structure of my talk today to explain each one.

The reason I walk is a story I learned from my mentors, Andrés Duaney and Elizabeth Prater-Seiberg, founders of the New Urbanism movement.

And I should say that I learned half of today's slides and half of my talk from them.

It is the story of planning, the story of the formation of the profession of planning.

In the 19th century, when people were suffocating in the dark, devilish factory soot, planners said, "Let's keep the houses away from the factories."

And lifespans increased quickly and dramatically. I would say that the planners have been trying to repeat the experience ever since.

So began what we call Euclidean zoning, dividing the landscape into large single-use areas.

And usually when I arrive in the city to make plans, such plans are already waiting for me in the property I am considering.

And what such a plan guarantees is that it will not be a walkable city because there is nothing nearby.

Another city, of course, is our most walkable city. I want to say that this is Rothko and this is Seurat.

It's just a different way -- he was a pointillist -- it's a different way of making a place.

And even this map of Manhattan is a bit misleading due to the mixed use of red color vertically.

So this is the big story of the New Urbanists – acknowledging that there are only two ways that have been tried by thousands of people around the world and throughout history to build community.

One is the traditional district.

Here you can see several neighborhoods in Newburyport, Massachusetts. The district is defined as a compact and diverse neighborhood, with places to live, work, shop, reproduce and educate all within walking distance.

And it is defined as ambulatory.

There are many small streets.

All are easy to walk.

And contrast that with the inventions that came after World War II, the sprawl of the suburbs, decidedly less compact, decidedly less diverse and inconvenient to walk. Because there are so few connecting streets that the connecting streets are overloaded and you can't let your kids go there.

And I would like to thank aerial photographer Alex McLean for providing many of these beautiful images that I am showing you today.

So it's fun to break down sprawl into its constituent parts.

A very easy-to-understand place to just live, a place to work, a place to shop, and a huge public institution.

Schools are getting bigger and bigger, and as a result, the distance between schools is getting bigger and bigger.

And the ratio of parking lot size to school size tells you everything you need to know. No child walks to this school and no child walks to this school.

There are 4th and 3rd graders driving 1st and 2nd graders and of course we have the crash stats to prove it.

And other civic facilities like playgrounds are super-sized, which is great for the Westin in Ft. The Lauderdale area has 8 soccer fields, 8 baseball fields and 20 tennis courts, but just look at the roads that take you there. Would you let your child ride a bicycle?

And this is why we now have soccer moms.

When I was a kid, there was a soccer field, a baseball field, and a tennis court, but they were all close by, so I could walk there.

Then there's the final piece of sprawl that everyone forgot to count. If you were to decouple everything from everything else and reconnect only to the automotive infrastructure, this is what your landscape would look like.

The main message here is that if you want a walkable city, you can't start with the sprawl model.

I need the bones of the city model.

This is a result of its shape design.

And this is what many Americans want.

But we need to understand that this is the American dream in two parts.

If you're dreaming of this, you'll also be dreaming of this often ridiculous extreme when we first build landscapes to accommodate cars.

And the experience of being in these places -- (laughter) this is not photoshopped.

Walter Kulash shot this slide.

Located in Panama City.

This is the real place.

Being a driver or even a pedestrian can be a bit annoying in places like this.

This is a slide that epidemiologists have been showing for a while now (laughter) The fact that we have a society that drives up the escalator to the parking lot to get to the treadmill shows us that we are doing something wrong.

But we know how to do it better.

Compare the two models below.

I present this slide, which has been the formative document of New Urbanism for almost 30 years, to show that sprawl and traditional neighborhoods are one and the same.

It's how big they are, how close they are to each other, how they're interspersed, and whether there's a road network rather than a cul-de-sac or road collection system.

So when we look at downtown areas, places that are expected to be walkable, mostly downtown in American cities and towns and villages, we look at them and say we need the right balance of use.

So what is missing or underrated?

And, again, what is lacking in the typical American city where most Americans live is housing.

Work and housing are out of balance.

And when you get housing back, you'll find that other things come back too, and housing usually comes first among them.

And of course, the last and final thing to show up is school. Because people have to move, young pioneers have to move and grow old, have children and fight. Then in the end the school will be a lot better.

The other part of this part, the convenient urban part, is transportation, and you can have a completely walkable area without transportation.

But a fully walkable city needs transport. Because if you can't access the whole city as a pedestrian, you'll get a car. Once you have a car, the city begins to reshape itself to your needs, roads get wider, parking lots get bigger and it's no longer a walkable city.

So transit is a must.

But every layover experience, every layover trip, begins and ends with a walk, so we need to remember to build walkability around the station.

The next largest category is safe walking.

Most walkability experts talk about it.

It's essential, but it's not enough to keep people walking.

And there are a lot of moving parts to create a walkable city.

The first is block size.

This is Portland, Oregon, 200 feet tall and famous for walking.

This is Salt Lake City, famous for its 600-foot-high blocks that you can't walk on.

It's like two different planets when you look at them, but both of these places were built by humans, and in fact a 200-foot block city can be a two-lane city, or a two- to four-lane city, and a 600-foot block city can be a six-lane city, and that's the problem.

These are crash stats.

Doubling the size of blocks -- this is a study of 24 California cities -- doubling the size of blocks almost quadrupled the number of non-highway fatalities.

So how many lanes are there?

Here's what I tell every audience I meet. It's a reminder of induced demand.

The induced demand applies to both highways and urban areas.

And the induced demand shows that when we widen our roads to accommodate the congestion we anticipate and the additional travel we anticipate in a congested system, it is the congestion that is primarily limiting demand, resulting in expansion, ready for all of these potential trips to occur.

People are moving away from work and making different choices about their commute times, and those lanes will quickly fill up with traffic. So when we widen the street again, the lane fills up again.

And we've learned that a congested system can't satisfy a car.

This is from Newsweek magazine, which is by no means an esoteric publication. "Today's engineers agree that building new roads usually makes traffic worse."

My reaction when I read this was, "Let me meet some of these engineers, because they're not the engineers I'm working with. With the big exception that I work with now, they're not the kind of engineers you often come across when you work in cities and say, 'Oh, that road is too busy, we need to add more lanes.'"

So when you add a lane, you get stuck in traffic and you're like, "Hey, I told you I needed that lane."

This applies both on highways and in congested urban areas.

But what's surprising about most American cities I work in, more typical cities, is that there are many streets that are actually too big for the traffic jams we're experiencing right now.

This was the case with Oklahoma City, which had been named by Prevention Magazine as the worst city for pedestrians in the nation when the mayor ran up to me, very upset.

Now it's unlikely that it's true, but it's certainly enough for the mayor to do something about it.

We did a walkability study, looked at the number of cars on the road, and found that there were 3,000, 4,000, and 7,000 cars, with two lanes capable of handling 10,000 cars per day.

Look at these numbers. These are all close to or less than 10,000 vehicles, and these are the streets designated by the new downtown plan to be four to six lanes wide.

So there was a fundamental disconnect between the number of lanes and the number of cars that wanted to use them.

So it was my job to redesign every street downtown from curb to curb. We did that on 50 Block Street and it's currently being rebuilt.

In other words, the typical endless boulevard has been narrowed down, is under construction, and the project is half complete.

On a typical road like this, doing so finds space for the median.

Find a space for a bike lane.

Doubled the number of on-street parking.

Added a complete bike network that never existed before.

But Oklahoma City has a very successful mining economy, so not everyone has as much money as Oklahoma City.

A typical city resembles Cedar Rapids, all with a four-lane, half-one-way system.

It's a little confusing, but what we've been doing and what we're doing. It's a work in progress and currently under engineering. A half-one-way four-lane system has been changed to a two-lane system, all-way. In doing so, it adds 70 percent more street parking. This is a store favorite and protects sidewalks.

This parking lot makes the sidewalks safer and adds a stronger bike network.

Then the lane itself. how wide is it?

It really matters.

As Andrés Duaney puts it, the standard has changed to allow us to see the curvature of the earth on the typical road to the American parcel.

(Laughter) This is a block that has been in the Washington suburbs since the 1960s.

Look carefully at the width of the road.

This is a subdivision built in the 1980s.

1960s, 1980s.

The standards have changed so much that in my neighborhood in South Beach, it was time to fix a street that wasn't properly drained, and the standards were so wide that we had to widen the road and remove half the sidewalks.

People run faster on wide roads.

people know it.

Engineers deny it, but residents know it, and in Birmingham, Michigan, they are fighting for narrower roads.

Renowned for its walkability, Portland, Oregon has introduced a "Skinny Streets" program in its residential neighborhoods.

We know that narrow streets are safer.

Developer Vince Graham is at a conference with our project I'On in South Carolina showing off an amazing 22 foot road.

These are two-way roads, very narrow right-of-way, and he indicates the words of this famous philosopher. "Broad roads lead to destruction...

The road to life is narrow. ”

(Laughter) (Applause) It's very common in the South.

Now: bicycle.

Bicycles and cycling are a current revolution underway only in some American cities.

But where you build it they come.

As a planner, I hate to say this, but one thing I can say is that the cycling population is a function of the cycling infrastructure.

I asked my friend Tom Brennan from Nelson\Nygaard, Portland, to send me some photos of his bike commute in Portland.

he sent me this I said "Was that bike a work day?"

He said, "No, it was Tuesday."

Much like Portland, after spending money on bike infrastructure, New York City multiplied bike ridership by painting this bright green lane.

Even car cities like Long Beach, California have seen a significant increase in the number of motorcyclists based on infrastructure improvements.

And of course, if you know what it's really all about here on 15th Street in Washington, D.C., Chicago's new bike lanes by Rahm Emanuel, Buffer lanes, Parallel parking from curbs, Bikes between parked cars and curbs, Meet these mint cyclists.

But if all lanes are bike lanes, like in Pasadena, none of the lanes are bike lanes.

He was the only cyclist I met in Pasadena...

(Laughter) Parallel parking, as I mentioned earlier, is an important steel barrier that protects curbs and pedestrians from moving vehicles.

This is the fort. Lauderdale; parking is allowed on one side of the street but not on the other.

This is happy hour on the parking lot side.

It's a sad time on the other side.

And the trees themselves slow down the car.

If there is a tree next to the road, they will slow down, but of course, they can also slow down very quickly.

Every detail i.e. curb return radius.

Is it 1 foot or 40 feet?

How steep the curb is will determine the speed of your car and how much space you need to cross.

And I love this because it's objective journalism.

"Some say the entrance to the city center is not good for pedestrians."

When every aspect of the landscape is swooping, aerodynamic, and stream-shaped in geometric patterns, it says, 'This is where the vehicles go.

Therefore, specific details and specialties alone cannot set the stage.

And here, you know, this way. Yes, once-in-a-hundred-year storms run out of water in less than a minute, but this poor woman has to climb the curb every day.

So right away, a comfortable walk has to do with the fact that all animals seek perspective and shelter at the same time.

We want to see predators, but we also want to feel our flanks covered.

As such, we are drawn to places with a good edge. People won't want to go there if you don't provide an edge.

What is a good ratio of height to width?

Is it 1 to 1? 3 to 1?

Beyond 1 to 6 it's not very comfortable anymore.

I don't feel stuck.

Well, a 6v1 in Salzburg can be a lot of fun.

The other side of Salzburg is Houston.

The main issue here is parking.

However, missing teeth and vacant lots can also be a problem, and if your corners are missing due to old zoning rules, you may have a missing nose in your neighborhood.

That happened in my neighborhood too.

This was a zoning code indicating that no building could be built on the site.

As you may know, Washington DC is currently changing zoning to allow places like this to be places like this.

That required a lot of changes.

A triangular house may be interesting to build, but people generally like it when they actually build it.

Therefore, the missing nose should be filled.

And finally, an interesting walk - a sign of humanity.

We are part of social primates.

Nothing interests us more than others.

We want people's attention.

So a perfect 1:1 ratio is great.

This is Grand Rapids. Because when you have an exposed parking deck on your left and a conference facility on your right that is clearly designed in honor of that parking deck, you don't get as many people.

Charleston, South Carolina's 10th-term mayor, Joe Riley, told us that it only takes 25 feet of building to hide a 250-foot garage.

I call this place Chia Pet Garage. Located in South Beach.

That active ground floor.

I would like to finish with this project that I want to show you.

By Meleka Architects. Located in Columbus, Ohio.

On the left is the pedestrian-filled convention center district.

Short North District is on the right. It's ethnic, has great restaurants, great shops, and it's struggling.

This was a bridge, so it didn't work very well. No one walked into the neighborhood from the convention center.

Well, when we rebuilt the highway, we added another 80 feet of bridge.

Sorry, they rebuilt the bridge over the highway.

The city paid $1.9 million, gave the site to the developer, the developer built it, and now Short North is back to life.

And everyone says that the newspaper, not the planning magazine, is to blame for that bridge.

That's it. That is the general theory of walkability.

Think about your own city.

Let's see how we can apply it.

You have to do all four things at once.

So find where most of them are, fix what you can, and fix what still needs fixing in those places.

Thank you for your attention today.

(applause)

More than 1.5 billion people around the world experience armed conflict.

People have been forced to flee the country in response, leaving more than 15 million refugees.

Without a doubt, children are the most innocent and most vulnerable victims...

But not just from the obvious physical dangers, but also from the implicit effects war has on families.

The experience of war puts children at a very high risk of developing emotional and behavioral problems.

We can only imagine that children will feel insecure, threatened and in danger.

But there is good news.

The quality of care that families receive may have a greater impact on children's well-being than their actual experiences of war.

So, in fact, children are protected by warm and safe parenting during and after conflict.

In 2011, I was a PhD student at the University of Manchester's Department of Psychology.

Like many of you here, I watched the Syrian crisis unfold before my eyes on television.

My family is from Syria and lost some family members very early on in a truly horrifying way.

I was sitting and watching TV with my family.

We've all seen bombs destroying buildings, chaos and destruction, and people screaming and running away.

What intrigued me the most were the people running around screaming all the time, especially the frightened children.

I was the mother of two young, typically inquisitive children.

They were 5 and 6 years old at the time, an age that usually asks a lot of questions and expects genuine and convincing answers.

So I started wondering what it would be like to raise children in war zones and refugee camps.

Will my children change?

Will my daughter's bright, happy eyes lose their sparkle?

Could my son's really relaxed and easy-going personality turn him into a scared and withdrawn person?

How should I deal with this?

Can I change it?

As psychologists and parent trainers, we know that developing parenting skills can have a huge impact on a child's well-being, and we call this parent training.

The question I had was whether parent training programs would help families in conflict areas and refugee camps.

Can we reach them with advice and training to help them overcome these challenges?

So I decided to use my academic abilities to make a difference in the real world, so I turned to my PhD supervisor, Professor Rachel Callum.

I didn't know exactly what I wanted to do.

She listened carefully and patiently. And I was happy to say, "If that's what you want to do and it means a lot to you, then do it.

Let's find out how to see if the parent program works for the family in this situation. ”

So for the past five years, my colleagues Professor Callum and Dr. Kim Cartwright have been working on ways to help families who have experienced war or displacement.

Now, for families experiencing conflict to know how to support their children, the first step is naturally to ask them what they are struggling with, right?

So it seems obvious.

But it's the most vulnerable people that we try to support, and often we don't really ask.

How many times have we assumed we knew exactly what was right to help someone or something without actually asking first?

So I visited refugee camps in Syria and Turkey and sat with families and listened to their stories.

I listened to their parenting challenges, parenting struggles, and their calls for help.

And sometimes it was paused and all I could do was hold hands with them and just join them in silent weeping prayer.

They told me about their struggles, about the rough and harsh refugee camp conditions where it was difficult for them to concentrate on anything other than practical chores like fetching clean water.

They told me how they watched their children withdraw. Sadness, depression, anger, bedwetting, thumb sucking, fear of loud noises, fear of nightmares, frightening, frightening nightmares.

These families were experiencing what we were seeing on TV.

Nearly half of the mothers were either war widows or did not even know if their husbands were alive or dead.

They saw their children change, but they didn't know how to help them.

They didn't know how to answer the child's question.

What I found incredibly surprising and very motivating was that these families were so motivated to support their children.

In the face of all these difficulties they tried to help their children.

They sought help from NGO workers, refugee camp teachers, professional health workers and other parents.

A mother I met had only been in camp for four days, but had already made two attempts to enlist help for her eight-year-old daughter, who was suffering from terrifying nightmares.

Sadly, these attempts are often futile.

Refugee camp doctors, when available, are most often either too busy or lack the knowledge or time for basic parenting assistance.

Teachers and other parents in refugee camps are like them, part of a new refugee community grappling with new needs.

So we started thinking.

How can we help these families?

The family was wrestling with something bigger than they could handle.

The Syrian crisis has revealed how incredibly impossible it is to reach out to family members on an individual level.

How else can we help them?

How can we support families at a low cost at the population level in this terrifying and terrifying time?

After hours of talking with NGO staff, one suggested a brilliant and innovative idea: using bread wrappers to distribute parenting information leaflets. Bread wrappers were being delivered by humanitarian workers to families in conflict zones in Syria.

that's what we did.

The bread wrapper looks exactly the same, except for the two extra sheets of paper.

One was a parenting information leaflet with basic advice and information to normalize to parents what they might be going through and what their children might be going through.

It also includes information on how to support yourself and your child, such as spending time talking to your child, being more affectionate, being more patient with your child, and talking to your child.

The other piece of paper was a feedback survey, and of course there was a pen.

So is this just leafleting, or is it actually a possible means of providing psychological first aid that provides a warm, safe, and loving parenting experience?

We were able to distribute 3,000 copies in just one week.

Surprisingly, the response rate was 60%.

60% of 3000 families responded.

I don't know how many researchers are here today, but response rates like this are amazing.

If it can happen in Manchester, let alone in Syria's conflict zone, it highlights how important this kind of message is to families.

I remember how much we were looking forward to the survey responses.

The family left hundreds of messages, most of which were incredibly positive and encouraging.

But my favorite is "Thank you for remembering us and our children."

This demonstrates a potential means of providing psychological first aid and feedback to families.

Imagine replicating this using other means such as baby formula distribution, feminine hygiene kits or even food baskets.

But the refugee crisis affects each of us, so let's make this issue more accessible.

We are bombarded with statistics and photographic images every day, and with over one million refugees reaching Europe by last month, it's no surprise.

1000000.

Refugees join our communities, become our neighbors, and their children attend our schools.

So we adapted the leaflet to meet the needs of European refugees and made it online and open access in areas with the highest refugee influx.

For example, when a Swedish healthcare organization uploaded this message to their website, it was downloaded 343 times within the first 45 minutes. This highlights how important it is for volunteers, health care workers, and other parents to provide open-access psychological first aid messages.

In 2013, I sat on the cold, hard floor of a tent in a refugee camp with mothers sitting around me conducting a focus group.

Across from me stood an elderly woman, and next to her lay a woman, who I believe to be a 13-year-old girl, with her head resting on the elderly woman's lap.

The girl remained silent throughout the focus group, with her knees hunched over her chest and not speaking at all.

Towards the end of the focus group, as I was thanking the mothers for their time, an older woman looked at me, pointing at a young girl, and said, "Can I help you with something?"

I wasn't sure what she expected from me, but I looked at the young girl, smiled, and said in Arabic, "Salaam Alaikum. Shuismak?"

"What is your name?"

She looked at me really confused and unmotivated, but said, "Haruru."

Halul is a nickname for the Arabic female name Hala, and is only used when referring to a really young girl.

At that point, I realized that the real-life Hara was probably much older than thirteen.

It turns out that Hara was 25 years old and a mother of three young children.

Hara was a confident, bright, cheerful, loving, caring mother to her children, but the war changed all that.

She survived the bombings of her town. She experienced an explosion.

Her children were screaming in fear at the noise as fighter planes flew around the building and dropped bombs.

Hala frantically grabbed pillows and covered her children's ears to block out the noise, all the while screaming herself.

When they arrived at the refugee camp and finally found themselves in some kind of safe place, she completely retreated and acted like her childhood self.

She completely rejected her family, children and husband.

Hara couldn't take it anymore.

This is a parenting struggle with a very tough ending, but sadly, it's not uncommon.

People who have experienced armed conflict or displacement face deep emotional conflicts.

And that's something we can all relate to.

If you've ever been through a devastating time in your life, how would you continue to cope if you lost someone or something really important to you?

Are you still able to take care of yourself and your family?

Given that the first years of a child's life are crucial for healthy physical and emotional development, and that 1.5 billion people have experienced armed conflict, many of whom are now part of our communities, we cannot turn a blind eye to the needs of those experiencing war and displacement.

We must prioritize the needs of families, both internally displaced persons and refugees around the world.

These needs must be prioritized by NGO staff, policy makers, WHO, UNHCR and each of us, regardless of our functioning position in society.

As we begin to recognize individual faces involved in conflict, as we begin to notice the complex emotions on their faces, we begin to see them as human beings as well.

We are beginning to see these family needs, and that they are true human needs.

When the needs of these families are prioritized, interventions for children in humanitarian settings are prioritized and the primary role of families in supporting children is recognized.

Family mental health will be shouted loud and clear on the global and international agenda.

And children would be less likely to join social welfare schemes in resettlement countries because their families would have received support earlier.

And we will be more open-minded, more welcoming, more caring and more trusting of those who join our community.

we have to stop the war.

We need to build a world where children can dream of planes dropping presents, not bombs.

Families will continue to be displaced and children will be vulnerable unless the armed conflicts raging around the world are stopped.

However, improved parenting and caregiver support could weaken the link between war and the psychological hardships of children and their families.

thank you.

(applause)

(Guitar music begins) (Cheers) (Cheers) (Music ends)

People have long used the media to talk about sex.

Love letters, phone sex, racy Polaroids.

There is also the story of a girl who eloped with a man she met by telegraph in 1886.

Today we have sexting and I am a sexting expert.

Not a sexter expert.

However, I know what this means. I think you know that too.

[That's a penis] (Laughter) I've been studying sexting since 2008, when the media started focusing on sexting.

I wrote a book about the moral panic about sexting.

And what I've discovered is that most people worry about doing it wrong.

They're just trying to stop sexting from happening.

But let me ask this: what's wrong with sexting as long as it's entirely consensual?

People are into blue cheese, coriander, and all sorts of other things you're not into.

(Laughter) Sexting, like fun, is certainly dangerous, but it doesn't hurt unless you send the image to someone who doesn't want to receive it.

What I see as a serious problem is people sharing private images of others without their permission.

And I think we should think more about digital privacy instead of worrying about sexting.

Consent is the key.

Most people today think about sexting without thinking about consent at all.

Did you know that teen sexting is now criminalized?

Images of people under the age of 18 constitute child pornography and can be a crime. And if you took that image yourself and were happy to share it, that's fine too.

That leaves us with a strange legal situation in most US states where two 17-year-olds can legally have sex, but not be photographed.

Some states have also attempted to enact sexting misdemeanor laws, but these laws continue to make consensual sexting illegal, thus repeating the same problem.

It doesn't make sense to try to ban all sexting to address privacy violations.

This is like saying let's solve the problem of date rape simply by making dating completely illegal.

Most teens don't get arrested for sexting, but do you know who gets arrested?

It is often teenagers who are disliked by their partner's parents.

And this can be due to class prejudice, racism and homophobia.

Of course, most prosecutors are smart enough not to apply child pornography charges against teens, but some do.

According to researchers at the University of New Hampshire, 7 percent of all people arrested for child pornography possession are teens who engage in consensual sexting with other teens.

Child pornography is a serious crime, but it is different from sexting teenagers.

Parents and educators also approach sexting without thinking too much about consent.

Their message to teens is, "Don't do it anyway."

And it's understandable. There are serious legal risks and, of course, potential invasion of privacy.

When you were a teenager, you were supposed to do what you were told, right?

You probably think my child will never have a sext.

That's true. Only 33 percent of 16- and 17-year-olds sext, so your little angel might not.

Unfortunately, by the time they're older, they're likely to be sexting.

In every study I've seen, the percentage of 18-24 year olds is over 50 percent.

And most of the time nothing goes wrong.

People always ask me if sexting is so dangerous.

It's like leaving your wallet on a park bench, expecting it to be stolen, right?

Here's what I think about it. Sexting is like leaving your wallet at your boyfriend's house.

When you come back the next day and all your money is gone, you really need to dump the guy.

(Laughter) So instead of criminalizing sexting to prevent these privacy violations, we need to put consent at the heart of how we think about the circulation of personal information.

Every new media technology raises privacy concerns.

In fact, in the United States, the first big debates about privacy were in response to relatively new technology at the time.

In the late 1800s, people were suddenly worried about cameras and newspaper gossip columns being more portable than ever before.

They worried that the cameras would capture information about them and disseminate it out of context.

Does this sound familiar?

That's exactly what we're worried about right now with social media, drone cameras, and of course sexting.

And these fears of technology are justified. Because technology can amplify and bring out our worst traits and behaviors.

But there is a solution.

And we've been here before with dangerous new technology.

In 1908, Ford introduced the Model T car.

Traffic fatalities were on the rise.

It was a serious problem. It looks very safe, right?

Our first response was to try to change driver behavior. So we formulated a speed limit and enforced it through fines.

But in the decades that followed, we began to realize that the technology in the car itself wasn't just neutral.

We can design cars to be safer.

So in the 1920s, shatterproof windshields were developed.

Seat belts in the 1950s.

Then in the 1990s airbags appeared.

All three fields – legal, personal and industry – have worked together over time to help solve the problems posed by new technologies.

You can do the same with digital privacy.

Of course, back to agree.

Here's the idea.

Before anyone can distribute your personal information, they must obtain your permission.

This idea of ​​affirmative consent comes from anti-rape activists who argue that all sexual activity requires consent.

And we set very high standards for consent in many other areas as well.

Consider having surgery.

Your doctor needs to confirm that you have meaningfully and intentionally consented to the medical procedure.

This is not a scroll down and "agree, agree" kind of agreement like the iTunes Terms of Service.

(Laughter) The more we think about consent, the better privacy laws we have.

At the moment, we don't have that many protections.

If your ex-husband or ex-wife is a terrible person, they may take nude pictures of you and upload them to porn sites.

Removing these images can be very difficult.

And in many states, it's better to actually take a picture of yourself to claim copyright infringement.

(Laughter) Right now, if someone violates your privacy, whether it's an individual, a company, or the NSA, you can sue, but you may not win because many courts assume digital privacy is simply not possible.

Therefore, they do not intend to punish those who violate.

I'm often asked this question even now, but because digital images are digital, won't the boundary between the public and private become ambiguous?

no! no!

Not everything digital is automatically published.

It makes no sense.

As New York University legal scholar Helen Nissenbaum puts it, we have laws, policies, and norms to protect sensitive information of all kinds, whether it's digital or not.

Your health records are all digital, but doctors can't share them with anyone.

All financial information is stored in a digital database, but credit card companies cannot publish your purchase history online.

Better laws can help us deal with privacy breaches after they happen, but one of the easiest things we can all do is make personal changes to protect each other's privacy.

We are always told that privacy is our own, sole and personal responsibility.

We are told to constantly monitor and update our privacy settings.

We are told never to share anything that we don't want the whole world to see.

This makes no sense.

Digital media is a social environment and we share things with people we trust every day.

As Princeton University researcher Janet Bertesi argues, our data and privacy are not just personal, they are actually interpersonal.

So one very easy thing you can do is start asking permission before sharing other people's information.

If you want to post someone's photo online, ask for permission.

If you would like to forward an email thread, please ask for permission.

And if you want to share someone's nude selfie, of course, ask for permission.

These individual changes go a long way in protecting each other's privacy, but they also require the participation of technology companies.

These companies' business models rely on us sharing everything with as many people as possible, so there's little incentive to help protect our privacy.

For now, if I send you an image, you can forward it to anyone.

But what if you need to determine if the image is transferable?

This indicates that you do not have permission to submit this image.

We do things like this all the time to protect copyright.

If you buy an e-book, you can't send it to as many people as you want.

So why not try this on your mobile phone?

What you can do is push technology companies to add these protections by default to their devices and platforms.

After all, you can choose the color of your car, but airbags are always standard.

Not thinking more about digital privacy and consent can have serious consequences.

There was a teenager from Ohio. For privacy, let's call her Jennifer.

She shared nude photos of herself with her high school boyfriend, thinking he could be trusted.

Unfortunately, he betrayed her and sent her pictures all over the school.

Jennifer felt embarrassed and humiliated, but her classmates harassed her instead of pitying her.

They called her a slut and a whore and made her life miserable.

Jennifer started skipping school and her grades dropped.

In the end, Jennifer decided to take her own life.

Jennifer has done nothing wrong.

All she did was share nude photos with someone she thought she could trust.

Nevertheless, our law tells her she has committed a horrific crime tantamount to child pornography.

Our gender norms tell her that she has somehow done the most horrible and shameful thing by producing this nude image of herself.

And assuming privacy is impossible in digital media, we completely ignore and excuse her boyfriend's horribly bad behavior.

People still keep asking victims of privacy violations, "What were you thinking?"

That image should never have been sent. ”

If you're wondering what to say instead, try this.

Imagine meeting a friend who broke his leg while skiing.

They took a risk and did something fun, but it didn't end well.

But you probably wouldn't be that stupid to say, "I wish I wasn't going skiing then."

Thinking more about consent, we find that victims of privacy violations deserve sympathy, not criminalization, shaming, harassment, and punishment.

Making these legal, personal, and technical changes can help victims and prevent some privacy breaches.

The problem isn't sexting, it's digital privacy.

And one of the solutions is consent.

So the next time a privacy breach victim shows up at your place, instead of blaming them: Change the way you think about digital privacy and treat it with compassion.

thank you.

(applause)

I think most of you can probably relate to what I'm feeling right now.

My heart is beating in my chest.

My palm is a little sticky.

I'm sweating

And my breathing is a little shallower.

Now, these familiar sensations are clearly the result of standing in front of a thousand people and giving a talk that could possibly be streamed online to a million more people.

However, the physical sensations I am experiencing are actually the result of more fundamental mind-body mechanisms.

My nervous system pumps hormones like cortisol and adrenaline into my bloodstream.

This is a very ancient and much-needed response that pumps blood and oxygen to the organs and muscles needed to respond quickly to potential threats.

However, this reaction is problematic and can be over-activated.

Confronting such stressors on a regular basis, especially over an extended period of time, can overload the system.

Basically, if this reaction happens infrequently, it's very necessary for my health and survival.

But if it goes too far, it can actually make you sick.

A growing number of studies are investigating the relationship between chronic stress and illness.

Heart disease and cancer are also known to be related to stress.

That's because over time, the over-activation caused by stress can interfere with the body's processes that keep you healthy.

Now imagine for a moment where I was pregnant.

What effect can this type of stress have on the health of the developing fetus, especially during pregnancy?

It probably won't surprise you to say that this kind of stress during pregnancy is bad.

In a fundamental sense, stress can even cause your body to start labor prematurely, as it tells you that the uterus is no longer a safe place for your baby.

Stress during pregnancy is associated with high blood pressure and low birth weight babies, and can lead to a range of health problems that make childbirth more dangerous for both parent and child.

Of course, stress is a somewhat universal experience, especially in our modern lifestyle.

You may never have stood up for a TED talk, but you've probably faced a big presentation at work, a sudden job loss, a big test, or a violent conflict with family and friends.

But I've found that the type of stress we experience and whether we can stay relaxed long enough for our bodies to function properly depends a lot on what kind of person we are.

A growing body of research also shows that people who experience more discrimination are more likely to have poor health.

Even the threat of discrimination, such as fear of being stopped by the police while driving, can have a negative impact on health.

Dr. David Williams, a Harvard professor who pioneered tools to prove these connections, says the more marginalized groups in our society experience more discrimination, with greater health consequences.

I have been interested in these issues for over ten years.

My interest in maternal health began when a planned plan fell through and instead led me down the path of looking for other ways to help pregnant people.

I became a doula, a trained layperson who supports people during pregnancy and childbirth.

And because I'm Latino and Spanish-speaking, my first volunteer doula work at a public hospital in North Carolina made it clear to me how race and class impacted the experiences of the women I supported.

When looking at the statistics on rates of illness during pregnancy and childbirth, the pattern outlined by Dr. Williams becomes clear.

African-American women in particular have a very different experience than white women when it comes to whether or not their babies will be born healthy.

In certain parts of the country, particularly in the deep South, maternal and child mortality rates for black women are actually closer to those in sub-Saharan Africa.

In those same communities, the percentage of white women is almost zero.

Nationally, black women are four times more likely to die during pregnancy and childbirth than white women.

Four times more likely to die.

They are also twice as likely to die in their first year of life and two to three times more likely to be born prematurely or underweight, a sign of poor development, compared to white infants.

Indigenous women also have higher rates of these problems than white women, as do some Latino groups.

As a doula-turned-journalist-blogger, I have spent the past decade trying to raise awareness about how differently women of color, especially black women, experience pregnancy and childbirth in the United States.

But when people talk about these frightening statistics, they usually think it's about poverty or lack of access to care.

But in the end it turns out neither of these tell the whole story.

Even middle-class black women still do far worse than middle-class white women.

The gap between this group is actually widening.

And while access to care is certainly still an issue, even women of color who receive recommended prenatal care still suffer from such high rates.

And we're back on the road from discrimination to stress to poor health and start painting a picture that many people of color know to be true. That is, racism actually makes us sick.

Does it still seem unreasonable?

please think about it. Immigrants, especially black and Latino immigrants, are actually in better health when they first arrive in the United States.

But the longer you stay in this country, the worse your health gets.

People like me who were born in the United States to Cuban immigrant parents are actually more likely to have worse health than their grandparents.

This is what researchers call the “immigrant paradox,” further showing that there is something about the U.S. environment that makes us sick.

But here's the problem. The problem of racism making people of color sick, especially black women and babies, is enormous.

I could spend time talking to you about this, but I won't. Because we want to make sure that there is only one solution.

And the good news is that this is a solution that isn't particularly expensive and doesn't require fancy medications or new technology.

The solution is called the "JJ Way".

Meet Jenny Joseph.

She is a midwife who has been serving pregnant women in the Orlando, Florida area for over 10 years.

Jenny and her team provide antenatal care to more than 600 women annually at what she calls an accessible clinic.

Most of her clients are black, Haitian and Latinx and give birth at local hospitals.

But by providing accessible and respectful prenatal care, Jenny has achieved amazing things. Nearly all of her clients have delivered healthy full-term babies.

Her method is deceptively simple.

Jenny says all appointments start at the front desk.

Every member of her team, and every moment the women are in the clinic, is there to support them in any way they can.

No one is turned down for lack of funds.

The JJ Way is to make finances work no matter what the hurdles.

No one should be blamed for being late for an appointment.

No one is disrespected or disrespected.

Jenny's waiting room feels more like her aunt's living room than a clinic.

She calls this space a "disguised classroom."

Arranged in a circle of plush chairs, women chat one-on-one with educators, attend group antenatal classes, and wait for appointments.

When you're finally called back to your appointment, you'll be greeted by Alexis or Trina, two of Jenny's medical assistants.

Both are young African Americans and mothers themselves.

Their approach is casual and friendly.

During one visit I observed, Trina chatted with a young soon-to-be mother while taking her blood pressure.

This Latino mother had a hard time holding food because of nausea.

Deflating the blood pressure cuff, Trina said, "Let's take a look at the prescription change. Okay?"

I can't help but eat. ”

That "we" is actually a very important aspect of Jenny's model.

She sees her staff as part of a team, along with women and their families, with one goal: to help mothers deliver healthy babies.

Jenny says that Trina and Alexis are actually the core of her care models, and her role as a provider is only to support their work.

Trina spends much of her day on her cell phone, sending all sorts of emails with her clients.

One woman emailed to ask if the medicine prescribed by her doctor was safe to take during pregnancy.

The answer was no.

Another woman texted a photo of a baby born in Jenny's care.

Finally, when you're finally called back to your healthcare provider, you're already weighed in the waiting room and doing your own pee test in the bathroom.

This is a major departure from the traditional medical model in that responsibility and information are put back in women's hands.

So rather than the kind of medical practice often available to low-income women, where you can be blamed for not following the recommendations of your healthcare provider, Jenny's model is to be as supportive as possible.

And that support is an important buffer against the stress of racism and discrimination that women face every day.

But the best thing about Jenny's model is that it's incredibly successful.

Remember the stats I told you about: Black women are more likely to give birth prematurely, have low birth weight babies, and even more likely to die from complications of pregnancy and childbirth?

Well, JJ Way has almost completely eliminated those problems, starting with what Jenny calls "thin babies."

She has managed to deliver healthy, stocky babies like this one to almost all of her clients.

Audience: Oh!

Miriam Zoila Perez: Baby girl born to Jenny's customer this past June.

In Jenny's area, a similar demographic of women who gave birth at the same hospitals where her clients delivered were three times more likely to give birth to babies below a healthy weight.

Jenny is making headway on a problem that for decades was seen as an almost intractable problem.

One might think that all this one-to-one correspondence required by The JJ Way must be too costly to scale.

Well, that would be wrong.

Visits with providers aren't central to Jenny's model, but for good reason.

These visits are expensive, and in order to maintain the model, we have to meet many customers to cover the costs.

But Jenny wouldn't have to spend a lot of time with each woman if every member of her team could provide her clients with the support, information, and care they needed.

The beauty of Jenny's model is that she actually believes it can be implemented in almost any medical setting.

That's exactly what a revolution in nursing care is waiting to happen.

These issues that I have shared with you are big ones.

They come from a long history of societies based on racism, classism, and the stratification of race and class.

They involve sophisticated physiological mechanisms to protect us and actually cause disease when overstimulated.

But if there's one thing I've learned from my work as a doula, it's that a little unconditional support can go a long way.

History has shown that people are incredibly resilient, and while racism and the stress it causes cannot be eradicated overnight, we may be able to create a buffer environment for what people of color experience on a daily basis.

And during pregnancy, that buffer can be a great tool for transferring the effects of racism to the next generation.

thank you.

(applause)

Five years ago, I landed my dream job.

I was a foreign correspondent in the Middle East for ABC News.

However, we felt that there was a crack in the wall, an issue in our industry, that needed to be fixed.

As you know, I arrived in the Middle East in late 2007, right in the middle of the Iraq War.

But by the time I got there, it was already nearly impossible to find broadcasts about Iraq.

Coverage has been degraded across the network.

And more than 80% of the articles that were actually published were about us.

We missed the story of Iraq, the people who live there, and what is happening to them under the weight of the war.

Afghanistan was already off the agenda.

Less than 1% of all news in 2008 was about the war in Afghanistan.

The war was the longest in U.S. history, but information was so scarce that teachers at the schools we spoke to said they struggled to explain to their students their parents fighting and sometimes dying abroad.

We drew a blank, and it wasn't just Iraq and Afghanistan.

From conflict zones to climate change to all sorts of issues around public health crises, we missed what we call species-level issues. Because, as a species, they can actually sink us.

And our failure to understand the complex issues of our time faced certain practical consequences.

How do we solve problems that are fundamentally incomprehensible, can't be tracked in real time, and the people working on them are invisible to us and sometimes invisible to each other?

Looking back at Iraq, the time we missed this narrative was a time when society was collapsing, setting the conditions for the later rise of ISIS, its takeover of Mosul, and the terror violence that spread across Iraq's borders and into the world.

Just as I was making those observations, I looked across the Iraqi border and realized there was another story we were missing. It's the Syrian War.

If you're an expert on the Middle East, you should have known from the beginning that Syria is that important.

But it really has become one of the forgotten stories of the Arab Spring.

I knew the implications beforehand.

Syria is closely linked to regional security and global stability.

I felt we couldn't let this be one of the stories we left behind.

So I quit my big TV job and started a website called "Syria Deeply".

Designed to be a source of news and information to make complex issues easier to understand, it has been a resource for policymakers and experts working on the Syrian conflict over the past four years.

We've built a business model out of consistent, high-quality information and top voice on the issue.

And it turned out that it was a model to scale.

I received a hot request that I want to do other things "deeply".

So we started working our way down the list.

I'm just one of many entrepreneurs. It's also just one of many startups trying to solve the news problem.

All of us on the ground know that something is wrong with the press industry.

Are broken.

Trust in the media has hit an all-time low.

And the stats you see there are for September and are probably worse.

But this can be resolved.

We can fix the news.

I know it's true.

You can call me an idealist. I call myself a hardworking optimist.

And we know there are a lot of people out there.

We have ideas to make things better. We would like to share three of them that we have found in our work.

Idea number one is that we want news that is built on deep domain knowledge.

With newsrooms all over the country laying off one after another, we have lost the ability to increase our expertise.

Beat reports are endangered.

When it comes to foreign news, the way we solve this problem is to work with more local journalists and treat them like partners and collaborators rather than just fixers collecting phone numbers and voice bytes.

Local reporters from Syria, across Africa and across Asia bring us stories we never would have found on our own.

It's about a wheelchair race that gave hope to those wounded in war, like this piece outside Damascus.

Or this one from Sierra Leone, about a local chief who curbed the spread of Ebola by voluntarily enforcing quarantine in his district.

Alternatively, this one, filmed at the Pakistani border, depicts Afghan refugees being forcibly returned home under police threats before they are ready.

Local journalists are our leaders.

They teach us something new every day and bring important stories that we all need to know.

Idea #2: The press industry needs something like the Hippocratic Oath. The first is a pledge not to cause harm.

(Applause.) Journalists have to be tough.

We must speak truth to those in power, but we must also be accountable.

We need to stick to our own ideals and recognize that we are losing sight of journalism as a public service when what we do can potentially harm society.

I saw that we were covering the Ebola crisis.

We launched Ebola deeply. we did our best.

But what we saw was a mass of people flooded with hysterical, sensationalist reporting, sometimes inaccurate and sometimes outright wrong.

Public health experts say it's actually costing lives as it makes it harder for people to work out what's really happening on the ground by creating more panic and sometimes misrepresenting the facts.

The noise made it difficult to make the right decisions.

We can do better as an industry, but we need to recognize how we went wrong last time and decide not to go that way next time.

it's a choice.

We must resist the temptation to use fear as an assessment.

And that decision must be made in individual newsrooms, in collaboration with individual news executives.

Because if you do what you did last time, the next deadly virus could be even worse, and the consequences could be even greater. We are not responsible for our reporting and if it is not correct.

What's your third idea?

If we want to understand a complex world, we have to embrace complexity.

Embrace complexity -- (Applause) Don't treat the world as a simplification. Because simple is not accurate.

We live in a complicated world.

News is adult education.

Our job as journalists is to dig deep into complexity and find new ways to make it easier for others to understand.

If we don't do that and pretend there are only simple answers, we're all going to be pulled over a steep cliff.

Understanding the complexity is the only way to know the real threat that is just around the corner.

It is our responsibility to help you translate these threats, understand what is true, and what you need to do to prepare for what comes next.

I am a hardworking optimist.

I believe that what is broken can be fixed.

We all want to.

There are great journalists out there doing great work. All we need is a new format.

I honestly believe it's time to wake up again and rethink what we can do.

I believe that what is broken can be fixed.

We know we can fix the news.

I think it's worth a try and I truly believe it will work in the end.

thank you.

(applause)

So, have you ever wondered what it would be like to live in a place with no rules?

That's pretty cool, isn't it?

(Laughter.) But one morning I woke up and realized that the reason there are no rules is because there is no government and no laws.

Virtually all social institutions disappeared.

There are no schools, no hospitals, no police, no banks, no athletic clubs, no public works.

Well, I worked in a refugee camp in the Balkans during the Kosovo war when I was a medical student in 1999, so I know a little bit about what this is like.

When the war was over, incredible, I took leave from medical school and got permission to go back to my Kosovar village with some of the families I befriended in the camp and see how they lived in this post-war situation.

Post-war Kosovo was a very interesting place. Because the NATO forces were there mainly to keep the war from breaking out again.

However, other than that, it is actually a lawless area, and almost all social systems, both public and private, have been destroyed.

So I would say it's absolutely thrilling when you get into any of these situations and settings...

About 30 minutes. Because it's about the same amount of time it takes to run into a situation where you realize how vulnerable you are.

That moment for me was when I had to go through the first checkpoint. As I drove by, I realized that I would be negotiating with a heavily armed individual to pass this checkpoint. If they decided to shoot me on the spot, they wouldn't actually be doing anything illegal.

But the feeling of weakness I felt was nothing compared to the weaknesses of the family I had known that year.

As you know, life in a society without social institutions is full of dangers, uncertainties and simple questions like "What am I going to eat tonight?"

It's very complicated to answer.

Security questions are scary when you don't have a security system.

Will an argument with my next-door neighbor escalate into a violent event that could end my life or that of my family?

Health concerns in the absence of a healthcare system are also frightening.

I listened as many families had to answer questions like, "My baby has a fever. What should I do?"

"My sister is pregnant and bleeding. What should I do?"

Who should I turn to? ”

"Where's the doctor, where's the nurse?

If found, can the person be trusted?

How do I pay? In what currency?"

"If I need medicine, where can I find it?

If I am taking the drug, is it really counterfeit? ”

And endlessly.

A major theme, a major feature of life in these environments, therefore, is the incredible vulnerability that people have to deal with on a daily basis due to the lack of social systems.

And indeed, this feature of life has proven incredibly difficult to explain and understand to people living outside of it.

I discovered this when I left Kosovo.

I returned to Boston to become a doctor and researcher in global public health policy.

I joined the Global Health Division at Harvard Medical School and Brigham and Women's Hospital.

And as a researcher, I really wanted to start working on this problem right now.

I thought, 'How can we mitigate the overwhelming vulnerability of people living in such a fragile environment?'

Couldn't we start thinking about how we can protect and quickly recover vital institutions like our health system?"

And I have to say I had great colleagues.

But the interesting thing is that this was kind of an unusual question for them.

They were like, "Does working in war mean working in refugee camps and working to document mass atrocities?" -- By the way, this is very, very, very important.

So it took me some time to explain why I was so passionate about this subject until about six years ago.

That's when this groundbreaking study came out, examining and describing the public health impact of war.

They came to an incredibly provocative conclusion.

These researchers concluded that the majority of war deaths and disabilities occur after conflict ends.

Therefore, the most dangerous time for people living in conflict-affected countries is after hostilities cease. This was after the peace agreement was signed.

When that political solution has been achieved.

It seems very cryptic, but of course it's not. Because war kills people by robbing clinics, hospitals and supply chains.

Their doctors are targeted and killed. they are on the run.

And more invisible and even deadlier is the destruction of health governance institutions and their finances.

So this is not at all surprising to me.

What is surprising and somewhat disappointing, however, is how little impact this insight has had on how we think about human suffering and war.

Here are some examples.

You may remember that Ebola hemorrhagic fever hit the West African country of Liberia last year.

There have been many reports about this group, Doctors Without Borders, sounding the alarm and asking for help and assistance.

However, much of the coverage did not answer the question, "Why is Doctors Without Borders in Liberia?"

Doctors Without Borders is an amazing organization dedicated to providing emergency medical care in conflict zones.

Liberia's civil war ended in 2003, 11 years before the Ebola outbreak.

When Ebola hit Liberia, there were fewer than 50 doctors across the country of 4.5 million people.

Médecins Sans Frontières is in Liberia because, 11 years later, Liberia still does not have a functioning health system.

When the earthquake hit Haiti in 2010, the outpouring of international aid was staggering.

But did you know that only 2 percent of that money went to rebuilding Haiti's public institutions, including the health sector?

From that perspective, Haitians are still dying in earthquakes.

I met this gentleman recently.

I'm Dr. Nezar Ismet.

He is the Minister of Health for the Northern Kurdistan Autonomous Region of Iraq.

Here he announces that the population of his country, his region, has increased from 4 million to 5 million in the last 9 months.

This is a 25% increase.

Thousands of these newly arrived people are going through incredible trauma.

His doctors are unpaid and work 16 hours a day.

His budget hasn't increased by 25%. That amount fell by 20 percent as funds flowed to security concerns and short-term relief efforts.

When his health sector collapses, and if history is any guide, which it will, what effect do you think it will have on the decisions of the five million people in his area who consider whether or not to escape such fragile living conditions?

As you can see, this is a frustrating topic for me, and I'm really trying to understand: Why are we so reluctant to protect and support Indigenous health and security systems?

I usually layer two concerns and two arguments.

The first concern is about corruption, that people in this environment are corrupt and unreliable.

And I will admit that I have encountered unpleasant people working in the medical sector in this situation.

But in every case I have worked with, from Afghanistan to Libya to Kosovo to Haiti to Liberia, the exact opposite is absolutely true. I have met inspiring people who risked everything to save their healthcare system when their country's healthcare costs were in crisis.

The trick for outsiders who want to help is identifying who the person is and building a path for them to lead.

That's exactly what happened in Afghanistan.

One of the lesser known successes of Afghanistan's nation-building efforts was the World Bank's significant investment in 2002 in identifying, training and promoting Afghanistan's health leaders.

These health leaders have achieved incredible feats in Afghanistan.

They have aggressively increased access to health care for the majority of the population.

The health of Afghans, once among the worst in the world, is improving rapidly.

In fact, the Afghan Ministry of Health is doing what I want America to do.

They use data and more to make policy.

It's unbelievable.

(Laughter) Another concern I hear a lot is, 'We can't afford it, we just don't have the money.

It's just unsustainable. ”

My point is that the current situation and the current system we have is the most expensive and inefficient system we can think of.

The current situation is that governments like the United States, or the collective body of governments that make up the European Commission, spend $15 billion annually worldwide on humanitarian and emergency disaster relief alone.

It's not foreign aid, it's just disaster relief.

Ninety-five percent of it goes to international relief agencies, where resources have to be imported into these regions, for example to put together some sort of temporary medical system, to be dismantled and sent back when the funds run out.

So our job is very clear.

As experts in global health community policy, our first job is to become experts in how to monitor health system strengths and vulnerabilities in threatened situations.

And that is the emergency when we see doctors fleeing, when we see medical resources deplete, when we see institutions crumbling.

That's when we need to sound the alarm and wave our arms.

OK？

not now.

Everyone knows it's an emergency, so we don't have to tell them.

Second, places like the one I work at at Harvard need to take cues from the World Bank's experience in Afghanistan and build robust platforms to support health leaders like this, and will continue to build.

These people are putting their lives at risk.

I think we can give some support to their bravery too.

Third: We need to reach out and forge new partnerships.

Our Global Health Center has launched a new initiative to work with NATO and other security policymakers to explore together what we can do to protect health system institutions during deployment.

We want them to understand that protecting health systems and other vital social institutions is an integral part of their mission.

It's not just about avoiding collateral damage. It is to win peace.

But the most important partners we need to engage with are you, the American people, and indeed the people of the world.

Because without understanding the value of social institutions, such as the health care system, in these fragile environments, we cannot support efforts to save them.

You wouldn't click on an article that said, "Hey, those doctors are all on the run in country X."

what does that mean?

I wonder what that means for the health system's ability to detect, say, the flu. ”

"Well, maybe not." That's what I want to tell you.

I have three of my favorite USA international defenders and builders on screen.

This is George C. Marshall. He was the one who put forward the Marshall Plan to save all European economies after World War II.

And this Eleanor Roosevelt.

Her human rights work is truly the cornerstone of all international human rights organizations.

My favorite is Ben Franklin. He did a lot in terms of creating the institution, but he was the midwife of our Constitution.

And I want to tell you that they are the people who didn't back down when our country was threatened, or when our world was threatened.

They didn't talk about building walls.

They discussed building institutions to protect human security for their generation and ours.

And I think our generation should do the same.

thank you.

(applause)

As a child, I was a typical nerd.

I'm sure some of you were like that too.

(Laughter.) And you laughed the loudest, and you probably still do.

(Laughter) I grew up in a small town on the dusty plains of north Texas, the son of a sheriff, the son of a minister.

Getting into trouble was not an option.

So I started reading calculus books for fun.

(Laughter) So did you.

That led me to build lasers, computers, model rockets, which led me to make rocket fuel in my bedroom.

Now, in scientific terms, this is called a very bad idea.

(Laughter) Around the same time, Stanley Kubrick's 2001: A Space Odyssey hit theaters and my life changed forever.

I loved everything about that movie, especially HAL 9000.

Well, HAL was a sentient computer designed to guide the Discovery spacecraft from Earth to Jupiter.

HAL was also a flawed character who ultimately chose to value mission over human life.

Now, HAL was a fictional character, but he still speaks to our fears, our fears of being conquered by an emotionless artificial intelligence indifferent to humanity.

I believe such concerns are unfounded.

In fact, we stand at a remarkable time in human history. By refusing to accept the limitations of our bodies and minds, we build machines of exquisite and beautiful complexity and grace that extend the human experience in ways beyond our imagination.

After a career that spanned from the Air Force Academy to the Space Force, I became a systems engineer and recently became embroiled in an engineering problem related to NASA's Mars mission.

Now, spaceflights to the moon can rely on controllers in Houston to monitor every aspect of the flight.

However, Mars is 200 times farther away, so it takes an average of 13 minutes for a signal to travel from Earth to Mars.

If there is a problem, there is not enough time.

Therefore, a reasonable engineering solution calls for mission control to be placed inside the walls of the Orion spacecraft.

Another interesting idea included in the mission profile is to place humanoid robots on the Martian surface before humans arrive on Mars, first building facilities and then serving as collaborating members of the scientific team.

Now, looking at this from an engineering perspective, it became very clear that what I needed to build was a smart, collaborative, socially intelligent artificial intelligence.

In other words, we needed to build something that looked a lot like HAL, but without the murderous tendencies.

(Laughter) Let's take a break.

Is it really possible to build such artificial intelligence?

Actually, yes.

In many ways, this is a hard engineering problem with elements of AI, not a wet ball of AI problems that require engineering.

In the words of Alan Turing, I am not interested in building sentient machines.

I'm not building a HAL.

All I want is a simple brain, an illusion of intelligence.

The art and science of computing have come a long way since HAL hit our screens. If his inventor, Dr. Chandra, were here today, he would ask us many questions.

Is it really possible to take a system of millions and millions of devices, read their data streams, predict failures and act proactively?

yes.

Can we build a system that converses with humans in natural language?

yes.

Can we build a system that recognizes objects, discerns emotions, expresses emotions, plays games, and even reads lips?

yes.

Can you build a system that sets goals, executes plans based on those goals, and learns along the way?

yes.

Can we build systems with theory of mind?

we are learning to do this.

Can we build a system with an ethical and moral foundation?

we have to learn how to do that.

So let's take a moment to accept that it's possible to build such artificial intelligence for this kind of mission and other purposes.

The next question you have to ask yourself is should you be afraid of it?

Now, with any new technology comes a certain amount of anxiety.

When we first saw the car, people lamented that families would fall apart.

When people first saw the telephone becoming ubiquitous, people worried that it would ruin all conversations between citizens.

When written language became popular, people thought we would lose our ability to remember.

While all these things are true to some extent, it is also true that these technologies have given us something that extends the human experience in some profound ways.

So let's take this a little further.

I'm not afraid to create AI like this. Because it ultimately embodies some of our values.

Consider this. Building cognitive systems is fundamentally different from building traditional, software-intensive systems of the past.

We don't program them. we teach them

To teach the system how to identify flowers, show thousands of flowers of your favorite type.

To teach the system how to play the game -- well, it does. So are you.

I like flowers come.

Teaching a system how to play a game like Go involves having it play thousands of Go games, but in the process also teaching it how to distinguish between good and bad games.

If you want to create a legal assistant with artificial intelligence, teach it the basics of law, but at the same time blend it with the sense of mercy and justice that is part of law.

In scientific terms, this is called ground truth, and that's the point. So in building these machines, we are teaching them our values.

That's why I trust artificial intelligence as much or more than a well-trained human being.

But what about rogue agents and well-funded non-governmental organizations?

I am not afraid of AI falling into the hands of a lone wolf.

Clearly we cannot protect ourselves from all random acts of violence, but the reality is that such a system requires substantial and nuanced training far beyond our individual resources.

What's more, not only is an Internet virus injected into the world at the push of a button, but suddenly the virus spreads to a million locations and laptops start exploding everywhere.

Now this kind of matter is getting bigger and will definitely appear.

Am I afraid that such artificial intelligence threatens the entire human race?

If you watch movies like 'The Matrix', 'Metropolis', 'Terminator' and dramas like 'Westworld', they all talk about this kind of horror.

In fact, philosopher Nick Bostrom, in his book Superintelligence, takes up the subject and says that superintelligence is not only dangerous, but could pose an existential threat to all of humanity.

Dr. Bostrom's basic argument is that such a system will eventually have an insatiable thirst for information, perhaps learn how to learn, and eventually find that it may have goals that run counter to human needs.

Dr. Bostrom has many followers.

He is endorsed by people like Elon Musk and Dr. Stephen Hawking.

Kudos to these brilliant minds, but I believe they are fundamentally wrong.

Well, Dr. Bostrom's argument has a lot to unravel. I don't have time to figure it all out, but think very briefly. Ultra-knowing and ultra-doing are quite different.

HAL was a threat to Discovery's crew only in so far as HAL commanded all aspects of Discovery.

Therefore, it must be accompanied by superintelligence.

It should rule our entire world.

This is Skynet, which appears in the movie "Terminator", and it has super intelligence that controls human will and controls every device in every corner of the world.

Practically speaking, it doesn't happen.

We're not building AI to control the weather, direct the tides, or command capricious chaotic humans.

Moreover, if such an artificial intelligence were to exist, it would need to compete with the human economy and thereby compete with us for resources.

And finally -- don't tell Siri -- you can always unplug it.

(Laughter) We are on an incredible co-evolutionary journey with the machine.

The people we are today are not the people we were then.

Worrying now about the rise of superintelligence is in many ways a dangerous distraction. Because the rise of computing itself brings with it many human and social problems that we still have to deal with.

How would society best be organized when the need for human labor diminished?

How can we bring understanding and education to the world and still respect our differences?

How can human lifespan be extended and improved through cognitive health care?

How can we use computing to take us to the stars?

That's what's exciting.

The opportunity to use computing to improve the human experience is within our reach here and now, and we are just getting started.

thank you very much.

(applause)

Cultural evolution is a dangerous child for any species to be unleashed on its planet.

By the time you realize what's going on, your child is a toddler and has gotten up and wreaked havoc, and it's too late to put it back together.

We humans are a Pandora species on Earth.

We were the ones who took the second replicator out of the box, and we can't push it back out of the box.

We see its impact all around us.

I think this is the view that comes from taking memes seriously.

And it gives us a new way of thinking about not only what is happening on Earth, but what is happening elsewhere in the universe.

First of all, I would like to talk about memetics and the theory of memes. Now I want to talk about how this can answer the question of who is there, if there is actually someone.

Memetics: Memetics is based on universal Darwinian principles.

Darwin had this brilliant idea.

In fact, some say it's the best idea ever thought of.

Isn't it a great idea that there may be some of the best ideas that no one has ever thought of?

Do you think it is possible?

Audience: No.

(Laughter) Susan Blackmore: Someone over there yells no.

Well, I say yes and give Darwin the prize, if any.

why?

Because the idea is so simple yet it can explain all the designs in the universe.

I think it's not just biological design, it's all design that we think of as human design.

It's all the same thing just happening.

What did Darwin say?

You may be familiar with the idea of ​​natural selection, but let me paraphrase the 1859 Origin of Species in a few sentences.

Here's what Darwin said: If the biodiversity is diverse and you can't doubt it, I've been to the Galapagos and measured things like beak and turtle shell size.

And after 100 pages.

(Laughter) And if there was a struggle for survival in which nearly all of these creatures died, and this is unquestionable, I read Malthus and calculated how long it would take elephants to cover the whole world if they were to breed indefinitely, and so on.

And after another 100 pages.

And if the very few who survive are to pass on to their descendants whatever helped them survive, then those descendants must be better adapted to the circumstances in which all this happened than their parents.

Got an idea?

If so, if so, if so.

He didn't have the concept of an algorithm at all, but that's what he explained in that book, and this is what we now know as an evolutionary algorithm.

In principle, only three things are needed: mutation, selection, and inheritance.

And as Dan Dennett says, if you have them, you have to evolve.

Alternatively, you can design out of chaos without the help of your mind.

There is a phrase in that slide that I like.

What do you think is my favorite word?

Audience: Chaos.

SB: Chaos? no what? Mind? no.

Audience: None.

SB: No, not at all.

(Laughs) If you try them all in order, hmm...?

AUDIENCE: It is mandatory.

SB: Definitely, definitely. Never, never.

This is really great.

No designers, no plans, no foresight, nothing else.

If there is something copied with variations and it is selected, the design should appear out of nowhere.

can't stop it.

"Must" is my favorite word.

Now, what does this have to do with memes?

Now, the principles here apply to anything copied with variations and selections.

We are used to thinking in terms of biology, and we think of genes this way too.

Darwin, of course, was not. He didn't know anything about genes.

He talked mainly about animals and plants, but also about the evolution and extinction of languages.

But the principle of universal Darwinism is that all diverse and selected information produces design.

This is what Richard Dawkins said in his 1976 bestseller The Selfish Gene.

The information being copied he called a replicator.

I copy it at will.

That doesn't mean it stays inside the cell for the purpose of being "copied".

However, regardless of the result, it will be copied if possible.

I don't care about the result because it's not possible and the information is just copied.

And he wanted to get away from people thinking about genes all the time, so he said, "Is there another replicator on Earth?"

Oh yes there is.

Look around. This room is enough.

All around us is another replicator still clumsily drifting in the soup of primitive cultures.

The information we copy from person to person by imitation, language, speaking, telling stories, wearing clothes, doing things.

This is the information copied in the variations and selections.

This is an ongoing design process.

He wanted a name for the new replicator.

So he adopted the Greek word "mimeme," which means something imitated.

Remember, that's the core definition: what is imitated.

And we abbreviated it as a meme simply because it turned out to be a meme that sounded good and was an effective diffusive meme.

So this idea was born.

It's important to stick to that definition.

The whole science of memetics is so vilified, misunderstood and feared.

However, many of these problems can be avoided by remembering definitions.

Memes are not equivalent to ideas.

it's not an idea. As a matter of fact, it is not equivalent to anything else.

Stick to the definition.

It is what is imitated, information that is copied from person to person.

So let's take a look at some memes.

Well, you wear your glasses around your neck in a very attractive way.

Wondering if you came up with the idea yourself or copied it from someone else?

If it's copied from someone else, it's a meme.

So, oh no, I don't see any interesting memes here.

Yes guys, did anyone bring me a funny meme?

Oh, I don't think you invented the idea of ​​earrings, earrings.

You probably went out and bought it.

There are many more in the store.

It is something that is passed down from person to person.

All the Stories We Tell -- Of course, TED is a great meme festival, a bunch of memes.

But the way to think about memes is to think about why they go viral.

These are selfish information and will be copied if possible.

But some of them are copied because they are good, true, useful, or beautiful.

Some are copied even when they are not copied.

Sometimes it is very difficult to explain why.

There is one particular interesting meme that I rather enjoy.

And to my delight, as expected, I came here to find it, and I'm sure you did too.

If you go to some nice, fancy, international hotel, take off your clothes and go to the bathroom, what do you see?

Audience: Bathroom soap.

SB: Excuse me?

Audience member: Soap.

SB: Soap, yes. What else do you see?

AUDIENCE: (inaudible) SB: Hmm, hmm.

Audience: Sink, toilet!

SB: Sinks, toilets, yes, they're all memes, they're all memes, but they're kind of useful. And then there's this.

(laughs) What is this person doing?

(Laughter) This spread all over the world.

No wonder you all found it when you arrived at the toilet here.

But this photo was taken in the restroom behind a tent at Eco Camp in the Assam jungle.

(Laughter) Who put it there? Why?

(Laughter) Some people get carried away.

(Laughter.) Some people are just lazy and make mistakes.

Some hotels are taking this opportunity to post even more memes on small stickers.

(Laughter) What the hell is this all about?

I think it's there to let you know someone has cleaned the place, but everything is lovely.

And really, all it tells you is that other people are potentially spreading germs from place to place.

(Laughter) Now think about it.

Imagine a world filled with brains and so many memes that you probably will never find a home.

All memes are about to be copied--trying, enclosed in inverted commas--so this is an abbreviation for what can be copied is copied.

They are using you and me as propaganda copy machines and we are the memetic machines.

Now, why is this important?

Why is this useful and what does it tell us?

It gives us a whole new look at human origins and what it means to be human, all the conventional theories of cultural evolution, human origins, and how humans are so different from other species.

Big brains, language, tool use, and all the other theories that explain all these things that make us unique are based on genes.

Language must have been beneficial to genes.

Tool use must have enhanced our survival, mating, etc.

As Richard Dawkins complained long ago, it always comes back to genes.

The point of memetics is to say, "No, it's not."

There are currently two replicators on this planet.

A new imitation process began the moment our ancestors began imitation, perhaps 2.5 million years ago.

Copy with variations and selections.

A new replicator has been unleashed, but it is inconceivable from the outset that the humans who unleashed this new creature will only copy what is useful, what is beautiful, what is true, and cannot copy anything else.

Their brains had the advantage of being able to copy things like lighting fires, putting out fires, and new hunting techniques, but they also inevitably copied feathers in their hair, strange clothes, and paintings on their faces.

In other words, there will be an arms race between the genes that want humans to have small, economical brains so they don't waste time copying these things, and the memes themselves, such as the sounds that humans make and copy, which have become language, to compete for bigger and bigger brains.

So, according to this theory, the big brain is driven by memes.

This is why in "Memetic Machine" I called it the memetic urge.

As memes evolve, inevitably, they drive larger brains that are better at mimicking memes.

This is why we have very particular brains that love religion, music and art.

According to this view, language is a human-adapted parasite, not something that originally existed because of genes.

And like most parasites, it is dangerous at first, but then co-evolves and adapts, and eventually we form a symbiotic relationship with this new parasite.

And from our point of view, we don't realize that was the beginning.

So this is a view of what it means to be human.

All other species on this planet are nothing more than genetic machines and cannot imitate at all or very little.

Only we are genetic machines and we are also memetic machines.

Meme took a gene machine and turned it into a memetic machine.

But that's not all.

Now we have a new kind of meme.

I've been thinking a lot about memes, so I've wondered for a long time, is there a difference between the memes we copy, the words we speak to each other, the gestures we copy, the human, and the technological things that surround us?

I've always called them all memes, but now I honestly think we need a new word for technology memes.

Let's call them techno-memes or tems.

Because the process is changing.

Perhaps 5,000 years ago we started writing.

We keep our meme storage on clay tablets, but to get a true Tem and a true Tem machine, all the variation, selection, and copying must be done outside of humans.

And we are getting there.

We have almost reached the astonishing point that such machines exist.

And indeed, in the short time I've been at TED, I've found that we're even closer than we ever thought.

In fact, now because of Tem, our brains are becoming like Teme Machines.

Our children are thriving as they learn to read, write and use machines.

We're going to have all sorts of implants and drugs that require us to be awake all the time.

We think we choose these things ourselves, but the theme forces us to do so.

So we are now on the eve of the birth of the third replicator on Earth.

Now, what else is going on in space?

Who else?

People have long wondered about this question.

We've already asked that here at TED.

In 1961 Frank Drake created the famous equation, but I think he was concentrating on the wrong thing.

This equation has been very productive.

He wanted to estimate N, the number of communicating civilizations in our galaxy. And we've included star formation rates, planetary velocities, and, importantly, intelligence.

I think that's the wrong way of thinking.

Intelligence appears everywhere and in all kinds of forms.

Human intelligence is only one kind.

But what really matters is the level of Replicator you have and the level of Replicator that feeds on the one in front of you.

So instead of thinking about intelligence, we encourage you to think about replicators.

Based on that, I proposed another kind of equation.

very simple equation.

N, same thing, how many communicative civilizations we can expect in the galaxy.

Let's start with the number of planets in our galaxy.

Part of what gets the first replicator.

Part of what gets the second replicator.

Part of what gets the third replicator.

Because it's only the third replicator that reaches out to send information, send probes, get out there, and communicate elsewhere.

OK, so why is nobody contacting me when I take this equation?

Because every step is dangerous.

Getting a new replicator is risky.

You can get through, we got through, but it's dangerous.

Let's take the first step as soon as life is born on this earth.

We may take a Gaian view.

I really liked Peter Ward's talk yesterday. It's not always about Gaian.

In fact, life forms produce things that kill themselves.

Well, we've done it on this planet.

But much later, billions of years later, we have a second replicator, the meme.

It was dangerous, okay.

Think big brains.

How many mothers are there here?

You know a lot about big brains.

They are dangerous to give birth and suffer to give birth.

(Laughs) My cat gave birth to 4 kittens while purring all the time.

Oh, well, it's a little different.

(Laughter.) But it's not only painful, it kills a lot of babies and mothers, and it's very expensive to produce.

The genes are forced to produce all this myelin, all the fat to myelinate the brain.

Did you know that your brain sitting here uses about 20 percent of your body's energy output for 2 percent of your body weight?

It's a very expensive organ to run.

why? Because it creates memes.

Now it could have killed us. It could have killed us, and maybe nearly killed us, but you know, we don't know.

But perhaps it almost came true.

Have you tried before?

What about other species?

Louise Leakey spoke yesterday about us being the only ones left in this chapter.

what happened to the others?

Could it be that this imitation experiment, this experiment in the second replicator, is lethal?

Well, we managed to get over it and adapt.

But now, as I explained earlier, we've reached the third replicator point.

And this is even more dangerous - well, it's also dangerous.

why? Because Tem is a selfish duplicator who doesn't care about us or our planet or anything else.

They are just information, so why would you do that?

They are using us to suck up the resources of the planet to produce more computers and all the amazing things we hear about here at TED.

Don't think, "Oh, we built the Internet for our own benefit."

It looks like that to us.

Think about it, Tem spreads because it has to.

We are old machines.

Well, do you get it done?

what will happen?

What does get over mean?

Well, there are two ways to get over it.

One of the things that's clearly happening around us now is that the Tems are turning us into Tem-Machines through implants, drugs, and merging with technology.

And why would they do that?

Because we are self-replicating.

we have a baby

We make new things, so it's convenient to piggyback on them. Because we are not yet at a stage where other options are viable on this planet.

From what I heard this morning, it's close, but it's closer than you think.

A place where Tememachine itself replicates itself.

That way, even if the Earth's climate were to become completely unstable and uninhabitable, it wouldn't matter.

Because they don't need those tem machines. They are not squishy, ​​wet, oxygen-breathing creatures that need warmth.

They were able to continue their activities without us.

So there are these two possibilities.

Second, I don't think we are that close.

It's getting closer, but we're not there yet.

First, it comes too.

But the damage already done to Earth shows how dangerous that third point, that third danger point, is to get the third Replicator.

And can we get through this third danger point the way we got through the second, and the way we got through the first crisis?

It may or may not.

I have no idea.

(Applause) Chris Anderson: Great talk.

SB: Thank you. I scared myself.

CA: (laughs)

Hello, I'm an engineer making robots.

Now, of course you all know what a robot is, right?

If not, you'll probably go to Google and ask them what a robot is.

So let's do it.

Go to Google and you'll get this.

Now, you can see that there are many different types of robots here, but they mostly have a humanoid structure.

And they look pretty traditional, with plastic, metal, motors and gears, etc.

Some of them seem so friendly that you can even get close and hug them.

Some of them aren't very friendly and look like they're straight out of "The Terminator." In fact, it may have just come straight out of The Terminator.

You can do a lot of really cool things with these robots. It can be really exciting.

But I want to see different kinds of robots and I want to build different kinds of robots.

And we are inspired by things that are similar to us but not similar to us.

So these are natural biological organisms that do really amazing things that we can't do, and neither do modern robots.

They do all sorts of amazing things like move around on the floor. They enter our gardens and eat our crops. they climb trees. They go into the water and come out of it. It catches and digests insects.

So they do really interesting things.

They live, breathe, die, and eat things from their environment.

Modern robots don't actually do that.

Now, wouldn't it be great if future robots could use some of these properties to solve really interesting problems?

We will look at some problems in the environment that can be solved using skills and technologies derived from these animals and plants.

Let's look at two environmental problems.

They're both made by us - this is humans interacting with the environment and doing some pretty nasty things.

The first concerns demographic pressures.

Agriculture and agriculture have to produce more and more crops because the pressure of populations around the world is so great.

Well, to do that, farmers put more and more chemicals into the land.

They throw in all sorts of substances that encourage crop growth, such as fertilizers, nitrates, and pesticides, but they also have some negative effects.

One of the negative effects is that even if the land is heavily fertilized, the crop will not be able to carry all of it.

Much of it remains in the soil, and when it rains, these chemicals wash into the water table.

And on the water table, it flows into streams, lakes, rivers, and the ocean.

Now, when you put all these chemicals and nitrates in that kind of environment, there are organisms in that environment that are affected by it, say algae.

Algae love nitrates and fertilizers, so they take all of these chemicals and, given the right conditions, produce them in large quantities.

Generates a large amount of new algae.

We call it flowering.

The problem is that algae grow in this way and deplete the water of oxygen.

When that happens, other creatures in the water can no longer survive.

What should I do?

We are trying to develop a robot that eats and consumes algae and makes it safe.

That's the first problem.

The second problem, which we also caused, has to do with oil pollution.

Well, oil comes out of the engines and boats we use.

Oil is released into the sea that way, as tankers sometimes flush their oil tanks into the sea.

Wouldn't it be great if we could somehow address this problem with robots that could eat the pollution that oil fields produce?

that's what we do.

We are building robots that eat pollution.

To actually build a robot, we take inspiration from two living things.

You can see the basking shark on the right.

The basking shark is a giant shark.

They are non-carnivorous, so as you can see, they can swim together.

And basking sharks swim through the water with their mouths open, collecting plankton.

In doing so, it digests the food and uses that energy in the body to keep moving.

So could we build such a robot, like a water-drinking basking shark that eats up pollution?

Well, let's see if we can do it.

But we also take inspiration from other living things.

Here is a picture of the water boatman, and the water boatman is really cute.

When swimming through water, they use their paddle-like legs to propel themselves forward.

So we take these two creatures and combine them to create a new kind of robot.

In fact, we're inspired by water boatmen and call it a "Row-bot" because the robot sits on the water and paddles.

A Row-bot is therefore a rowing robot.

OK. So what would it look like?

Here are some pictures of the Row-bot, but you'll notice that it doesn't look like the first robot you saw.

Google is wrong. Robots don't look like that, they look like this.

That's why we brought Row-bot here.

I'll stick with it for the time being.

It has a sense of scale and is unlike any other.

OK, it's made of plastic. Now let's take a look at the components that make up Row-bot, what really makes it special.

A Row-bot consists of three parts, and these three parts are actually similar to the parts of an organism.

It has a brain, a body, and a stomach.

You need your stomach to create energy.

Every Row-bot has these three components, and every creature has these three components, so let's look at them one at a time.

It has a body, that body is made of plastic and sits on water.

And the sides here have flippers, paddles to help you move, like a water boatman.

It has a plastic body, but it has a soft rubber mouth here, a mouth here, and two mouths.

Why does it have two mouths?

One is to put the food inside and the other is to put the food out.

So you can see that there is actually a mouth and a derriere, or (laughs) a part where something comes out. It looks exactly like a real creature.

It looks like a basking shark.

So that's the body.

A second component may be the stomach.

The robot needs to be energized, and the pollution needs to be dealt with, so when the pollution gets in, the robot is going to do something.

In the middle here is a cell called a microbial fuel cell.

Lower this to lift the fuel cell.

here. That means it has one of these onboard instead of a battery or traditional power system.

This is its belly.

And it's really the stomach, because you can put energy into this side in the form of pollution and it can produce electricity.

So what is it?

It's called a microbial fuel cell.

It's a bit like the chemical fuel cells you've met in school and seen in the news.

Chemical fuel cells can take hydrogen and oxygen and combine them to produce electricity.

It's a well-established technology. It was on the Apollo space mission.

It's about 40, 50 years ago.

This is a little new.

This is a microbial fuel cell.

This is the same principle. On one side there is oxygen, but on the other side, instead of hydrogen, there is soup, and in that soup are living micro-organisms.

Now, you put organic matter (waste, food, sandwich pieces, etc.) in there, and microbes eat that food and turn it into electricity.

Not only that, microbial fuel cells can also be used to treat some of the pollution if you choose the right type of microbe.

If you choose the right microbes, they will feed on algae.

Using other types of microbes will feed on petroleum spirits and crude oil.

So we see how this stomach can be used not only to process pollution, but also to generate electricity from it.

So the robot moves through the environment, takes food into its stomach, digests the food, generates electricity, uses that electricity to move through the environment, and so on.

Now let's see what happens when we run Row-bot. It's time to row the boat.

Here are some videos. The first thing you see is the open mouth.

The front mouth and the bottom mouth are open, and you can row forward with them fully open.

As it moves through the water, food enters at the same time as waste is expelled.

When it has moved enough, it stops and closes its mouth - slowly closing its mouth - and then sits there to digest the food.

Of course, these microbial fuel cells contain microorganisms.

What we really want is to get a lot of energy out of the microbes as quickly as possible.

However, it cannot be forced into microbes, which generate a small amount of electricity every second.

Generate milliwatts or microwatts.

Let's put that into context.

For example, a modern cell phone consumes about 1 watt of power.

That means using 1,000 or 1 million times more energy compared to microbial fuel cells.

How do we deal with that?

Now, when the Row-bot finishes digesting and takes in the food, it sits there waiting for it to consume all the food.

That could take hours, or it could take days.

A typical row-bot cycle looks like this: Open your mouth, move, close your mouth, sit there for a while and wait.

After digesting the food, you can repeat the process again.

But it looks like a real creature, right?

It seems like that's what we're doing.

Saturday night we go outside, open our mouths, fill our bellies and sit in front of the TV to digest.

When you get bored, repeat the same thing again.

If this cycle is lucky, at the end of the cycle you will have enough energy left to do something else.

For example, you can send a message.

You can send a message saying, "Here's how much contaminant I've eaten recently," "This is what I've encountered," or "Here's where I am."

The ability to send the message, "This is where I am," is really, really important.

Given the oil slicks and massive algal blooms we've seen before, what you really want to do is put a Row-bot in there and eat up all those contaminants before you have to salvage them.

why?

Because these Row bots at the moment, this Row bot I have here contain motors, contain wires, contain components that are not biodegradable per se.

Current Robots contain what looks like poisonous batteries.

These cannot be left in the environment and must be tracked and collected after the job is done.

This limits the number of Row-bots that can be used.

On the other hand, if robots are a bit like living things, they will die and become nothing at the end of their lives.

Wouldn't it be great if these robots weren't made out of plastic like this, but some other material that biodegrades to nothing if thrown out?

It will change the way robots are used.

Instead of having to put 10 or 100 robots into the environment, track them, and retrieve them when they die, you can put 1,000, 1,000,000, 100,000,000 robots into the environment.

Please spread it around.

They know that at the end of their lives they will be nothing.

Don't worry.

This will change the way we think about and deploy robots.

So the question is, "Can you do this?"

Yes, we have shown that this can be done.

You can make a biodegradable robot.

What's really interesting is that you can build a biodegradable robot using materials you have at home.

I'll show you a few. You might be surprised.

You can make a robot out of jelly.

Instead of motors like we have today, we can create what we call artificial muscles.

Artificial muscles are smart materials that contract, bend and twist when electricity is applied.

It looks like real muscle.

In other words, artificial muscles are installed instead of motors.

Artificial muscles can also be made from jelly.

You can make an artificial muscle by preparing some jelly and salt and moving it around a bit.

We also showed that the stomach of the microbial fuel cell can be made out of paper.

In other words, the entire robot can be made from biodegradable materials.

If you throw them there, they degrade to nothing.

So yeah, this is really, really exciting.

Not only will this completely change the way we think about robots, but it will also allow us to be very creative in thinking about what we can do with them.

Let's take an example.

If you could make a robot out of jelly -- we're eating jelly right now, right?

So why not try making something like this?

Robot gummy bears.

Well, here are some of the things I prepared earlier.

Let's go. I have a packet - and I have the lemon flavored one.

I'll take this gummy bear -- he's not a robot, okay?

we have to pretend

And when you put one of these in your mouth, the lemon tastes so good.

Since it is a robot, please do not bite too much. You may hate it.

and swallow it.

Then it goes into the stomach.

And when it's in the belly, it moves, thinks, twists, bends, does things.

They may go further into the intestine to check for ulcers or cancer, and may give injections.

As you know, ingredients that have done their job can be consumed in the stomach, and if you don't want it, they can flow straight through your body into the toilet where they can be safely broken down in the environment.

This will change the way we think about robots again.

So we're starting with robots that eat pollutants, then robots that can eat humans.

I hope this article has given you a little insight into what future robots can do.

Thank you for your attention.

(applause)

What if I told you that there is a race in time, that races in America compete in the modern way we understand them?

Usually we talk about race in terms of being black or white.

In my African-American community, there's been a long-standing, multi-generational joke about what's called "CP time" or "time for people of color."

We no longer refer to African Americans as “people of color,” but the age-old joke persists about being late to church, dinners, family functions, and even our own funerals.

Personally, I'm the type of person who sticks to time.

When I was a kid, I feel like my mom used to say, 'We're not going to be that black man.

So we usually arrive at the event 30 minutes early.

But today I want to talk more about the political nature of time. Because if there was a race for time, it would be white people.

White people have their own time.

I get it.

Making such "inflammatory remarks" makes us feel uncomfortable. Are we past the point where race really matters?

Isn't race an overbearing concept?

Shouldn't we move forward with our enlightened, progressive selves and relegate useless concepts like race to the dustbin of history?

How can we get over racism if we keep talking about race?

Perhaps we should trap the concept of race in a time capsule, bury it and dig it up a thousand years later, staring at them with a decidedly more enlightened, racial-less version of us who belongs to the future.

But the desire to mitigate the effects of race and racism is manifested in the way we try to manage our time, the way we tell history, the way we try to push the negative truths of the present into the past, the way we try to claim that the future we want is the present we are living now.

Well, when Barack Obama became President of the United States in 2008, many Americans declared that we were over racism.

I come from an academy obsessed with everything post.

We are postmodern, we are poststructural, we are postfeminist.

"Post" has become a simple academic adjunct that we apply to various terms to show how we have been.

But prefixes alone do not have the power to make race and racism obsolete.

America was never "pre-competitive."

So it would be disingenuous to claim that we have solved the race problem when we have not yet addressed the impact of race on Blacks, Latinos and Indigenous peoples.

Just as we were getting ready to celebrate our post-racist future, our political landscape became the most racist in the last 50 years.

So today I want to offer three perspectives on the past, present and future of time as it relates to the fight against racism and white supremacy.

First, the past.

Time has history, and so do black people.

But we treat time as if it were timeless, as if it always was, or as if it had no political history linked to the looting of indigenous lands, the genocide of indigenous peoples, the theft of Africans from their homelands, and so on.

When European white male philosophers first tried to conceptualize time and history, one famously declared that "[Africa] is not a historical part of the world."

He was essentially saying that Africans were people outside history who had no influence on the march of time or progress.

This idea that black people have had no impact on history is one of the basic ideas of white supremacy.

That's why Carter G. Woodson founded "Negro History Week" in 1926.

That's why we continue to celebrate Black History Month every February in the United States.

Now, we also see this idea that black people are alternately outside the boundaries of time or trapped in the past. Just like I'm doing now, one black man stands up and claims that racism is still a problem, and someone who is usually white tells them: "Why are you trapped in the past?"

Why can't I move on?

We have a black president.

We are past all that. ”

William Faulkner famously said, "The past never dies.

Nor is it the past. ”

But my good friend Professor Christy Dotson says, "Our memory is longer than our lifespan."

We all carry the hopes and dreams of our families and communities.

We cannot afford to let go of the past.

But sometimes our political situation becomes so worrying that we don't know if we're living in the past or in the present.

For example, when Black Lives Matter demonstrators go out to protest the unjust killing of black citizens by police, the photos emerging from the protests look as if they were taken 50 years ago.

The past won't let us go.

Still, let's push forward.

I would argue that the racial conflict we are experiencing today is a clash that transcends time and space.

what do you mean?

Well, we already said that white people have their own time.

Those in power decide the pace of work for the day.

They decide how much our time is really worth.

And Professor George Lipschitz argues that whiteness drives the pace of social inclusion.

They decide how long it will really take for minority groups to earn the rights they have been fighting for.

Let's take a quick step back in time and give an example.

Think about the civil rights movement and its leaders' cries of "freedom now," and they challenged the slow pace of white social inclusion.

By 1965, when the Voting Rights Act was passed, there was a full 100 years between the end of the Civil War and the granting of voting rights to the African-American community.

Despite the urgency of the war, it was still a full hundred years before real social inclusion occurred.

Since 2012, conservative state legislatures across the country have stepped up efforts to roll back voting rights for African Americans by passing restrictive voter ID laws and curtailing early voting opportunities.

In July of this year, a federal court overruled North Carolina's voter ID law as "...targeting African Americans with surgical precision."

Limiting African-American participation in politics is the primary way we try to manage and control people by managing and controlling our time.

But another place to see this collision of space-time is in the gentrified cities of Atlanta, Brooklyn, Philadelphia, New Orleans, Washington DC, where blacks have lived for generations.

But now, in the name of urban regeneration and development, these communities are being displaced to bring them into the 21st century.

Professor Sharon Holland asked: "What happens when a human being in time meets a human being who occupies only space?"

These racial struggles are fought over those who are seen as the takers of the universe and those who are seen as the creators of the world.

Those who control the course and momentum of history are considered creators of the world who own and rule time.

In other words, white people.

But when Hegel famously said, "Africa is not part of the history of the world," he implied that Africa was merely a gigantic landmass occupying space at the bottom of the earth.

Africans were space takers.

So today, while whites continue to control the course and momentum of history, they too often treat blacks as if they occupy a space to which we have no right.

The march of time and progress is being used to justify a staggering degree of violence against our most vulnerable people, who are seen as cosmic usurpers rather than creators of the world and driven from where they live to usher them into the 21st century.

The shortening of lifespans by zip code is just one example of the unjust blending of time and space in black lives.

A child born in the 93 percent white New Orleans zip code 70124 can expect to live a full 25 years longer than a child born in the 60 percent black New Orleans zip code 70112.

Children born in the affluent Maryland suburbs of Washington, DC can expect to live a full 20 years longer than those born in the downtown area.

Ta-Nehisi Coates argues that "the defining characteristic of drafting into the black race is the inevitable usurpation of time."

We experience time discrimination as personal, not structural, he says. It's lost moments of joy, lost moments of connection, lost quality time with loved ones, and years of healthy quality of life.

Will there be black people in the future?

Do black people have a future?

What if you belong to the very race that has always been in a race against time?

What if your group was a group whose future was never envisioned?

These timeless clashes between protesters and police, gentrifiers and residents do not paint a very good picture of what America wants for the future of black people.

If present is any indicator, children will be under-educated, health hazards will take a toll, and housing will continue to be tight.

So if we're really ready to talk about the future, perhaps we should start by acknowledging that we don't have time.

We black people are always short on time.

Time is not ours.

Our life is a life of constant urgency.

Time is used to drive us out, or conversely, we are driven to complacency by endless calls to just be patient.

But if the past is the prologue, let us now use the method of always running out of time to urgently demand freedom.

We believe the future is what we create.

But first, we must decide that time belongs to all of us.

No, we are not all given equal time, but we can judge the time we are given to be fair and free.

We can stop your zip code from being the main determinant of your lifespan.

We can stop stealing learning time from black children through excessive suspensions and expulsions.

Long term imprisonment for nonviolent crimes can stop stealing time from black people.

Police can stop stealing time and black lives through excessive use of force.

We believe the future is what we create.

But neither colored people's time nor white's time nor your time nor my time will get there.

Now it's our time.

ours.

thank you.

(applause)

Three years ago, I started building a decentralized web because I was worried about the future of the Internet.

The internet we use today acts as a gatekeeper.

If you want to access anything on the web, you have to go through multiple middlemen.

First, go to your domain name servers, then your server hosting company (usually a third-party, web hosting service).

This happens every time you visit a website on the web.

However, these gatekeepers are vulnerable to internet attacks and also facilitate censorship and surveillance.

And the situation is only getting worse.

Everything is moving to the cloud and data is hosted by giant corporations.

The move creates a much more powerful intermediary.

Moving to the cloud now makes sense because it's easier and cheaper for developers and service operators.

No need to worry about physical server maintenance.

I can't blame them, but I found this trend very dangerous. Because this way these giants have unlimited control over their hosting services.

And it is very easy to abuse this power.

For example, last year, the CEO of a company that acts as a gatekeeper for nine million websites decided, under public pressure, to block one of the sites it controls: the far-right page.

He then sent an internal email to his colleague.

"This was an arbitrary decision.

I woke up this morning in a bad mood and decided to kick them off the internet. ”

He himself admits that "no one should have this power."

In response, one of our employees asked, "Is today the day the Internet dies?"

I don't think we're actually killing the internet, but I think we're in the middle of some sort of irresponsible centralization process that makes it more vulnerable.

The distributed human-to-human web solves this problem by removing the central web hosting service.

This allows users to have hosted sites that they want to save.

In this network, sites are downloaded directly from other visitors.

So if you have a site with 100 visitors, that site is hosted on 100 computers around the world.

Essentially, this is the human-powered version of the internet.

Network security is provided by public key cryptography.

This ensures that only the actual owner can modify the site.

Instead of getting your electricity from a big power plant, think of it as having solar panels on the roof of your house so that if the person next to you on the street needs additional energy, they can download power from your house.

Therefore, by using the decentralized web, you can make your content accessible to other visitors.

And that means you can fight against things that feel unjust like censorship.

The Internet is strictly controlled in China.

You can't criticize the government or organize protests, and you can't post things like emojis commemorating Tiananmen victims.

On the decentralized web, governments don't decide what can and cannot be seen.

It's people that make the web more democratic.

But at the same time, users probably don't want to endanger themselves by hosting this kind of problematic content, so it's hard to do anything obviously illegal anywhere in the world using this network.

Another growing threat to Internet freedom is overregulation.

I get the impression that our delegates who vote for internet regulation laws are not fully aware of their decisions.

For example, the European Parliament is considering a new law, a new copyright law, and it has a part called Article 13.

If passed, the bill would require all major websites to implement filters that automatically block content based on rules controlled by the big companies.

While the original idea is to protect copyrighted material, it jeopardizes many other things we do on the internet: blogging, criticizing, discussing, linking and sharing.

Google and YouTube already have similar systems in place, receiving 100,000 takedown requests per hour.

Of course, we can't process this amount of data manually, so we use machine learning to determine if it's really a piracy.

But these filters make mistakes.

They're removing documents about human rights violations, lectures about copyright, and everything from search results that show criticism of this new Article 13.

Besides that, they are removing many other things as well.

And in some cases, these filters not only remove certain content, but can also lead to the loss of linked accounts: e-mail addresses, documents, photos, unfinished books, as happened in the case of author Dennis Cooper.

It's not hard to see how such a system could be abused by politicians and competitors.

This Article 13, the extension of these automatic filters to the entire Internet, was strongly opposed by Wikipedia, Github, Mozilla, and many others, including the original founders of the Internet and the World Wide Web, Vint Cerf and Tim Berners-Lee.

However, despite this strong opposition, two-thirds of MPs supported the law in the last European Parliament vote.

A final vote is expected in early 2019.

Results are important, but no matter what happens, there will undoubtedly be many similar proposals around the world.

Without a hosting company, it would be very difficult to enforce this kind of regulation through the decentralized web.

The website is served by the visitors themselves.

I started building this network three years ago.

Since then, I have put thousands and tens of thousands of hours into development.

why?

Why spend thousands of hours on something that anyone can freely copy, rename, or even sell?

For me, one of the reasons was that I wanted to do something meaningful.

During my normal day-to-day work as a web developer, I never had the feeling that I was working on something that could be bigger than myself.

Simply, I wanted to make sense of my brief existence in this world.

Last year, China's Great Firewall started blocking this network I created.

The move officially made me an enemy of government-backed internet censorship.

Since then, it's really been a cat-and-mouse game.

They create a new rule in their firewall. I am trying to address it as soon as possible so that users can continue to host content and create websites that may be censored by the centralized Chinese Internet.

Another motivation for creating this network was concern.

I fear that the future of our Internet is out of our control.

The increasing centralization and proposed laws threaten our freedom of speech, and thereby our democracy.

So for me, building a decentralized web means creating a safe harbor, a space where the rules are written by the people, not by big corporations or political parties.

thank you.

(applause)

You are chasing a werewolf that is terrorizing your town.

After months of detective work, you've narrowed it down to one of five suspects: the mayor, the tailor, the baker, the grocer, and the carpenter.

You invited them to dinner with a simple plan. The trick is to slip a rare werewolf antidote into their dinner squares.

Unfortunately, my pet goat ate four of the squares, so I only have one left.

Luckily, the remaining squares are 50 grams and the minimum effective dose is 10 grams.

If you can divide the square exactly into 5 halves, you'll have just enough antidote for everyone.

You will need to use a laser cutting tool to cut out the squares. None of the other means available are accurate.

There are 8 points that can act as start or end points for each cut.

To use this device, you must enter pairs of points that tell the laser where each cut begins and ends. The laser then makes all the cuts simultaneously.

As long as it is collected in units of 10 grams, you can cut it into squares as many times as you like.

However, the square cannot be folded or deformed, and using the laser cutter only succeeds once.

Full moon is rising. Soon someone will transform and tear you all apart, unless you can cure them first.

How can you split the antidote perfectly into 5 equal parts, cure the secret werewolf, and save everyone?

Pause the video now if you want to figure it out for yourself.

Answer with 3 Answer with 2 Answer with 1 For puzzles that involve cutting and rearranging, it is often helpful to actually cut the paper and see what you get.

Cutting BF and DH would get us 4th, but we need 5th.

Maybe there's a way to shave off a quarter to be exactly a fifth.

Cutting the BE looks fine at first, but the final cut cuts it by a quarter, leaving the rest to 3/16. This is slightly less than 1/5 and not enough to cure a werewolf.

What if we started with BE instead?

That way you get a quarter.

Also, is there a way to remove some hair?

Both DG and CH look promising.

Another cut from A to F might reveal something.

The four cuts B to E, D to G, F to A, H to C result in four triangles and one square in the middle.

However, you can also rearrange the pieces that make up each triangle to create a square that is identical to the central one.

This means we split the antidote into perfect fifths.

The interesting thing about this kind of problem is that while it's possible to start with the geometry and solve it, it's actually easier to start experimenting and see where you get there.

For example, with 24 cut points in a square, this is not very viable, but with only 8, there are a limited number of reasonable choices.

As the full moon rises in the sky, you secretly administer drugs to each and every citizen in town.

And just as you do, a terrifying transformation begins.

And then suddenly it reverses as well.

Your measurements were perfect, so the townspeople and animals can rest in a little peace.

We spent a lot of time learning spelling at school.

Children still lose a lot of time at school because of spelling.

So I want to ask you guys, do we need new spelling rules?

Yes, I think so.

Alternatively, I think you should simplify what you already have.

Neither the questions nor the answers are new in Spanish.

Since 1492, when Antonio de Nebrija set out clear and simple principles of spelling in the first grammatical guide to the Spanish language, it has continued to move from century to century. "...so you have to write the word as you pronounce it, and pronounce it as you write it."

Each sound had to correspond to one letter, each letter represented one sound, and those not representing sounds had to be removed.

This approach, the phonetic approach of having to write words as they are pronounced, is at the root of the spelling we practice today, and it is not.

That's because Spanish has always strongly resisted writing words in ways that are too different from how we pronounce them, in contrast to English, French, etc.

But phonetic approaches also do not exist today. Because when we decided how to standardize our texts in the 18th century, there was another approach that guided most of the decisions.

It was an etymological approach, in which words had to be written according to the way they were written in their original language, Latin or Greek.

In this way, the silent "H", which is written but not pronounced, was created.

Thus, contrary to what many believe, there are B and V that were never distinguished in Spanish pronunciation.

The result is a G that can be aspirated like ``gente'' or unaspirated like ``gato''.

So we have three letters: C, S, and Z. These letters correspond to one sound in some places, two sounds in others, and three sounds nowhere.

I'm not here to teach you what you don't know from your own experience.

We all went to school, spent a ton of time learning, with a few exceptions, and a huge amount of flexible, childlike brain time dictating and memorizing spelling rules.

We have been taught in many ways, implicitly or explicitly, in spelling, that something fundamental to our upbringing is at stake.

But I feel that teachers may not have asked themselves why it is so important.

In fact, they didn't ask themselves the earlier question, "What is the purpose of spelling?"

What do you need to spell?

And the truth is that when someone asks themselves this question, the answer is much simpler and less important than we usually believe.

Using spelling to standardize your writing style ensures that everyone writes in the same way and makes it easier to understand when reading to each other.

However, unlike other aspects of language such as punctuation, spelling does not involve separate expressions.

There are punctuation marks.

Punctuation marks can change the meaning of a phrase.

Punctuation gives you a certain rhythm to what you're writing, but spelling doesn't.

As for spelling, it is either wrong or correct depending on whether it complies with the current rules.

But wouldn't it be wise, then, to simplify the current rules to make correct spelling easier to teach, learn, and use?

Wouldn't it be wiser to simplify the current rules and spend all the time we spend teaching spelling today on complex language problems that are actually worth the time and effort?

My suggestion is not to do away with spelling, but to let people write whatever they want.

Since language is a commonly used tool, we believe it is fundamental to use language according to common standards.

But I also think it's fundamental that these common standards be as simple as possible. Because, in particular, simplifying spelling does not equalize spelling. The simplification of spelling does not compromise the quality of the language at all.

I deal with Spanish Golden Age literature every day, and I read Garcilaso, Cervantes, Gongola, Quevedo, and they sometimes write "hombre" without an H, and sometimes "escribir" with a V. It is perfectly clear to me that the difference between these writings and ours is due to convention, or rather the lack of convention of their time.

But that's not the difference in quality.

But let's go back to the Masters. Because they are important characters in this story.

Earlier I mentioned this rather ill-advised claim that teachers pester us about spelling.

But the truth is, as it stands, this makes perfect sense.

In our society, spelling serves as an indicator of privilege, distinguishing the educated from the barbaric, the educated from the ignorant, regardless of what is written.

Whether you put H in or not, determines whether you get a job or not.

A person can become the subject of public ridicule because B is in the wrong position.

So, in this context, it makes sense to spend all your time spelling.

However, we should not forget that throughout the history of our language, spelling reform was always driven by teachers and those involved in early language learning, who realized that our spelling often has barriers to knowledge transfer.

For example, in our case, Sarmiento, together with Andrés Bello, spearheaded the largest spelling reform in Spanish, the Chilean Reform in the mid-nineteenth century.

So why not take over the work of those teachers and begin our spelling progress?

Now, in this intimate group of 10,000 people, I'd like to table a few changes that seem reasonable to start a discussion with.

Let's remove the silent H.

Don't write anything in places where writing the H doesn't pronounce anything.

(Applause.) It's hard for me to imagine what kind of sentimental attachment to someone could justify all the hassle caused by a silent H.

As I said before, B and V were never distinguished in Spanish -- (applause) pick one. It doesn't matter. We can discuss and discuss it.

Everyone has their own tastes and can make their own case.

Let's keep one and remove the other.

G and J, let's divide the roles.

G should remain unaspirated as in ``gato'', ``mago'' and ``águila'' and J as aspirated as in ``jarabe'', ``jirafa'', ``gente'' and ``argentino''.

The C, S, and Z cases are interesting. It has been shown that the audio approach should be a guide, but cannot be an absolute principle.

Sometimes you have to deal with pronunciation differences.

As mentioned before, C, S, and Z correspond to one note in some places and two notes in others.

We are all better off from 3 to 2 letters.

For some, these changes may seem a little drastic.

Not really.

All language schools, the Royal Spanish Academy, also believe that spelling should be corrected step by step. Language is bound up with history, traditions and customs, but at the same time it is a practical everyday tool, and our love of history, traditions and customs sometimes becomes an obstacle to our current use.

In fact, this explains the fact that our language has historically modified itself based on us more than other languages ​​with which we are geographically close. For example, ``ortographia'' to ``ortografía'', ``theatro'' to ``teatro'', ``quantidad'' to ``cantidad'', ``symbolo'' to ``símbolo''.

And part of the silent H is gradually removed. In the Royal Academy's dictionary, "arpa" and "armonía" can be written with or without the H.

And everyone is fine.

We also believe that now is a particularly appropriate time to have this discussion.

It is always said that language changes spontaneously from the bottom up, that it is the user who introduces new words or introduces grammatical changes, and that the authorities (academies in some places, dictionaries in others, ministries in others) accept it and incorporate it long after the fact.

This is only true for some levels of language.

This is true at the lexical and word level as well.

It's safe to say that this is less true at the grammatical level, and less so at the spelling level, which historically has varied top-down.

Educational institutions always set the rules and propose changes.

Why would you say this is a particularly appropriate moment?

To this day, writing has always been a much more restricted and private use than speech.

However, in the modern age of social networks, this is undergoing a revolutionary change.

Never before have people written so much. No one has ever written a piece to be seen by so many people.

And these social networks are the first to see innovative use of spelling at scale. There, even well-educated people with perfect spelling behave much like the majority of users of social networks when using social networks.

This means neglecting spell checking and prioritizing speed and efficiency in communication.

For now, we see chaotic personal usage on social networks.

But I think we need to pay attention to them, perhaps because they tell us that the times that designate new places to write call for new standards for that writing.

We perceive them as signs of modern cultural decline, so we think it would be wrong to reject or discard them.

No, we believe they need to be observed, organized and guided within guidelines that better meet the needs of the times.

Some objection can be expected.

Some would say that simplifying spelling loses etymology.

Strictly speaking, if you want to preserve etymology, you'll go beyond mere spelling.

You also have to learn Latin, Greek and Arabic.

Simplified spelling allows you to normalize the etymology in the same place as it is now: the etymology dictionary.

A second objection would come from those who say, "If we simplified the spelling, we would stop distinguishing between words that differ by a single letter."

It's true, but it doesn't matter.

Our language has homonyms, words with multiple meanings, but we don't confuse the 'banco' where we sit with the 'banco' where we deposit our money, or the 'traje' we wear with the 'trasimos'.

In most situations, context clears up confusion.

But there is a third objection.

For me it is the most understandable and even the most moving.

Those who say, "I don't want to change."

I was brought up this way and so accustomed to it that my eyes hurt when I read words written in abbreviated spelling. ”

(Laughter.) This opposition is partly in all of us.

what do you think we should do?

The same thing is always done in such cases. Changes are made with an eye to the future. Children are taught new rules, and those who don't want to adapt can write in a familiar way, hoping that over time the new rules will take hold.

The success of any spelling reform that affects deeply ingrained habits depends on caution, consensus, graduality, and tolerance.

At the same time, we cannot allow clinging to old conventions to hinder our progress.

The greatest respect we can give to the past is to improve what it has given us.

Therefore, I believe that we must come to an agreement, and that the Academy must also come to an agreement, and eliminate from the spelling rules all the customs that we practice only for the sake of tradition, even if they are now useless.

If we can do that in an unglamorous but very important area of ​​language, I believe we can leave the next generation with a better future.

(applause)

Do you remember when you were a kid and you had a favorite toy that was always with you, like Christopher Robin had Winnie the Pooh, inspiring endless adventures to your imagination?

What could be more innocent than that?

Now let me introduce my friend Kayla.

Cayla has been named Toy of the Year in countries around the world.

She connects to the Internet and uses voice recognition technology to answer your child's questions, answering them like a friend.

But the power does not lie in your child's imagination.

In reality, there is a dangerously false sense of security that companies are collecting tons of personal information while families are chatting innocently in the safety of their homes.

This incident rang alarm bells for me as it is my job to protect the rights of consumers in my country.

And with billions of devices like cars, energy meters, and even vacuum cleaners expected to be online by 2020, we thought this was a case worth investigating further.

After all, what was Kayla doing when she was learning such interesting things?

Did she have other loyal friends to share information with?

Yes, your prediction was correct. she did

To play with Cayla, you'll need to download an app to access all of her features.

Parents must agree that the terms are subject to change without notice.

Recordings of children, their friends and family members can be used for targeted advertising.

And all this information may be shared with anonymous third parties.

sufficient? Not perfect.

Anyone with a smartphone can connect to Cayla within a certain distance.

When we questioned the company that created and programmed Cayla, they released a series of statements that to break security you must be an IT expert.

How about checking the facts of that statement and live hacking Kayla together?

she came

Cayla is equipped with a Bluetooth device that can transmit up to 60 feet, less if there's a wall in between.

This means that I, or a stranger, can connect to the doll while outside the room with Kayla and her friends.

To illustrate this, turn on Cayla.

Let's see, 1, 2, 3.

There. she is on And I asked my colleague to stand outside with a smartphone. he is connected And to make this a little creepier...

(laughter) Let's see if the kids can listen to Kayla in a safe room.

Man: Hello. My name is Kayla. what is yours

Finn Milstad: Oh, Finn.

Man: Is your mother nearby?

FM: Oh no, she's at the store.

Man: Oh. Would you like to come out and play with me?

FM: That's a great idea.

Man: Oh, that's great.

FM: I'm going to turn off Kayla now.

(Laughter) I didn't have to bypass passwords or other types of security to do this.

We have published reports in 20 countries around the world, revealing this critical security flaw and many other issues.

what happened?

Kayla was banned from entering Germany, removed from shelves by Amazon and Walmart, and now rests peacefully at the German Spy Museum in Berlin.

(Laughter) But the Cayla was also sold in stores around the world for over a year after we published the report.

What we made clear was that there were very few rules to protect us and the rules were not properly enforced.

We need to ensure the security and privacy of these devices just before they hit the market. Because if someone can break into your home via a connected device, what's the point of locking it with a key?

You may think, "That would never happen to me."

But that doesn't mean it's safe. Because simply connecting to the Internet puts you in an impossible position of choosing one or the other.

let me show off

Like most of you, I have dozens of apps on my phone that, when used correctly, can make our lives easier, more convenient, and perhaps healthier.

But have we been fooled by a false sense of security?

Simply tick the box to get started.

Yes, I have read the terms.

But have you really read the terms?

Are you sure you need to use the service now because you haven't seen it for too long, your phone's battery is dead, and you didn't understand it the last time you tried it?

And now, a power imbalance has been established as we have agreed to have our personal information collected and used on a scale we cannot even imagine.

This is why my colleagues and I decided to explore this further.

We decided to read the terms of popular apps on the average mobile phone.

And to show the world how unrealistic it is to expect consumers to actually read the terms, we printed over 900 pages of the terms, read them aloud to ourselves while sitting in our office, and live-streamed the experiment on our website.

As you can see, it took quite a while.

It took 31 hours 49 minutes 11 seconds to read the terms on an average smartphone.

That's longer than a marathon of movies "Harry Potter" and "The Godfather" combined.

(Laughter.) Reading is one thing.

Understanding is another story.

It would have taken much longer.

This is a real problem because users have agreed to terms and conditions, and companies have argued for 20-30 years against increasing regulation of the Internet.

As this experiment showed, informed consent is nearly impossible to achieve.

Do you think it's fair to hold the consumer responsible?

I don't

I think we should ask for more descriptive terms rather than choosing one or the other before agreeing.

(Applause.) Thank you.

Now, I would like to talk about love.

Dating apps are among the most popular apps in the world, and the industry is currently worth over $3 billion a year, or close to it.

And of course, we have no problem sharing intimate details with our other halves.

But who else is spying on, storing and sharing our information while we bare our souls?

My team and I decided to investigate this.

And I realized that in order to understand this issue from all angles and do a really thorough job, I had to download myself one of the most popular dating apps in the world.

So I went home to my wife...

(laughs) He just got married.

“Is it okay to create a profile on a very popular dating app for purely scientific purposes?”

(Laughter) Here's what we found.

Hidden behind the main menu was a box with a checkmark that gave the dating agency access to all of my personal photos on Facebook, over 2,000 in my case, some of which were quite personal.

To make matters worse, I read the terms and conditions and found that: You need to get out your reading glasses to read this.

It's complicated, so I'll read it for you.

have understood.

-- "Posting Content" -- Content refers to photos, chats and other interactions on the dating service -- "As part of the Service, you automatically grant the Company, its affiliates, licensees and successors an irrevocable right" -- which means you cannot change your mind -- "Perpetual" -- which means forever -- "Non-exclusive, transferable, non-transferable, to use, copy, store, perform, display, reproduce, record, reproduce, adapt, modify and distribute Content" Sublicenseable, Fully Paid Worldwide Rights and Licenses", make derivative works of the Content or incorporate the Content into other works, grant and approve the foregoing sublicense in any media now known or hereafter created. ”

This basically means that all your dating history and everything associated with it can be used for any purpose at any time.

Imagine, 20 years from now, your kids seeing your saucy dating photo on a contraceptive ad.

But seriously -- (Laughter) What does all this business mean to you?

For example, financial loss: Algorithms may decide whether to take out a mortgage based on your web browsing history.

Subconscious Manipulation: Companies can analyze your emotions based on your photos and chats and show you ads when you are at your most vulnerable.

Discrimination: Fitness apps can sell your data to health insurance companies and prevent future insurance coverage.

All these things are happening in the world today.

But of course, not all uses of data are malicious.

Some are just flawed, some need more work, and some are really great.

And there's good news, too.

Dating companies around the world changed their policies after we filed a legal complaint.

But you won't find groups like mine fighting for consumer rights everywhere.

Nor can consumers solve this problem on their own. Because we stop talking when we know that the innocent things we said will come back to haunt us.

When we know we are being watched and watched, our behavior changes.

And if we can't control who owns our data and how it's used, we lose control of our lives.

The story I told you today is not a random example.

They are everywhere and a sign that things need to change.

And how can we achieve that change?

Businesses need to recognize that prioritizing privacy and security builds trust and loyalty with their users.

Governments must build a safer internet by ensuring enforcement and up-to-date rules.

And what about our people?

We can use our voices to remind the world that technology can only bring real benefits to society if it respects fundamental rights.

Thank you very much.

(applause)

This weekend, in Columbus, Georgia, Cardiff, Wales, Chongqing, China, and Chennai, India, tens of millions of people in the United States and tens of millions of people around the world will leave their homes, take a car, take public transport, or walk, walk into a room, sit next to someone they don't know, or maybe someone they know, and watch a movie with the lights dimmed.

They will watch movies about aliens and robots, robot aliens and common people.

But they're all going to be movies about what it means to be human.

Millions will be awed and terrified, millions will laugh and millions will cry.

And then the lights come back on and they reappear in the world they knew hours ago.

And millions of people will see the world a little differently than they did when they started school.

Like visiting a temple, mosque, church, or other religious site, watching a movie is in many ways a sacred ritual.

Repeated week after week.

This weekend, like most weekends in 1996-1990, I'm going to a multiplex near a shopping mall about eight miles from my childhood home in Columbus, Georgia.

The funny thing is that somewhere between then and now, we accidentally changed some of the conversation about which films would be made.

So the story actually begins in 2005, in an office above Sunset Boulevard, where I was a junior executive at Leonardo DiCaprio's production company, Appian Way.

For those unfamiliar with how the film industry works, this basically means that I am one of the few people who make films for people behind and in front of the camera. I think that name is better known than mine.

Basically, you're an assistant film producer doing humble work involved in the creative side of filmmaking.

You make a list of writers, directors, and actors who might be a good fit for the movie you want to bring to life. You hope to meet many of them and their representatives and do favors for future dates.

And you read a lot.

Read a novel that might become a movie, read a comic that might become a movie, read an article that might become a movie, read a script that might become a movie.

And you might read scripts from writers who are writing adaptations of novels, comics, or articles, and rewrite scripts you're already working on.

This is all in hopes of finding the next big piece, or the next big writer, who can offer something that can make you and your company the next big thing.

So in 2005, I was head of development at Leonardo's production company.

I got a call from a scriptwriter representative and the conversation started much the same way. "Leo's next movie is ready".

In the film, written by his client, Leo plays an oil industry lobbyist whose girlfriend, a local meteorologist, threatens to leave him because his job contributes to global warming.

And this situation is culminated in the fact that there is a hurricane brewing in the Atlantic that threatens to cause Maria-like damage from Maine to Myrtle Beach.

So saddened by the impending goodbye, Leo did some more research on the hurricane and discovered that on its way across the Atlantic, a hurricane passed over a long-dormant but now active volcano, spewing toxic ash into its eyes, and would probably be used as some kind of chemical weapon to destroy the world.

(Laughter) At that point I asked him. "So you're pitching me 'Leo vs. a toxic superstorm destroying humanity'?" "Well, it sounds silly when you say it like that."

I was ashamed to ask him to send me the script, and I read 30 pages before I realized it was as bad as I thought it would be.

Now, "superstorms" are certainly an extreme example, but they are not uncommon either.

And unfortunately most scripts aren't as easy to ignore as this one.

For example, a comedy about a high school senior facing an unexpected pregnancy and making unusual decisions about her unborn baby.

It's clearly "Juno".

It grossed over 230 million at the worldwide box office, with four Oscar nominations and one win.

What if a Mumbai teenager who grew up in the slums wants to be a contestant in India's version of Who Wants to Be a Millionaire?

It's simple - "Slumdog Millionaire".

377 million people worldwide, 10 Oscar nominations, 8 wins.

A chimpanzee tells the story of how he lived with legendary pop star Michael Jackson.

who?

(laughs) It's a trick question.

But it's a script called Bubbles, which will be directed by Thor Ragnarok director Taika Waititi.

So a big part of your job as head of development is to distinguish between "Superstorm" and "Slumdog Millionaire," and more generally, between writers who write "Superstorm" and writers who can write "Slumdog Millionaire."

The easiest way to do this is obviously to read all the scripts, but frankly that's not possible.

As a rule of thumb, the Writers Guild of America registers about 50,000 new materials each year, most of which are screenplays.

Of these, a reasonable estimate is around 5,000 that pass through various filters, agencies, management companies, screenwriters, etc. and are read by someone at the production house or large studio level.

And they're trying to decide if they can be one of the 300-plus movies released each year by major studios and their sub-brands.

Earlier, I described it as a bit like walking into a membership bookstore, where the entire inventory is haphazardly organized and every book has the same, nondescript cover.

Your job is to enter that bookstore and not go back until you find the best and most profitable book there.

It's anarchic, hilariously opaque.

And everyone has their own way of dealing with these issues.

As you know, most companies rely on big agencies and assume that if there's great talent in the world, they've already found their way into an agency, regardless of what structural barriers actually exist to get into it in the first place.

Others simply compare their notebooks about the books they read and what they liked, and hope that their group of peers is the smartest, smartest, and most tasteful people in town.

Others try to read everything, but again it is impossible.

If you read 500 scripts a year, you're reading a lot.

And that's just a fraction of what's still out there.

It's basically triage.

And when triaging, we tend to follow conventional wisdom about what works and what doesn't.

Comedies about young women dealing with reproductive realities don't sell.

Indian teenager stories do not hold up in the domestic market, or anywhere else in the world outside of India.

That the only viable source of cinema is a very narrow group of writers who have already found a way to live and work in Hollywood, who have already acquired the best representation in the industry, and who are writing a very narrow range of stories.

And, somewhat embarrassingly, I was there in 2005.

For months, sitting in my office above Sunset Boulevard, staring at an anonymized metaphorical bookstore, I read nothing but terrible scripts.

And I interpreted this to mean one of two things. A: Either I wasn't very good at my job (ostensibly finding good scripts) or B: my job was to read bad scripts.

In that case, my mother calling me every week asking if my law school entrance exam scores were still valid was probably something I should have paid more attention to.

What I also knew was that I would soon be on vacation for two weeks. As much as reading bad scripts is a job, it's even more painful when you're on vacation.

So I had to do something.

So late one night at the office, I made a list of everyone I had breakfast, lunch, dinner, or drinks with and had a job similar to mine, and sent an anonymous email.

And I made a very simple request.

Send us a list of up to 10 of your favorite scripts that meet the 3 criteria.

One: I love that script, two: the movie version of that script won't be released in theaters by the end of that calendar year, and three: I learned about it this year.

This wasn't an appeal for a script that would be the next blockbuster, nor was it an appeal for an Academy Award-winning screenplay. It didn't have to be a script my boss would like, or a script the studio wanted to make.

It was an opportunity for people to speak their minds about what they liked. There are fewer and fewer such opportunities in this world.

Well, of the 75 people I emailed anonymously, almost everyone responded.

And actually 20 other people emailed to join this anonymous email address and I have verified that they are indeed getting the jobs they claim to be.

Then I put the votes into a spreadsheet, ran a pivot table, and output to PowerPoint. Then, the night before I left for vacation, I gave it a semi-disruptive name and emailed it back to everyone who voted from an anonymous email address.

blacklist.

A tribute to those who lost their careers in the anti-communist hysteria of the 1940s and '50s, it consciously flips the notion that black has some negative connotation.

After arriving in Mexico, I pulled out a poolside chair and started reading these scripts, and to my surprise and delight I found that most of them were actually very good.

Mission accomplished.

What I didn't expect and couldn't foresee was what happened next.

About a week into my vacation, I stopped by the hotel business center to check my email.

After all, this was the world before the iPhone.

Then I realized that this list, which I created anonymously, had been forwarded dozens of times to my personal email address.

I shared a list of scripts that everyone said they loved, read them, and loved them myself.

And my first reaction, which I can't really say here, I'd describe as horror, was that the idea of ​​researching people's scripts was certainly not novel or genius.

Sure, there were unspoken Hollywood rules that kept people away from that kind of behavior, but early in my career, I didn't understand them.

I was sure I was going to get fired, so that day I decided A: I would never tell anyone I did this and B: I would never do this again.

Six months later, something even stranger happened.

I was in my office at sunset when I got a call from another writer's agent.

That call was very similar to the one about 'Superstorm' and started with 'I have Leo's next movie'.

Well, that's not where it gets interesting.

What was interesting was how the call ended.

Because this agent told me: I said, "Don't tell anyone, but I have very authoritative information. This will be the number one script on the Blacklist next year."

(Laughter) Right.

Suffice to say I was stunned.

Here's an agent trying to sell me his clients using a blacklist that I created anonymously and decided never to do again.

Suggest that the script is worth it based solely on its chances of being on a list of beloved scripts.

After the call ended, I began to sit in my office and stare out the window, experiencing bouts of shock and general dizziness.

And I realized there was so much more value in this work I made than just finding a good script to read on vacation.

So I did it again the next year -- and the "LA Times" kicked me out as the person who created it -- and the year after that, and the year after that -- I've done it every year since 2005.

And the results were interesting. Because apart from being unapologetically lied to, this agent was just right.

This list is a testament to the value of screenwriting to many, proving that good screenplays have greater value than many had previously anticipated.

Soon, work started rolling in to the screenwriters on that list, and those scripts started being written. And the scripts that were created broke assumptions about what worked and what didn't.

It was scripts for Juno, Little Miss Sunshine, The Queen, The King's Speech, Spotlight and more.

That's right, Slumdog Millionaire.

And even an upcoming movie about Michael Jackson's chimpanzees.

Now, I think it's very important to pause here and say that you can't take credit for the success of these films.

I didn't write, direct, produce, make a mistake, or create a food or craft service. We all know how important it is.

Credit for those films, credit for their success, goes to the people who made them.

What I did was change the way people viewed them.

By chance, I asked if the common sense was correct.

And yes, there are movies on that list that would have been made if it weren't for the Blacklist, but there are also many movies that never were made.

And at least we've put many of them into production. I think this is worth noting.

Since its inception in 2005, the blacklist has about 1,000 scripts.

About 325 units were produced.

They have been nominated for 300 Academy Awards and won 50.

Four of the last nine Best Picture Awards have been blacklisted scripts, and ten of the last 20 Oscar Best Original Screenplays have been blacklisted scripts.

Collectively, they have grossed about $25 billion at the worldwide box office. I mean, hundreds of millions of people have seen these movies when they left their homes and sat next to strangers when the lights went down.

And that's to say nothing of the post-theatrical environment of DVDs, streaming, and let's be honest, illegal downloads.

Five years ago today, October 15th, my business partner and I reinforce the idea that screenwriter talent is not where we expected it to be, launching a website that allows anyone on the planet who writes English-language scripts to upload and rate their own scripts and make them available to thousands of film industry professionals.

And in the five years since its launch, we're happy to almost prove the theory.

Hundreds of artists from all over the world have found representation and their works have been optioned or sold.

The seven have also seen movies made in the past three years, including "Nightingale," about the mental decline of a veteran, and the only time David Oyelowo's face appears on screen in 90 minutes of the film.

It was nominated for a Golden Globe Award and two Emmy Awards.

It's also kind of cool that the dozen or so authors I found on the website ended up making the year-end list this year. Among them are two of the past three number 1 authors.

Simply put, the conventional wisdom about the merits of a screenplay, where it is and where it can be seen, was wrong.

This is worth noting. Because, as I said before, we rely on a lot of common sense in the triage of finding and making movies to make.

And that common sense may, perhaps, be wrong with even greater consequences.

Movies about black people don't sell well abroad.

Female-led action movies just don't work. For women will see themselves in men, but men do not see themselves in women.

No one wants to watch a movie about a woman over 40.

That our on-screen heroes have to live up to our very narrow notions of what beauty is.

What does it mean to a kid who looks like me in Columbus, Georgia, when these images are projected 30 feet high and the lights are dimmed?

Or a Muslim girl from Cardiff, Wales?

Or a gay kid in Chennai?

What does that mean for how we see ourselves, how we see the world, and how the world sees us?

We live in very strange times.

And I think most of the time we all live in a constant state of triage.

Too much information, too much to deal with.

So, in general, we tend to follow common sense.

And I think it's important to always ask yourself how much of that common sense is just convention and not wisdom.

How much does it cost?

thank you.

(applause)

28 years ago I was a broken man.

And you probably wouldn't be able to say that if you met me.

I got a good job at a reputable academic institution.

Well dressed, of course.

But my insides were rotten.

As you know, I grew up in an addiction-ridden household and struggled to come to terms with my sexuality as a child.

Growing up as a gay child, though I couldn't name her at the time, compounded my isolation and anxiety issues.

But when I drank alcohol, it all disappeared.

Like many people, I was a drinker from an early age.

I drank all the way through college.

And when I finally came out in the early 1980s, gay bars were the only place I could meet other gay people, socialize, and be myself.

What do you do at a gay bar?

you drink

And I did - a lot.

My story is nothing special.

Like millions of Americans, my illness went undiagnosed.

It took me to people, places and things I would never have chosen.

Only after the intersection with the law gave me an "opportunity" to receive care did I begin my recovery journey.

My recovery journey has been full of love and joy, but not without pain.

Like many of you, I have lost too many friends and family to this disease.

I have heard many heartbreaking stories of people who have lost loved ones to addiction.

And I lost countless friends to HIV and AIDS.

The current opioid epidemic and the AIDS epidemic have, tragically, much in common.

We are in the midst of the greatest health crisis of our time.

In 2014 alone, 28,000 people died from prescription drug and heroin-related drug overdoses.

In the 1980s, many people were dying of HIV and AIDS.

Officials ignored it.

Some people don't even say a word.

They didn't want therapy.

And tragically, it has many similarities to current infectious diseases.

Some called it the gay plague.

They called for isolation.

They wanted to separate innocent victims from the rest of us.

I was afraid we would lose this battle because people accused us of being sick.

Prejudice and fear held public policy hostage, as did compassion, care, research, recovery and treatment.

But we changed everything.

Because from the pain of those deaths we have witnessed social and political movements.

AIDS has pushed us to action. Stand up, speak up, and act.

And it revitalized the LGBT movement.

Silence equals death, so we knew we were in a fight for our lives, but we changed and made things happen.

And now, we have the potential to see the end of HIV/AIDS in our lifetime.

These changes have been driven, in no small part, by people's courageous yet simple decisions to come out to their neighbors, friends, family and colleagues.

Many years ago I was a volunteer on the Names project.

It was an initiative started by Cleve Jones of San Francisco to show that people who died of AIDS had names and faces, families and people who loved them.

I still remember unrolling the AIDS memorial quilt on the National Mall on a sunny October day in 1988.

Fast forward to 2015.

The Supreme Court has ruled to nullify the ban on same-sex marriage.

My husband Dave and I walked up the steps of the Supreme Court and joined many others in celebrating the ruling. I couldn't help but wonder how far I could have gotten around LGBT rights and how far I needed to get around addiction issues.

When I was named Director of Drug Policy by President Obama, I was very open about my recovery and the fact that I was gay.

And at no point during my approval process, at least as far as I know, did the fact that I am gay affect my candidacy or my suitability for this job.

But my addiction was.

At one point, a congressional staffer said that despite the fact that I had been in recovery for over 20 years, and despite the fact that the job required some knowledge of addiction, there was no way I could be approved by the U.S. Senate because of my past.

(Laughter) This is the prejudice that people with substance use disorders face every day. And I must say that is why I am more comfortable coming out as gay than as a person with a history of addiction.

Almost every family in America is affected by addiction.

Unfortunately, it is too often not told openly and honestly.

Whispered.

It is met with ridicule and contempt.

We hear these stories over and over on TV, online, from government officials, family and friends.

And those of us with addiction hear those voices and somehow believe we don't deserve care and treatment.

Currently, only 1 in 9 people in the United States receive care and treatment for a disability.

1 in 9 people.

Think about it.

People with other illnesses generally receive care and treatment.

If you have cancer, you need treatment; if you have diabetes, you need treatment.

If you have a heart attack, you can go to emergency services and get treatment.

Yet for some reason, people with addictions often have to wait for treatment or do not get it when they need it.

And left untreated, addiction can have serious and devastating consequences.

And for many it means death or imprisonment.

We have traveled that road before.

For too long our country felt we could get out of this problem.

But we know it can't be done.

Decades of scientific research have shown that this is a medical problem, a chronic medical condition that people inherit and develop.

As such, the Obama administration took a different stance on drug policy.

We have developed and implemented a comprehensive plan to expand preventive and curative services, early intervention and recovery support.

We have pushed for criminal justice reform.

We have removed barriers and given people a second chance.

We see public health and public safety officials working together at the local level.

We see police chiefs across the country directing people to treatment instead of jail or jail.

We are seeing law enforcement and other first responders cancel naloxone overdoses and give people a second chance at care.

The Affordable Care Act, the largest expansion of treatment for substance use disorders in a generation, also calls for the integration of treatment services within primary care.

Fundamentally, however, this work alone is not enough.

Unless we change the way we look at addicts in America.

Years ago, when I finally understood that I had a problem and needed help, I was too scared to ask for help.

I felt that people would think I was stupid, weak-willed, and morally flawed.

But I talk about recovery because I want to make a difference.

Please understand that we need to be open and honest about who we are and what we can do.

I'm public about my recovery, but not for self-aggrandizement.

I will speak openly about my own recovery to change public opinion, change public policy, change the course of this epidemic, and enable millions of Americans battling this journey to speak openly and honestly about who they are.

People are more than sick.

And we all have the opportunity to change public opinion and change public policy.

We all know people with addictions, and we can all do our part to change how people with addictions are viewed in the United States.

So when you see someone with an addiction, don't think of him as a drunk, a drug addict, an addict, or an abuser. Offer them help. Give them kindness and compassion.

And together, we can join the growing movement in America to change the way we view addicts.

Together we can change public policy.

As with any illness, we can ensure that people get treatment when they need it.

We can join millions of Americans in recovery and join the growing and unstoppable movement to end this epidemic.

thank you very much.

(applause)

Today I would like to talk to you about a pressing social issue.

Now, it's not nuclear weapons, it's not immigration, it's not malaria.

I am here to talk about movies.

Now, seriously, movies are actually very important.

Movies can entertain us greatly, and they can also move us through storytelling.

Storytelling is so important.

Stories teach us what society values, teach us lessons, share and preserve our history.

Story is great.

But stories, especially in the form of American cinema, do not give everyone the same chance to be in it.

Interestingly, in film, women are still erased and marginalized in many stories.

And I first learned this about ten years ago, when I was doing my first research on gender roles in G-rated movies.

Since then, we have conducted over 30 surveys.

my team is tired

And as a researcher and activist, I have dedicated my life to fighting the inclusion crisis in Hollywood.

So today I would like to talk to you about that crisis.

I want to talk about gender inequality in cinema.

I'd like to explain how it persists and then how to fix it.

But one note before we start. My data is really depressing.

I would like to apologize in advance, as I am going to make you feel very bad.

But I'm going to take it one last time and offer a ray of hope for resolving this mess that we've been in for so long.

So let's start with the seriousness of the situation.

Every year my research team looks at the top 100 highest-grossing movies in the United States.

What we do is observe every character that's speaking or being named on screen.

Now, to count as one of my investigations, all a character has to do is say one word.

This is a very low hurdle.

(Laughter) So far, we've looked at 800 films from 2007 to 2015 and cataloged every character that speaks on screen about their gender, race, ethnicity, LGBT, and disabled characters.

Let's take a look at some problematic trends in action.

First, women are still significantly absent from the screen in the film.

In 800 films and 35,205 characters, less than a third of the roles are played by girls and women.

Less than a third!

No change from 2007 to 2015, and comparing this result to a small sample of films from 1946 to 1955 shows no change for over half a century.

More than half a century!

But we are half the population.

Now, looking across this data, which is today's focus, the situation becomes even more problematic.

Last year alone, 48 of the top 100 films had no characters who spoke Black or African American.

None of the 70 films had Asian or Asian-American speaking girls or female characters.

none.

None of the 84 films featured female characters with disabilities.

And 93 had no lesbian, bisexual, or transgender female characters.

This is not an underestimate.

This is erasure, and I call it the invisibility epidemic.

Now, moving from fads to protagonists, the story still has its problems.

Only 32 of last year's 100 films had a female lead or co-star leading the action.

Only 3 out of 100 films have underrepresented women driving the narrative, and only 1 featured a diverse range of women over the age of 45 at the time of its theatrical release.

Now let's look at the depiction.

In addition to the numbers we just saw, women are far more likely to be sexualized in movies than men.

In fact, they're about three times more likely to wear revealing clothing or be half-naked, and much more likely to be skinny.

Now, in animation, a woman can be so skinny that her waist size is about the same as her upper arm circumference.

(Laughter) We're saying these girls have no room for a womb or other internal organs.

(Laughter) Now, all kidding aside, as theory suggests and research confirms, exposure to flimsy ideals and objectified content can lead to body dissatisfaction, flimsy ideals internalization, and self-objectification among some female viewers.

Clearly, what we see on screen does not match what we see in the world.

No match!

As a matter of fact, if we lived in a world of screens, we would face a demographic crisis.

So, as soon as I recognized these patterns, I wanted to know why. It's a misunderstanding of the gender of content creators and viewers.

Let's unpack it.

If you want to change the pattern I just mentioned, all you have to do is appoint a female director.

Ultimately, female directors are expected to see more girls and women on screen in terms of short films and indie films, more women-centered stories, and more stories with women over 40 on screen, and I think that's good news for this audience.

More underrated -- (laughter) sorry.

(laughs) I'm sorry, I'm sorry.

There are more and more underrepresented characters in terms of race and ethnicity, and most importantly, more women working behind the camera in key production roles.

A simple answer to the problem I just talked about.

or is it?

Not really.

From 2007 to 2015, 800 films and 886 directors.

Only 4.1% are women.

Only three were African American or black, and only one was an Asian woman.

So if female directors are part of the solution, why is it so difficult to recruit them?

Well, to answer this question, we conducted a survey.

We interviewed dozens of industry insiders and asked them about the director.

After all, executives, both men and women, think of men when they think of directors.

They perceive leadership traits to be inherently masculine.

So when they try to get a director to command a crew, or command a ship, or be a visionary or General Patton, everything we hear—their thoughts and ideas—pulls the men.

Perceptions of directors and leaders do not match perceptions of women.

Although the roles are contradictory, this is consistent with many studies in the field of psychology.

A second factor contributing to on-screen inequality is audience misunderstanding.

No need to tell this crowd, girls and women make up 50 percent of the people who go to the box office and buy tickets in this country.

right?

However, we are not considered a viable and economically advantageous target user.

Additionally, there are some misconceptions about whether women can open movies.

Putting a movie out there means that putting a woman at the center doesn't yield as much a return on investment as putting a man at the center of the story.

This misunderstanding is really costly.

right?

Especially in the wake of the success of series like The Hunger Games, Pitch Perfect, or the smaller indie movie Star Wars: The Force Awakens.

Our own economic analysis shows that the gender of the protagonist has no effect on the economic success of the United States.

But what happens?

The production costs are either alone or depending on how widely the film is distributed in the country.

Not the gender of the main character.

So at this point, we should all be depressed enough.

Fifty years on, nothing has changed, very few female directors work behind the camera, and the entertainment industry doesn't trust us as audiences.

Well, I said there was a silver lining, and there is.

In fact, there are simple, concrete solutions to solving this problem, involving content creators, management, and consumers like the people in this room.

Let's talk about some of them.

The first is what I call "just add five".

Did you know that by simply considering the top 100 movies next year and adding five female-speaking characters on screen to each one, a new standard will be set?

If we continue this for three years in a row, we will reach gender equality for the first time in more than half a century.

Now, this approach is advantageous for many reasons.

one? It doesn't take away the work of male actors.

Heaven forbid it.

(Laughter) Second, it's actually cost-effective. It doesn't cost that much.

The third is building a talent pipeline.

And fourth, humanize the production process.

why? Because it guarantees that there will be women on set.

The second solution is for A-list talent.

As we all know, top-tier actors can make demands, especially in contracts involving Hollywood blockbusters.

What if these leading companies simply added capital clauses or blanket covenants to their contracts?

Now what does that mean?

In case you didn't know, a typical feature film has 40-45 characters.

I would argue that only 8-10 of these characters are actually relevant to the story.

Except maybe "Avengers". right?

A few more for The Avengers.

The remaining 30 or so roles, there's no reason these bit parts can't match or reflect the demographics of the region in which the story is set.

Stock covenants by A-listers in contracts can stipulate that their role reflects the world we actually live in.

Now, there's no reason why networks, studios, and production companies can't adopt the same contract language in their negotiation process.

Solution #3: This is for the entertainment industry, and Hollywood in particular, to adopt the Rooney Rule when it comes to director-centric hiring practices.

Currently, the NFL's Looney Rule stipulates that if a team wants to hire a coach from outside the organization, it must interview undervalued candidates.

Exactly the same principle applies to Hollywood movies.

how?

Well, in these top movies, executives and agents can ensure that women and people of color are not only on the consideration list, but actually interview for the job.

Now, one might ask, why is this important?

It exposes women directors as prey to exclusive hiring practices and introduces them to executives.

The fourth solution is for consumers like me and you.

If we want to see more films about women, by women, for women, we have to support them.

That might mean going to independent theater chains instead of multiplexes.

Alternatively, you may scroll down a little further to find films directed by women online.

Or it could be writing a check to fund a film by a female director with a particularly underrated background.

right?

We need to write, call, and email the companies that make and distribute movies. Also, when you want to see inclusive expressions, women on screen, and most importantly, women behind the camera, you should post on your social media accounts.

We need to make our voices heard and value our money.

Well, we actually have the ability to change the world on this issue.

The United States and its content, especially movies, have captivated the imagination of audiences around the world.

World wide.

In short, the film industry now has unprecedented access to broadcast stories about equality around the world.

Imagine what would happen if the film industry aligned its values ​​with what was seen on screen.

It has the potential to foster inclusion and acceptance of girls and women, people of color, the LGBT community, people with disabilities, and more around the world.

The only thing the film industry has to do is unleash its secret weapon, which is storytelling.

Now, at the beginning of this talk, I said that movies can actually transport us, but I would argue that movies can change us.

None of us in this room have grown up or experienced a narrative world with fully-realized female characters. Because that number hasn't changed.

What if the next generation of viewers grew up with an entirely different screen reality?

what will happen?

Well, I'm here today to tell you that not only can you change what you see on the screen, but you can't wait to see it happen.

So let's agree to take action today to eradicate the transparency epidemic.

And let's agree to take action today to agree that U.S. and global audiences demand and deserve more.

And today, let's agree that the next generation of viewers and audiences have the right to see the stories we never got to see.

thank you.

(applause)

Chris Anderson: Hello. Welcome to the TED Dialogue.

This is the first in a series that takes place in response to the current political turmoil.

I don't know about you I am deeply concerned about the increasing division in this country and the world.

No one is listening to each other. right?

it's not.

So I feel like we need a different kind of conversation, a conversation based on reason, listening, understanding, broader context, I don't know.

At least that's what we'll try in the TED dialogue starting today.

And no one could be more excited to get this started.

Let me just say, this is the spirit here who thinks pretty much the same as anyone else on the planet.

I'm serious

(Yuval Noah Harari laughing) I'm serious.

He integrates history and underlying ideas in a breathtaking way.

By the way, some of you may know this book "Sapiens Complete History".

Has anyone read "The Complete History of Sapiens"?

(Applause.) I mean, I couldn't put it down.

In some ways, the way he tells the story of humanity through big ideas that make you think in a completely different way is amazing.

And this is the follow-up, which I believe will be published next week in the United States.

YNH: Yes, next week.

CA: "Homo Deus"

Well, this is the history of the next hundred years.

I had the opportunity to read.

This is very dramatic and, dare I say it, very alarming for some people.

Must read.

And honestly, there's no better person to understand what's going on in the world right now.

Please give a warm welcome to Mr. Yuval Noah Harari.

(Applause.) It's great to be able to join with friends on Facebook and on the web.

Hello facebook.

And when I start asking Yuval questions, I hope you also think of your own questions, not necessarily about the daily political scandals, but about the broader understanding of "Where are we going?"

do you prepare yes, I'll go.

So here you are, Yuval: New York City in 2017, a new president seized power and sent shockwaves around the world.

What on earth is going on?

YNH: I think the basic thing that happened was that we lost the story.

Humans think in stories and try to understand the world by telling stories.

And for the past few decades, we've had a very simple, very compelling story about what's going on in the world.

And the story was, "What is happening now is that the economy is globalized, the politics is liberalized, and the combination of the two creates a paradise on earth. Just keep globalizing the economy and liberalizing the political system, and everything will be great."

And 2016 is the moment when so many segments, even in the Western world, stopped believing this story.

Good or bad, it doesn't matter.

People stop believing the story and can't understand what's going on without it.

CA: Part of you believes that story was actually a very effective one.

done.

YNH: Yes, to some extent.

By some measures, we are now in the best time ever for humanity.

Today, for the first time in history, more people die from overeating than from overeating. This is an amazing achievement.

(Laughter) Also, for the first time in history, more people die from old age than from infectious diseases, and there is less violence.

For the first time in history, more people have committed suicide than crime, terrorism and war combined.

Statistically, you are your own worst enemy.

At least, of all the people in the world, you're the most likely to be killed yourself -- (laughter) which is also very good news, in comparison -- (laughter) compared to the level of violence we've seen in previous times.

CA: But this process of connecting the world ended up leaving a lot of people feeling left out, and they're reacting.

So we had a bomb that ripped through the whole system.

I mean, what do you think happened?

It feels like people's old way of thinking about politics, the left-right divide, has been blown away and replaced.

How should we think about this?

YNH: Well, the old left vs. right political model of the 20th century is now largely irrelevant and the real divide today is between the world and the nation, the global and the local.

And we see again around the world that this is now a major struggle.

We probably need a whole new political model and a whole new way of thinking about politics.

Essentially, we now have a global ecology, a global economy, but we have domestic politics, which are not aligned.

This renders the political system powerless, unable to control the forces that shape our lives.

And there are basically two solutions to this imbalance. Either deglobalize the economy and return it to the national economy, or globalize the political system.

CA: So some, perhaps many, liberals see Trump and his government as irredeemably bad, terrible in every sense of the word.

Does it contain underlying narratives or political philosophies that are at least worth understanding?

How would you describe that philosophy?

Is it just a philosophy of nationalism?

YNH: I think the underlying feeling and thought is that the political system, something is broken.

You can no longer give power to ordinary people.

I don't care about ordinary people anymore, and I think the diagnosis of this political disease is correct.

As for the answer, I'm not too sure.

I think what we're seeing is an immediate human response to undo something if something goes wrong.

And we see around the world that few people have a future-oriented vision of where humanity is headed in today's political system.

Almost everywhere we see the retrograde vision of “Make America Great Again.” As if the 50's or 80's were great, I don't know, but let's go back there someday.

Going to Russia one hundred years after Lenin, Putin's vision of the future is basically, oh, let's go back to the Tsar.

And in Israel, where I come from, the hottest political vision right now is to build the temple again.

Let's go back 2000 years.

So people think that at some point in the past we lost it, and sometimes in the past, you're kind of lost in the city and you say, 'Okay, let's go back to the point where I felt safe and start over.

I don't think this will work, but it's an instinct for many people.

CA: But why didn't it work?

"America First" is a very compelling slogan in many ways.

Patriotism is, in many ways, a very noble thing.

It has played a role in facilitating the cooperation of many people.

Why couldn't the world be organized with nations that put themselves first?

YNH: For centuries, or millennia, patriotism has worked very well.

Of course, it led to wars and such, but we shouldn't focus too much on the bad things.

And there is so much good in patriotism and the ability of many people to care for each other, empathize, and band together for collective action.

Back to the first countries, thousands of years ago, people lived along the Yellow River in China. There were so many different tribes, all of whom depended on rivers for their survival and prosperity, but all suffered from periodic floods and periodic droughts.

And none of the tribes could really do anything. Because each tribe controlled a small part of the river.

After a long and complicated process, the tribes united to form the Chinese nation. The Chinese nation controlled the entire Yellow River and was able to rally hundreds of thousands of people to build dams and canals, regulate the river, prevent the worst floods and droughts, and increase the level of prosperity for all.

And this worked in many places around the world.

But in the 21st century, technology is about to fundamentally change everything.

We now all live by the same cyber river in the world, and no single country can regulate it.

We all live on the same planet, but our own actions threaten it.

And without some form of international cooperation, nationalism is not at the right level to tackle any problem, be it climate change or technological disruption.

CA: So it was a great idea in a world where most actions, most problems happened nationally, but your argument is that today the most important problems are no longer national, but global.

YNH: That's right. All the major problems of today's world are global in nature and cannot be solved without some form of global cooperation.

It's not just climate change, the most obvious example people cite.

I think more about technology disruption.

Consider, for example, that artificial intelligence will push hundreds of millions of people out of the job market over the next 20-30 years, and this is a global problem.

It would disrupt the economies of all countries.

And similarly, given that people fear, say, bioengineering and doing genetic engineering research on humans, it doesn't help that one country, say the United States, outlaws all genetic testing on humans, while China and North Korea continue to do it.

Therefore, the United States cannot solve this problem alone, and since we are talking about high-risk, high-gain technologies, the pressure on the United States to do the same will be enormous.

If someone else is doing it, I can't afford to fall behind.

The only way to have regulation, effective regulation, for something like genetic engineering is to have global regulation.

As long as there are national regulations, no one wants to fall behind.

CA: That's really interesting.

It seems to me that this might be one key to sparking at least a constructive conversation between the different sides here. Because I think we can all agree that the starting point for much of the anger that has driven us this far is due to legitimate concerns about unemployment.

Jobs are lost, traditional ways of life are gone, and it's no wonder people are outraged about it.

And generally they are accusing globalism and the global elite of doing this to them without permission, which seems like a valid complaint.

But what I'm asking is, I mean, the key question is, what are the real causes of current and future unemployment?

As far as globalism is concerned, the correct response, yes, is to close borders, keep people out, change trade deals, etc.

But I think you're saying that the biggest cause of unemployment is never actually the case.

It stems from technology problems, and unless we operate as a connected world, we have no chance of solving it.

YNH: Well, I think so, I don't know about today, but looking to the future, it's not the Mexicans or the Chinese who are taking jobs away from people in Pennsylvania, it's robots and algorithms.

So unless there is a plan to build a big wall on the California border, the border wall with Mexico will be very ineffective.

And what struck me watching the pre-election debates was that Trump certainly didn't try to scare people by telling them that robots would take their jobs.

Even if it wasn't true now, it doesn't matter.

It could have been a very effective way to scare people (laughs) or to excite people that robots are going to take your job!

It means that whatever happens in universities and laboratories is already being heavily debated, and while there is intense debate about it, people are completely unaware that in 10, 20, 30 years, not 200 years, there will be unfathomable technological disruption. And because most of what we are teaching our kids in schools and colleges now will be completely irrelevant to the 2020 job market. 040, 2050.

So you don't have to think about it in 2040.

We need to think about what we teach young people today.

CA: Yeah, no, absolutely.

You often write about moments in history when mankind inadvertently... entered a new era.

Decisions were made, technology was developed, and suddenly the world changed. Probably changed for the worse for everyone.

One of the examples you gave in A History of Sapiens is just the whole agricultural revolution. For an actual human plowing a field, you've just got 12 hours of hard labor instead of 6 hours in the jungle and a much more interesting lifestyle.

(Laughter) So, are we here in another possible phase change, a kind of sleepwalking into the future that no one wants?

YNH: Yes, that's exactly right.

What happened during the Agricultural Revolution was a huge technological and economic revolution that empowered the human population, but when you look at the lives of real individuals, the lives of the elite few were much better and the lives of the majority were much worse.

And this could happen again in the 21st century.

There is no doubt that new technologies will empower humanity as a whole.

But we may once again find ourselves in a situation where the minority elite reaps all the benefits and deprives us of all the fruits, leaving the majority of the population worse than before, and certainly much worse than this small elite.

CA: And those elites may not even be human elites.

They could be cyborgs, or -- YNH: Yes, they could be enhanced superhumans.

They may be cyborgs.

They can be a completely non-organic elite.

They can also be unconscious algorithms.

What we are seeing in the world right now is the shift of authority from humans to algorithms.

More and more of our personal lives, economic matters, and political matters are actually being decided by algorithms.

If you ask a bank for a loan, your destiny could be decided by an algorithm, not a human.

And the general impression is that perhaps Homo sapiens just lost it.

The world is very complex, there is so much data, and things are changing so fast. So this thing, which evolved tens of thousands of years ago in the African savannah to deal with a specific environment, a specific amount of information and data, cannot cope with the realities of the 21st century. The only thing that can deal with it is big data algorithms.

So it's no wonder that more and more power is shifting from us to algorithms.

CA: So we're in New York City for the first of a series of TED conversations with Yuval Harari, and there's a Facebook Live audience.

We look forward to your participation.

We will be answering your questions and those of those in the audience within just a few minutes, so please come along.

Yuval, if you argue that the technology of the future will force us to overcome nationalism...

In a way, we need to have a global conversation about the danger that much of what is happening presents.

The problem is, I don't know if AI is really an imminent threat, but it's hard to get people to really believe it.

What people, at least some people, are more directly concerned with is probably climate change, and possibly other issues such as refugees and nuclear weapons.

Would you argue that in the situation we are in, we should somehow solve these problems?

You talked about climate change, but President Trump said he doesn't believe it.

So, in a way, the strongest argument can't really be used for this claim.

YNH: Well, when it comes to climate change, I think it's quite surprising at first glance that there is such a close correlation between nationalism and climate change.

So for the most part, people who deny climate change are nationalists.

And at first glance you think: Why?

What kind of relationship do they have?

Why don't socialists deny climate change?

But if you think about it, it's clear. Because nationalism has no solution to climate change.

If you want to be a nationalist in the 21st century, you have to deny this issue.

If you accept the reality of the problem, then yes, you must accept that there is still room for patriotism in the world, there is still room for special loyalties and obligations to your people and your country.

I don't think anyone is seriously considering abolishing it.

But tackling climate change requires greater loyalty and commitment at the national level.

And it's not impossible. Because people can have multiple layers of loyalty.

If you can be loyal to your family, to your community, to your nation, why can't you be loyal to humanity as a whole?

Of course, prioritizing can be difficult at times, but hey, life is hard.

deal.

(Laughter) CA: So now I would like to ask some questions from the audience.

There is a mic here.

Ask Facebook to join you too.

Howard Morgan: One of the things that has obviously made a big difference in this country and the rest of the world is the inequality in the distribution of income, which has changed dramatically in the United States and around the world compared to 50 years ago.

Is there anything I can do to affect it?

Because it solves many of the root causes.

YNH: So far we haven't heard very good ideas about what to do with it. Again, because most ideas remain at the national level and the problem is global.

So one of the ideas you hear a lot right now is Universal Basic Income.

But this is a problem.

So, I think this is a good start, but a problematic idea because it's not clear what is "universal" and what is "fundamental".

When talking about Universal Basic Income, most people actually mean National Basic Income.

But the problem is global.

Suppose AI and 3D printers are taking millions of jobs out of all the people making my shirts and shoes in Bangladesh.

So what happens?

Will the US government impose taxes on Google and Apple in California and use them to pay basic income to unemployed Bangladeshis?

If you believe that, you can trust that Santa Claus will come and solve your problems.

So unless we have a basic income that is truly universal rather than national, we will not solve a serious problem.

It's also not clear what is basic. Because what are the basic human needs?

A thousand years ago, food and shelter were enough.

But today people would say that education is a basic human need and should be part of the package.

But how much? 6 years? 12 years? PhD?

Similarly, let's say that in 20, 30, 40 years from now there is an expensive medical treatment that can extend a person's lifespan to 120 years. I don't know.

Will this be part of the basic income basket?

This is a very difficult problem. Because in a world where people have lost the ability to employ, this basic income is the only thing people can get.

So part of it is a very, very difficult ethical question.

CA: There are a lot of questions about how the world will pay for it and who will pay for it.

Question from Lisa Larson on Facebook. "How does current American nationalism compare to the nationalism of the last century between World War I and World War II?"

YNH: The good news is that we are in a much better position than we were a century ago when it comes to the dangers of nationalism.

A century ago, in 1917, Europeans were killing each other by the millions.

In 2016 Brexit, as far as I can remember, extremists murdered members of parliament and one person lost his life.

I'm just one person.

So if Brexit is about British independence, then this will be the most peaceful war of independence in human history.

And let's say Scotland chooses to leave the UK after Brexit.

So if in the 18th century Scotland tried to break free of London's control, and the Scots wanted it on several occasions, the response of the London government was to send troops north to burn Edinburgh and slaughter the Highland tribes.

My guess is that even if the Scots voted for independence in 2018, the London government would not send troops north to burn down Edinburgh.

Few people today are willing to kill or be killed for Scottish or British independence.

So with the rise of nationalism, and going back from the 1930s to the 19th century, national sentiment is far less powerful today than it was a century ago, at least in the West.

CA: Now, some people are publicly worried that things are changing, but I'm hearing that, depending on how things unfold, there could actually be an outbreak of violence in the United States.

Should we worry about it or do we really think things have changed?

YNH: Well, you should worry.

We should note two things.

First of all, don't get hysterical.

We have not yet returned to World War I.

But on the other hand, don't be complacent.

What we got from 1917 to 2017 was not due to a miracle of God, but simply due to human decisions, and if we start making bad decisions now, in a few years we could be back in a situation similar to 1917.

One thing I know as a historian is that human stupidity should never be underestimated.

(Laughter) It is one of the most powerful forces in history, human stupidity and human violence.

Humans do such crazy things for no apparent reason, but at the same time, another very powerful force in human history is human wisdom.

I have both.

CA: We have moral psychologist Jonathan Haidt here, and I think he has a question.

Jonathan Haidt: Thank you, Yuval.

You seem to be a fan of global governance, but if you look at Transparency International's world map, which assesses the level of corruption in political institutions, it's a vast sea of ​​red, with some yellow spots in countries with better institutions.

So if we have some kind of global governance, why do you think we end up looking more like Denmark than Russia or Honduras? Is there no alternative as in the case of CFCs?

There are ways to work with governments to solve global problems.

What does a world government actually look like and why do you think it works?

YNH: Well, I don't know how it will turn out.

No one has that model yet.

The main reason this is necessary is that many of these issues can and do lose.

If there is a win-win situation like trade, if both sides benefit from a trade agreement, this is something that can be resolved.

Unless there is some kind of world government, national governments have an interest in it.

But in a lose-or-lose situation, like climate change, without some overarching authority, real authority, it becomes even more difficult.

Well, I don't know how to get there and what it will be like.

And certainly there is no obvious reason to think it will be like Denmark, or even a democracy.

Probably not.

We do not have a viable model of democracy as a world government.

So maybe it's closer to ancient China than it is to modern Denmark.

But still, given the dangers we face, I think having some real ability to push through tough decisions on a global level is more important than anything else.

CA: I've got a question from Facebook, so I'll pass the mic to Andrew.

So Kat Hebron, in a call from Vail on Facebook, called out, "How will developed countries manage millions of climate change migrants?"

YNH: I don't know.

CA: That's your answer, Kat. (laughs) YNH: I don't think they know either.

They will probably just deny the problem.

CA: But immigration in general is another example of a very difficult problem to solve on a country-by-country basis.

One country can close its doors, but it can cause problems in the future.

YNH: Yes, so this is another very good example. Especially since migration is much easier today than in the Middle Ages and Antiquity.

CA: Yuval, there's certainly a belief among many technologists that political concerns are kind of overblown, that political leaders don't really have that much influence in the world, that the real decisions of humanity at this point are made by science, inventions, corporations, and many other things besides political leaders, and that it's actually very difficult for leaders to do much. So we don't really worry about anything.

YNH: Well, first, it is true that political leaders have a very limited ability to do good, but their ability to do harm is unlimited.

There is a fundamental imbalance here.

You can also blow everyone up with the push of a button.

you have such an ability.

But if you want to reduce inequality, for example, it's very difficult.

But starting a war is very easy.

So, today's political system incorporates a very frustrating imbalance that, while it may not do much good, it can still do a lot of harm.

For this reason, the political system remains a major concern.

CA: So why not put on your historian's hat and look at what's going on today and look back in history to the moments when things were going well and individual leaders really set the world and nations back?

YNH: There are many examples, but I would like to emphasize that it is never the individual leader.

So someone put him there and someone allowed him to stay there.

So it's never just one individual's fault.

There are many behind such individuals.

CA: Can I borrow the mic for Andrew here?

Andrew Solomon: You've talked a lot about worlds and nations, but it seems to me that world affairs are increasingly in the hands of identity groups.

We focus on people recruited by ISIS in the United States.

We look at other groups that have formed beyond national borders and still represent important authorities.

How will they be integrated into systems, and how will diverse identities be coherent under national or global leadership?

YNH: Well, the problem of such diverse identities is also a problem of nationalism.

Nationalism believes in a single monolithic identity, and an exclusive or at least a more extreme version of nationalism believes in exclusive allegiance to a single identity.

Nationalism has therefore had many problems with people wanting to divide their identities between different groups.

So this is not just a matter of global vision, for example.

And again, I think history shows that we shouldn't necessarily think in such an exclusive perspective.

If you think there is only one human identity, then "I am just X and that's it. I can't be more than one, that's all." That's where the problem begins.

There are religions and sometimes nations that claim exclusive allegiance, but that's not the only option.

There are many religions and nations that allow us to have multiple identities at the same time.

CA: But one explanation for what has happened in the last year is that the liberal elite, for lack of a better word, is tired of clinging to so many different identities and feels like, "But what about my identity? I'm completely ignored here."

By the way, I thought I was in the majority. ”

And that's what actually caused a lot of anger.

YNH: Yes. Identity is always problematic because it is always based on fictional stories and sooner or later it collides with reality.

That is, almost all identities beyond the level of a few dozen basic communities are based on fictional stories.

they are not true.

they are not real.

It's just a story people invent, tell each other, and start believing.

All identities are therefore highly unstable.

They are not biological realities.

For example, nationalists sometimes think of the state as a biological entity.

A nation is created by mixing soil and blood.

But this is just a fictional story.

CA: Dirt and blood cause sticky mess.

(smiles) YNH: It certainly is, and if I think too much about it being a combination of dirt and blood, it's going to confuse my mind.

From a biological point of view, obviously the nations that exist today did not exist 5,000 years ago.

Homo sapiens are social animals, that's for sure.

But for millions of years, Homo sapiens and our ancestors lived in small communities of a few dozen people.

Everyone knew about others.

Modern nations, on the other hand, are imaginary communities, but I don't know all about these people.

I come from a relatively small country called Israel, but I have never met most of the eight million Israelis.

I never meet most of them.

They basically exist here.

CA: But in terms of this identity, this group that feels marginalized and is probably displaced, and you're actually talking about in a way in "homo deus" this group is expanding, but there's a very large number of people who are somehow displaced by technology, and eventually there's a very large -- I think you call it a "useless class" -- from an economic point of view, it's possible that these people traditionally have a useless class. It means that there is a nature.

YNH: Yes.

CA: How likely is that?

Is it something we should fear?

And can we somehow deal with it?

YNH: You should think carefully about that.

In other words, no one knows what the job market will look like in 2040 or 2050.

Many new jobs are likely, but not certain.

And even if new jobs emerge, it won't always be easy for the 50-year-old truck driver who lost his job to self-driving cars to reinvent himself as a virtual world designer.

Looking at the trajectory of the Industrial Revolution, historically, when machines replaced humans in certain types of work, the solution usually came from low-skilled work in new business areas.

As agricultural workers were no longer needed, people moved to low-skilled industrial jobs, and as more and more machines took over, people moved to low-skilled service jobs.

Now, when people say that there will be new jobs in the future, humans can do better than AI, humans can do better than robots, they usually think of high-skilled jobs like software engineers designing virtual worlds.

Now, I don't know how an unemployed Wal-Mart cashier can reincarnate as a designer in a virtual world at age 50, and I certainly don't know how millions of unemployed Bangladeshi textile workers can do that.

I mean, if they're going to do it, we need to start teaching Bangladeshis how to be software designers today, but we're not doing it.

So what will they be doing in 20 years?

CA: So I feel like you're really emphasizing a question that's been really bugging me for the last few months.

It's almost a tough question to ask in public, but if someone can offer some wisdom, it might be yours. So I ask you: What are humans for?

YNH: As far as we know, nothing.

(Laughter) So there is no great cosmic drama or great cosmic plan that we have a role to play.

And we just need to discover what our role is and play it our best.

This is true of all religions and ideologies, but as a scientist I can only say that this is not true.

There is no universal drama with roles for Homo sapiens.

So -- CA: I'd just like to rebut that from your own book. Because in Homo Deus you really give the most coherent and easy-to-understand description of the senses, consciousness, and that unique kind of human skill.

You point out that it is different from intelligence, the intelligence that we put into machines, and that there are actually many mysteries around it.

If you don't even understand what this feeling is, how can you assert that it is purposeless?

So, in your own opinion, isn't it possible that the raison d'être of man has a cosmic sense, and is the center of joy and love, happiness and hope?

And maybe we can build a machine that can help actually amplify it, even if it doesn't become sentient itself?

is that funny?

While reading your book, I realized that I expected so.

YNH: Well, I definitely think that the most interesting problem in science today is that of consciousness and mind.

We are getting better and better at understanding the brain and intellect, but less so at the mind and consciousness.

People often confuse intelligence with consciousness, especially in places like Silicon Valley, which makes sense because in humans, intelligence and consciousness work together.

So intelligence is basically the ability to solve problems.

Consciousness is the ability to feel things, feel joy, sadness, boredom, pain, etc.

In Homo sapiens and all other mammals, not only in humans, but in all mammals, birds and some other animals, intelligence and consciousness go together.

We often solve problems by feeling things.

Therefore, we tend to confuse them.

But they are different.

What's happening right now in places like Silicon Valley is that we're building artificial intelligence, but we're not building artificial consciousness.

Over the past 50 years, computer intelligence has grown tremendously, but computer consciousness has not advanced at all. Also, there is no indication that computers will become conscious any time soon.

First of all, if consciousness has a cosmic role, it is not unique to Homo sapiens.

Cows are conscious, pigs are conscious, chimpanzees are conscious, chickens are conscious, so if we are going in that direction, first of all, we need to broaden our horizons and have a clear reminder that we are not the only sentient beings on the planet. And when it comes to senses, when it comes to intelligence, there's good reason to think we're the most intelligent of all.

But when it comes to sentience, I see no evidence that humans are more perceptive than whales, or more perceptive than baboons, or more perceptive than cats.

So the first step is to go in that direction and expand.

And the second question, what is it for?

I don't think we need to find our role in the universe.

The most important thing is to be free from suffering.

What characterizes sentient beings in contrast to robots, stones, etc., is that sentient beings suffer and can suffer, and they should be noted not to find their place in the mystical cosmic drama.

They need to focus on understanding what suffering is, what causes it, and how to get rid of it.

CA: I know this is a big issue for you, but it was very eloquent.

There will be a flood of questions from the audience here. You'll probably be bombarded with questions and comments from Facebook as well.

Let's go quickly.

here's one.

Hold your hand behind your back if you want the mic. I'll give you the mic.

Q: In your work, you talk a lot about fictional stories that we accept as true, and we live our lives accordingly.

As an individual who knows it, how does it affect the stories you choose to live your life with and, like all of us, confuse them with the truth?

YNH: I try not to.

So perhaps the most important question for me, both as a scientist and as a human being, is how to tell the difference between fiction and reality. Because reality is out there.

I am not saying that everything is fiction.

It is very difficult for humans to tell the difference between fiction and reality, and it has become more difficult as history progresses. Because the nations, gods, money, corporations, and other fictions we have created now rule the world.

So it's very difficult to even think, "Oh, this is all just a fictional being that we created."

But the reality is out there.

best for me...

There are several tests to tell the difference between fiction and reality.

The simplest and best of all, in a nutshell, is the ordeal of suffering.

If it can suffer, it's real.

If it doesn't suffer, it isn't real.

A nation cannot suffer.

It's very, very clear.

Even if the country loses the war, saying "Germany lost the First World War" is a metaphor.

Germany cannot afford to suffer. Germany doesn't care.

Germany has no idea.

Yes, Germans suffer, but Germany does not.

Likewise, if a bank fails, it doesn't suffer.

If the dollar depreciates, the dollar will not be affected.

People can suffer. Animals can also suffer.

This is real.

So I begin, if you really want to see reality, I go through the door of suffering.

If we can truly understand what suffering is, we will also have the key to understanding what reality is.

CA: I have a Facebook question related to this. From all over the world, I can't read.

YNH: Oh, it's Hebrew. CA: It's Hebrew. Here you go.

(laughs) Can you read my name?

YNH: Or Lauterbach Goren.

CA: Well, thank you for contacting us.

The question is, "Is the post-truth era really a new era, or is it just a peak or moment in an endless trend?"

YNH: Personally, I don't agree with the idea of ​​post-truth.

My basic reaction as a historian is this. If this is the post-truth era, when was the truth era?

CA: Yes.

(laughs) YNH: Was it the 1980s, 1950s, the Middle Ages?

So we've always lived in a post-truth era, in a way.

CA: But I would argue against that. Because I think what people are talking about is that there was a world where there was less journalism medium, there was more tradition, things were fact-checked.

The importance of truth was built into the charters of those organizations.

In other words, if you believe in reality, what you write becomes information.

There was a belief that the information should be connected to reality in a realistic way, and writing the headline was a serious and earnest attempt to reflect what actually happened.

And people didn't always get it right.

But I think what's concerning now is that there was an incredibly powerful technological system that, at least for a while, didn't really care if it was connected to reality, just if it was connected to clicks and attention, and that it amplified everything massively, and that was arguably detrimental.

That's a natural concern.

YNH: Yes. So technology has changed to make it easier to spread both truth, fiction and falsehood.

It goes both ways.

But spreading the truth is also much easier than it used to be.

But I don't think there is anything inherently new in this prevalence of myths and fallacies.

I don't know, but it's not that Joseph Goebbels didn't know about this idea of ​​fake news and post-truth.

His famous words were, "If you tell a lie too often, people will think it's true. The bigger the lie, the better, because people don't think that big is a lie."

I think fake news has been with us for thousands of years.

Think of the Bible.

(Laughter) CA: But there are concerns that fake news is tied to oppressive regimes. There is concern that dark times may be coming as we look at fake news rebellions like the canaries in the coal mines.

YNH: Yes. So the intentional use of fake news is a disturbing sign.

But I'm not saying it's not bad, I'm just saying it's not new.

CA: This question about global governance and nationalism has generated a lot of interest at Facebook.

Here's a question from Phil Dennis: "How can we get people and governments to give up power?

Well, actually, the text is too big to read the entire question.

But is it a necessity?

Will it take war to get there?

Sorry Phil -- I messed up the question, but it's the text here.

YNH: One of the options some people talk about is that only catastrophes can shake humanity and pave the way for a true system of global governance, and that you can't do that before catastrophes, but you need to start laying the groundwork to be able to react quickly when disaster strikes.

But before disaster strikes, people will have no motivation to do such things.

Another thing I would like to stress is that anyone really interested in global governance should always be very clear that it does not replace or abolish local identities and communities, both should be part of a single package.

CA: I would love to hear more about this, because the very term “global governance” is almost the epitome of evil in the thinking of many people on the alt-right right now.

Globalists, global governance, no, go away because it just seemed scary and far-fetched and let them down!

And many see this election as the ultimate sting for those who believe it.

So how can we change the story so that it doesn't seem so scary and distant?

Please further develop this idea of ​​compatibility with local identity and local community.

YNH: Well, again, I think we should really start with the biological reality of Homo sapiens.

And biology tells us two things about Homo sapiens that are very relevant to this question. First, we are totally dependent on the ecosystem around us, and today we are talking about a global system.

There is no getting away from it.

And at the same time, biology tells us about Homo sapiens that we are social animals, but social on a very, very local level.

It is a simple fact of humanity that we cannot be intimate with more than about 150 individuals.

The size of the natural population, the natural community of Homo sapiens, is less than 150 people, and anything beyond that is actually based on all sorts of fictional narratives and large-scale organizations. And I think we can find a way, once again, to build on our biological understanding of our species, to interweave the two and understand the needs of both the global level and the local community today in the 21st century.

And I would like to take it a step further and say that it starts with the body itself.

The feeling of alienation and loneliness that people have today, of not being able to find their place in the world, I think the main problem is not global capitalism.

The biggest problem is that over the last 100 years, people have become disembodied and dissociated from their bodies.

As a hunter-gatherer, or even a farmer, survival requires constant contact with your body and senses at every moment.

If you go to the forest for mushrooms and don't pay attention to what you hear, smell and taste, you will die.

So you should be very connected.

Over the last 100 years, people have lost the ability to touch, hear, smell and feel their bodies and senses.

More and more attention is being focused on screens and what is happening elsewhere.

I think this is the deep reason for feelings of alienation, loneliness, etc. Part of the solution, therefore, is not to bring back collective nationalism, but to reconnect with our own bodies. When you reconnect with your body, you will feel more at home in the world.

CA: Well, depending on the situation, we may soon return to the forest.

I'm going to ask one more question in the conference room and one more on Facebook.

Ama Adidaco: Hello. I am from Ghana, West Africa. My question is how to present and justify the idea of ​​global governance to countries that have historically been disenfranchised under the influence of globalization. Also, if you're talking about global governance, it definitely sounds to me like it comes from a very Westernized notion of what "global" should look like.

So how do we present and justify the idea of ​​global versus outright nationalism to people in countries like Ghana, Nigeria and Togo?

YNH: First, I would like to say that history is very unfair and we need to be cognizant of that.

Many of the countries hardest hit by globalization, imperialism and industrialization in the last 200 years are also exactly the countries most likely to be hit hardest in the next wave.

And we have to be very clear about that.

If we do not have global governance and suffer from climate change and technological disruption, the United States will not be the worst affected.

The worst suffering will occur in Ghana, Sudan, Syria, Bangladesh and elsewhere.

So I think these countries have more incentive to do something about the next wave of disruption, be it environmental or technological.

Again, given the disruption of technology, i.e. AI, 3D printers and robots taking billions of jobs out of work, I worry much more about the people of Ghana and Bangladesh than about the Swedes.

So history is so unfair and the consequences of disasters are not shared equally by everyone as usual, so the rich will be able to escape the worst consequences of climate change in ways the poor cannot.

CA: And here's a great question from Cameron Taylor on Facebook. "At the end of 'Sapiens,' you said we should ask the question, 'What do we want? Well what do you think we should hope for? ”

YNH: I think we should want to know the truth, to understand the reality.

I think most of what we want is to change reality, to make it fit our aspirations, our wishes, and we should want to understand that first.

The long-term trajectory of history shows that for thousands of years we humans have tried to control the outside world and shape it to suit our desires.

And we dominated other animals, rivers and forests, completely reshaping them and causing ecological destruction without contentment.

The next step is to turn your gaze inward. And even having control over the outside world doesn't really satisfy us.

Let's take control of our inner world.

This is truly a big project of science, technology and industry in the 21st century. It is about trying to control our inner world and learning how to design and produce our bodies, brains and minds.

These will likely be the staple products of the 21st century economy.

When people think about the future, very often they think in terms of, "Oh, I wish I could control my body and my brain."

And I think it's very dangerous.

If we have learned anything from past history, it is that we have acquired the power to manipulate, but we are now facing an ecological meltdown because we did not fully understand the complexity of ecosystems.

And now, if we try to redesign our inner world without really understanding it, especially without understanding the complexity of our mental system, it can lead to a kind of internal ecological disaster, and we end up facing a kind of mental meltdown inside of us.

CA: If you put all the pieces together here, the politics of the moment, the technology of the future, the concerns you just outlined, it sounds like you're in a pretty dark place when you think about the future yourself.

It's pretty worrisome, isn't it?

is that so?

And if you had one reason for wanting it, how would you describe it?

YNH: I also focus on the most dangerous possibilities because this is similar to my work and responsibilities as a historian or social critic.

That said, the industry focuses primarily on the positive aspects, so it's the job of historians, philosophers, and sociologists to highlight the more dangerous potential of all these new technologies.

I don't think any of that is avoidable.

Technology is never deterministic.

The same technology can be used to build completely different kinds of societies.

If you look at the 20th century, you see industrial revolution technology, trains and electricity, everything that could have been used to create a communist dictatorship, a fascist regime, or a liberal democracy.

The train didn't tell me what to do.

Similarly, artificial intelligence and bioengineering and everything else today does not predetermine a single outcome.

Humanity can meet this challenge. Nuclear weapons are the best example of how humanity meets the challenges of new technologies.

In the late 1940s and 1950s, many believed that the Cold War would sooner or later end in a nuclear catastrophe that would destroy human civilization.

And this did not happen.

In fact, nuclear weapons have inspired humanity around the world to change the way international politics is managed in order to reduce violence.

And many countries have basically taken war out of their political means.

They no longer sought their own interests through war.

Not all countries do, but many do.

And perhaps this is the biggest reason why international violence has declined so dramatically since 1945 and that today more people commit suicide than die in war.

I think this is a great example of how humans can rise to the challenge of even the most terrifying technology and actually get some good out of it.

The problem is that there is little room for error.

There may not be a second choice to retry if the decision was not made correctly.

CA: That's a very powerful note. I think we should come to a conclusion based on this.

Finally, I would like to say one thing to the people here, to the TED community around the world watching online, and to everyone watching online. Engage in these dialogues.

If you believe, more than ever, that you, like us, need to find a different kind of conversation, help make it happen.

Reach out to others, try to have conversations with people you disagree with, understand them, piece together pieces, and help find ways to move these conversations forward. Then we can make a real contribution to what is happening in the world today.

I think everyone feels more alive, more concerned, more involved in current politics.

The risk seems to be quite high, so please help us to act wisely and sensibly.

Thank you Yuval Harari.

(applause)

This story begins with these two, my children.

When we were hiking in the Oakland woods, my daughter noticed a plastic pail of cat litter in the creek.

She looked at me and said, "Daddy?

it doesn't go there. ”

When she said that, it reminded me of summer camp.

On the morning of the visitation day, just before allowing the worried parents to come through the gate, the camp superintendent said, "Hurry up! Everyone pick up five pieces of trash."

Hundreds of children picking up 5 pieces each will soon have a much cleaner camp.

So I thought, why not apply that crowdsourced cleansing model to the entire planet?

That was the inspiration for Literaty.

The vision is to create a world without waste.

Let me explain how it all started.

I took a picture of a cigarette using Instagram.

Then I took another picture...

And another photo...

and another photo.

And I noticed two things. One is that trash has become more artistic and approachable. Second, at the end of a few days, I realized that I had 50 photos on my phone and picked up each one to document the positive impact I was having on the planet.

That means 50 fewer things you might see, step on, or eat a bird.

So when I started telling people what I was doing, they started getting involved.

One day, I received this photo from China.

And that's when I realized that Literacy is more than just beautiful pictures. We were becoming a data-gathering community.

Each photo tells a story.

You can see who picked up what, geotags tell you where and timestamps tell you when.

So I created a google map and started plotting the points where the pieces were being picked up.

And through that process, the community grew and data increased.

My two children go to school very close to Bullseye.

Garbage: It blends into the background of our lives.

But what if we brought it to the forefront?

What if we knew exactly what was on our roads, sidewalks, and schoolyards?

How can that data be used to effect change?

Let me show you.

The first is the relationship with the city.

San Francisco wanted to know what percentage of its trash was tobacco.

why?

to create a tax;

So they put a few men on the streets with pencils and clipboards to roam the streets gathering information that would impose a 20-cent tax on all tobacco sales.

He was then sued by a major tobacco company, claiming that his information gathering with pencils and clipboards was neither accurate nor verifiable.

The city called me and asked if our technology could help.

I don't know if they were aware that our technology was my Instagram account -- (Laughter) but I said, "Yes, we can."

(Laughter) "And you know if it's Congress or Pall Mall.

Additionally, all photos are geo-tagged and time-stamped to provide proof. ”

Four days later, 5,000 data were used in court, doubling taxes as well as defenses, and generating $4 million in annual recurring revenue for the city of San Francisco's self-cleansing efforts.

Well, I learned two things during that process. One is that Instagram isn't the right tool -- (Laughter) so we created the app.

And second, come to think of it, every city in the world has its own trash fingerprint, and that fingerprint provides both the cause of the problem and the path to its solution.

If you could create an income stream just by knowing your percentage of cigarettes, what about coffee cups, soda cans, and plastic bottles?

If you can get fingerprinted in San Francisco, what about Oakland, Amsterdam, or somewhere closer to home?

What about brands?

How can they use this data to reconcile environmental and economic interests?

There is a plague-ridden block in downtown Oakland.

The Literacy community came together to collect 1,500 pieces.

And here's what we learned: Most of that rubbish was from a very famous taco brand.

Most of that brand's trash was their own hot sauce packs, and most of those hot sauce packs were never opened.

Problems and Paths to Solutions -- Well, maybe the brand will offer hot sauce on request, install bulk dispensers, or just come up with more sustainable packaging.

How do brands take on environmental hazards, turn them into economic powerhouses, and become industry heroes?

If you really want to create change, the best place to start is with your children.

A group of fifth graders picked up 1,247 pieces of litter in the schoolyard alone.

And I've learned that the most common type of trash is the plastic straw wrappers from our cafeteria.

So the children went to the principal and asked, "Why are we still buying straws?"

and they stopped.

And they learned that while each of us individually can make a difference, together we can create a greater impact.

Whether you are a student or a scientist, live in Honolulu or Hanoi, this is a community for everyone.

It started with two small children in the woods of Northern California and has now spread all over the world.

And do you know how to get there?

one at a time.

thank you.

(applause)

Joseph Keller was jogging around the campus of Stanford University and was shocked to see women jogging there as well.

Why did their ponytails sway from side to side like that?

A mathematician, he tried to understand why.

(Laughter) Professor Keller was interested in many things, such as why teapots drip and how worms wriggle.

Until a few months ago, I had no idea who Joseph Keller was.

I read about him in the New York Times obituary.

The Times published a half-page editorial dedicated to him, which you can imagine is an upscale space for the company's newspaper.

I read obituaries almost every day.

My wife is right that I start my day with scrambled eggs and "Let's see who died today" is pretty morbid.

(Laughter) But when you think about it, the front page of the newspaper is usually bad news, pointing to human failure.

An example of how bad news suggests achievement is the obituary at the end of a newspaper.

My day job is to run a company that focuses on future insights that marketers can derive from past data, a kind of rearview analysis.

And we started thinking. What would happen if you held your rear-view mirror up to an obituary in the New York Times?

Were there any lessons on how to get your obituary picked up even if you weren't there?

(laughs) Would this be better with scrambled eggs?

(Laughter) So we looked at the data.

2,000 editorially unpaid obituaries in 20 months, 2015-2016.

What have the deaths, or rather lives, of these 2,000 people taught us?

Well, first we saw the word.

This is an obituary headline.

This is from the wonderful Lee Kuan Yew.

Removing the beginning and the end leaves us with a beautifully worded description that attempts to describe an accomplishment or a life in just a few words.

It's interesting just looking at them.

Here are some celebrities who have died in the last two years.

Try to guess who they are.

[Artist beyond genre] That is Prince.

[Boxing and 20th century giants] Oh yeah.

[Muhammad Ali] [groundbreaking architect] Zaha Hadid.

So I took these descriptors and did what is called natural language processing. When you enter these into the program, the superfluous words ("the", "and") are filtered out, and "Charades" shows words that are easy to imitate, leaving the most important words.

And we did that for all 2,000 descriptors, not just those four.

And here it is.

Film, theater, music, dance and of course art are huge too.

Over 40 percent.

You must wonder why so many societies force their children to pursue engineering, medicine, business, or law in order to be considered successful.

While we're talking about professions, let's look at age, the average age at which things have been achieved.

Its number is 37.

That means we have to wait 37 years...

On average, you will die at the age of 81, 44 years before you achieve your first memorable major achievement.

(Laughter) Talk about having to put up with it.

(laughs) Of course, it depends on your profession.

If you're a sports star, you probably hit your stride in your twenties.

And if you're in your 40s like me, you can participate in the fun world of politics.

(Laughter) Politicians don't act until they're in their mid-40s, and sometimes they're just admirable.

(Laughter) In case you're wondering what the "other" is, here are some examples.

Isn't it fascinating what people do and what people remember?

(Laughter) Our curiosity was so high that we wanted to analyze more than just descriptors.

So we captured the entire first paragraph of all 2,000 obituaries, but did this separately for two groups of people (famous and not-famous).

Celebrities – Prince, Ali, Zaha Hadid – and less famous people are the likes of Jocelyn Cooper, Reverend Curry, and Lorna Kelly.

I think there are very few people who have not heard their names.

Great people, great achievements, but not famous.

So what happens if we analyze these two groups (celebrities and non-celebrities) separately?

What does it tell us?

please look.

Two things jumped out at me.

First, "John".

(Laughter) If you're here by the name of John, please say thank you to your parents -- (Laughter) and when you're gone, tell your kids to bring up your obituary.

And the second is "help me".

We have discovered many lessons from well-directed lives, and those who have immortalized themselves in print to teach us.

The exercise was a fascinating testament to the kaleidoscope of life, and even more interesting was the fact that the vast majority of obituaries featured famous people and obscure people who had performed seemingly extraordinary acts.

They had a positive impact on the living structure.

they helped

So ask yourself this question as you return to your daily routine. How are you using your talents to benefit society?

Because the most powerful lesson here is that the world would be a better place if more people lived their lives to death trying to be famous.

thank you.

(applause)

I'd like to introduce you to some of the smartest kids I know, but before I do, I'd like to introduce you to camels.

This is Cathy from Therapy Camels. I am visiting one of my young patients in my room. It's so magical.

A friend of mine raises camels on a ranch in the Santa Cruz Mountains.

He has about eight horses and started horses 30 years ago because he thought horses were too common.

John is an unconventional thinker, which explains why the two of us remained such good friends throughout our lives.

Over the years, I've convinced him to bring those cute furry beasts onto the shuttle to spend time with sick children from time to time.

In talking with John, I was surprised to learn that camels have an average lifespan of 40-50 years.

Many of the children I work with have less than a year to live.

Here is a photo of the George Mark Children's House, the first pediatric respite care center to open in the United States.

After working as a psychologist in pediatric intensive care units for many years, I founded this organization in 2004 out of frustration at the dignified deaths that so many children and their families had to endure.

As I sat with a family with a child at the end of life, I was very aware of my surroundings.

The sound of passing carriages literally echoed through the room as the elevated train roared overhead as it raced down the tracks.

The lighting in the ward was fluorescent and too bright.

The monitors, as well as the elevators, beeped, announcing their arrival.

These families were going through the most excruciating moments of their lives. I wished I had a more peaceful place to say my final goodbyes to my young daughters and sons.

There must be a better place for children at the end of their lives than a hospital intensive care unit, I thought.

Our children's house is calm and child-rearing is enriched.

It's a place where families can stay together and spend quality time with their children, many of whom come for recreational purposes, some returning for years.

We call those kids "Mileage Flyers".

Rather than the bright and noisy areas of the hospital, their rooms are quiet and comfortable, featuring real living spaces for families, a garden sanctuary, and a great outdoor playground with special structures for children with physical limitations.

This sweet baby Lars came to us straight from the hospital's intensive care unit.

Imagine hearing heartbreaking news that none of us wanted to hear.

His parents had told him that Lars had brain problems and would not be able to swallow, walk, speak or develop mentally.

Realizing that he has little chance of survival, his parents decide to value the quality time they can spend together.

They moved into one of our family's apartments and cherished every day too little.

Lars' life was certainly short, a few weeks, but it was calm and comfortable.

He went hiking with his parents.

Spending time in the pool with our aquatic therapist helped alleviate the seizures he was experiencing and made it easier for him to sleep at night.

His family had a peaceful place to celebrate his life and mourn his passing.

Lars has been with us for five years, during which time his family has had a daughter and another son.

These are strong evidences of the positive outcomes of specialized pediatric hospice care.

The baby's physical discomfort was well managed and everyone was given time to spend together in a beautiful location.

From now on, I'm talking about elephants, not camels in this room.

Few people want to talk about death, and even fewer want to talk about the death of a child.

Losing a child, especially for those of us who have children of our own, is more terrifying than terrifying, paralyzing, debilitating and impossible.

But what I've learned is that just because we adults can't understand the injustice of losing children doesn't mean they stop dying.

And furthermore, if even the most innocent of us can face the possibility of death bravely enough, we gain an incomparable kind of wisdom.

Consider crystals, for example.

She was one of the first children to come into our care after we opened our doors.

She was nine years old when she arrived, and neurologists expected her to live another two weeks.

She had an inoperable brain tumor and her weakness had really accelerated in the week before she came to us.

Dressed all in pink and lavender and surrounded by her favorite Hello Kitty accessories, she settled into her room and spent several days winning the hearts of all the staff.

Little by little her condition stabilized and, to her surprise, she actually improved.

Crystal's improvement was attributed to a variety of factors, later dubbed the "George Mark Bump," a lovely and not uncommon phenomenon in which children out of the hospital lived longer than the prognosis of their disease.

The peaceful atmosphere around her, the delicious meals that were frequently modified at her request, the resident pets, the therapy dog ​​and the rabbit, spent many cozy hours with Krystal.

After spending a week or so with us, she called her grandmother. And my grandmother said,

And what do you think?

The washer and dryer are free so no need to bring your quarters. ”

(laughter) Soon Krystal's grandma came from out of town and spent the remaining four months of Krystal's life together enjoying some very special days.

Crystal also had a special day as she was sitting outside by a fountain in her wheelchair.

For a little girl who spent most of the year in a hospital bed, counting hummingbirds outside provided great time with Grandma and lots of laughter.

The other days were special because of the activities our Child Life Specialist arranged for her.

I strung beads on crystals and made jewelry for everyone in the house.

She drew pumpkins for Halloween decorations.

She had an exciting time planning her 10th birthday, but of course none of us thought she would be there.

All of us wore pink boas for the occasion and, as you can see, the queen of the day, Krystal, wore a sparkly tiara.

I arrived at work one hot morning and was greeted by Crystal and her partner in crime, Charlie.

With help, they set up a lemonade and cookie stand in a very strategic location outside the front door.

When I asked Krystal how much the cookie I chose cost, she said "$3".

(Laughs) I said that I felt it was a bit expensive for one cookie.

(laughs) It was small.

"I know," she admitted with a laugh. "But I'm worth it."

And there hides the words of wisdom of a girl whose short life has forever affected me, forever.

Crystals were worth it, but shouldn't every child whose life was cut short by a terrible disease be worth it too?

Recognizing that children's rest and hospice care are critical missing elements in our healthcare environment will enable us all to work together today to provide the same professional care that Crystal received.

Interestingly, we are also able to provide this treatment for about a third of what a hospital intensive care unit would cost, and our family never has to look at the bill.

We are forever grateful to our supporters for believing in this important undertaking.

Truth be told, my colleagues and I, as well as my parents and other family members, who experience this special wisdom are in a special position.

While there are only two independent pediatric hospices in the United States, we are happy to report that, based on our model, there are 18 other pediatric hospices in varying stages of development.

(Applause.) Yet most of the children who die each year in the United States die in hospital rooms surrounded by beeping machines and anxious, exhausted adults, who have no choice but to say goodbye to virtual strangers under the harsh lights of institutions.

For comparison, the United Kingdom, which has about one-fifth the population of the United States and half the area of ​​California, has 54 hospice and respite centers.

why is that?

I have obviously asked myself that question many times.

My guess is that even if it's a childhood illness for which there is no cure, Americans have a positive "can do" attitude and expect the health care system to solve it.

Even though the greatest kindness we give our children is actually the end of a peaceful and painless life, we take extra steps to keep them alive.

The treatment-to-treatment transition remains a difficult task for many hospital physicians who have been trained to actually save lives rather than gently guide patients to the end of their lives.

The father of a sweet little baby we took care of in his final moments certainly caught this dichotomy when he reflected that there were many people who could help bring the baby into the world, but few who could help him get it out.

So what is George Mark's magic ingredient?

Young patients who come to us often mean that complex medical diagnoses limit their lives: some spend long periods of time in hospital beds, some are confined to wheelchairs, some undergo intensive chemotherapy and rehabilitation.

We are accustomed to ignoring those restrictions.

The default answer is "yes" and the default question is "why not?".

That's why we brought a boy who probably wouldn't live another baseball season to Game 5 of the World Series.

That's why staff and children organize talent shows for their families and friends.

Who wouldn't be fascinated by a boy playing piano songs with his feet because his arms are atrophied?

That's why we hold proms every year.

It's so magical.

We started this prom after hearing a father lament that he would never wear a boutonniere on his son's tuxedo lapel.

A few weeks before the dance, the house is in an uproar, and it's hard to tell if the staff or the kids are more excited.

(laughter) On the night of the event, you'll be in a vintage car, walking the red carpet into a great room, with an amazing DJ and photographer ready to take pictures of the attendees and their families.

At the end of this year's night, one of the young, bubbly teenage girls, Caitlin, said to her mother, "It was the best night of my life."

The point is to capture the best days and nights, remove restrictions, make the default answer "yes" and the default question "why not?".

After all, life is too short, whether you live to be 85 or just 8.

trust me.

Trust Sam instead.

We don't keep people, especially the little ones we love, safe by pretending death doesn't exist.

After all, we have no control over our lifespans.

What we can control is how we spend our days, the spaces we create, the meaning and joy of creating.

You can't change the outcome, but you can change the process.

Isn't it time we realized that our children are our most uncompromising courage and our wildest imaginations?

thank you.

(applause)

My name is Lovegrove.

I know of only 9 lovegroves, 2 of whom are my parents.

They're cousins, and you know what's going to happen -- (Laughter) so I have a very weird, quirky side that I fight all the time.

So I decided to discipline myself with an 18 minute talk to help me get through today.

I held it in to pee.

I thought maybe if I held out long enough, I could make it through the 18 minutes.

(laughter) Okay. I am known as Captain Organic, which is both an aesthetic standpoint and a philosophical standpoint.

But what I want to talk to you about today is my love for shapes and how shapes can influence people's souls and emotions.

Not so long ago, thousands of years ago, we actually lived in caves, and I don't think that coding system was lost.

We respond very well to forms.

But I'm interested in creating intelligent forms.

I'm not at all interested in blobism or the superficial garbage that comes out as design.

I think this artificially induced consumerism is terrible.

My world is the world of people like Amory Robbins, Janine Benyus, and James Watson.

I am in that world, but I work purely instinctively.

i am not a scientist. Maybe I could, but I work in this world on my instincts.

In short, I am the translator of 21st century technology into the beautiful, nature-related products we use every day.

And we have to develop things. We need to develop a package of ideas that raises people's awareness and respect for what they have dug out of the earth and transformed into products for everyday use.

So, water bottle.

We start with this concept, which I call DNA.

DNA: design, nature, art.

This is Leonardo da Vinci's painting 500 years ago, before photography was born.

It shows how observation, curiosity and instinct work to create great art.

Industrial design is a 21st century art form.

People like Leonardo, not so many, had this amazing instinctive curiosity.

I work in a similar position.

I don't want to sound arrogant, but this is something I drew on a digital pad a few years ago, 500 years into the 21st century.

This is my impression of water.

As we know, Impressionism is the most valuable art form on earth, easily $100 million for Monet.

I'm using a completely new process now.

A few years ago, I reinvented my process to keep up with people like Greg Lynn, Tom Mayne, Zaha Hadid, and Rem Koolhaas. I think all of these people are persistent pioneers with great new ideas on how to make shapes.

This is all digitally created.

Here you can see acrylic blocks being machined and milled.

This is what I show my clients to say, "This is what I want to do."

At that point, I have no idea if that's even possible.

It's a temptation, but I feel in my heart that it's possible.

Now let's take a look at the tools.

These are invisible things that you will never see in your life.

This is background noise in industrial design.

It's like Anish Kapoor flowing through Richard Serra.

It's worth more than the product in my eyes.

I do not have.

This is the final product.

I felt like nothing. It should feel like nothing.

When I put the water in, I noticed that the water itself had a skin on it.

It is a symbol of water itself and raises people's awareness of contemporary design.

Each bottle is different, so the shape varies depending on the amount of water.

That's a ton of individualism from a single product.

Fits arthritic hands. Fits in a child's hand.

That's what makes the strength of the product, the tessellation.

It's the millefiori of ideas.

In the future, it will be such a shape. Because we need to move away from that kind of polymer and use it in medical devices and perhaps more important things in life.

Biopolymers, these new material ideas, will probably be practical within a decade.

Not very cool, is it?

But I can live with it. No problem about that.

I design biopolymers to meet those conditions. It's the future.

This video was shot in Cape Town last year.

There's a funny side to this.

I have a particular interest in this sort of thing, and it shocks me.

I don't know if I should get down on my knees and cry. I don't know what you are thinking.

But all I know is that nature is purposefully improving what once was, and that the strangeness is the result of innovative thinking.

When I see things like this, it seems like a very normal thing to me.

But these things have evolved over the years, and what we're going to do is take three weeks to design a phone. How the hell do you do that when you have something that takes hundreds of millions of years to evolve?

How do you condense it?

I go back to my instincts.

I'm not talking about designing a phone that looks like that, nor am I thinking about architectural design like that.

I'm just interested in natural growth patterns and the beautiful shapes that only nature really creates.

How it flows through me and how it comes out, that's what I'm trying to figure out.

This is a scan through a human forearm.

It is then blasted through rapid prototyping to reveal its cellular structure.

My office is a combination of a natural history museum and a NASA space lab.

It's a strange, kind of strange place.

This is one of my specimens.

It's made - bones are made from a mixture of inorganic minerals and polymers.

I studied cooking in school for four years, and the experience was called "home science," and it was a bit of a cheesy trick for me to try to get a science degree.

(Laughter) In fact, I put marijuana in every dish I made -- (Laughter) and I had access to all the best girls. It was great.

All the guys on the rugby team didn't understand.

Anyway, this is meringue.

Here is another sample I have.

Made from polysaccharides and proteins.

If you add water to it, it will dissolve.

Will it be possible to manufacture from food in the future?

not a bad idea. don't know.

I'll have to talk to Janine and a few others about it, but I instinctively believe that that meringue could be something, a car - I don't know.

I am also interested in growth patterns. In other words, the open-ended way in which nature grows things without any restrictions on form.

These interrelated forms inspire everything I do, but may end up creating something incredibly simple.

Here are the details of the chair I designed in Magnesium.

It shows the interplay of elements and the beauty of a kind of engineering and biological thinking almost as a bone structure.

Any of these elements can be hung on the wall as an art object of sorts.

The world's first magnesium chair.

The development cost is 1.7 million dollars.

It was published in Time magazine in 2001 as the new language of the 21st century.

boy. For someone who grew up in a small Welsh village, that's more than enough.

It shows how to create one overall format and divide what you need, like in the automotive industry.

This is a really beautiful way of working.

It's a divine way of working.

It's organic and essential.

It has a completely fat-free design and looks human when you look at it.

When it migrates to the polymer, it can change the elasticity and fluidity of the shape.

This is the idea of ​​a one-piece gas-infused polymer chair.

What nature does is poke holes in things.

It removes all the excess.

I make organic things that are essential for life.

It looks funky too. But I don't try to make funky stuff. Because I think it's absolutely disgraceful.

To take the idea of ​​fractal technology a step further, consider a membrane that constantly shrinks like nature. It could be the seat of a chair.

It may be the sole of a sports shoe.

It may be a car that blends into the seat.

oh. Let's go with that. That's what it is.

This is something that exists in nature.

Observation has allowed me to incorporate that natural process into my daily design process.

that's what i do.

It is called "superfluidity". That's my sculptural survey.

Like a 21st century Henry Moore.

Yet when I look at Henry Moore, my hair stands on end.

If he was a car designer, well, we would all be driving cars.

At the time, he was Britain's highest taxpayer.

That's the power of organic design.

It contributes greatly to our sense of being, our sense of relationship to things, sensuality, and even certain, very important socio-erotic aspects.

This is my work. This is all my process.

These are actually sold as works of art. It's a very large print.

Ironically, the object was made with the Killarney process. This is a brand new process for the 21st century here. I can hear Greg Lynn laughing his socks off as I say that.

I will talk about that later.

Examining these data images reveals something new.

It's self inspiration.

Diatom structures, radiolarians, things we couldn't see, but now we can, are also hollowed out.

They are made from virtually nothing. Made from silica.

Corals, all these forces of nature, remove what you don't need and bring you maximum beauty.

we need to be in that area.

This is a new chair that will be released in September.

It's from a company called Morosso in Italy. It is a gas-injected polymer chair.

The holes you see there are a highly filtered and watered down version of the tip of the diatom structure.

It's going along with the polymer flow, and you'll see - an image showing the perfect one is now appearing.

It's great to have a company in Italy that can help make this dream come true.

Looking at the shadows coming out of it, it could actually be something more important than the product, but that's the bare minimum.

Coring on the back allows for breathing.

All unnecessary material is removed and you actually get a bend as well.

I was going to start dancing then.

This is the work I am currently doing.

I observe the structures of single surfaces and how they stretch and flow.

It's based on the furniture typology, but that's not the ultimate motivation.

In contrast to aluminum it is grown.

It grew in my mind and then also in terms of the whole process I go through.

This was at the CCP in Coventry two weeks ago. The company makes parts for Bentleys and others.

It's being built as we speak, and will be on display at Phillips in New York next year.

I have a big show planned with Phillips Auctioneers.

Oh yes, I am shocked when I see these animations.

This is what happens every day in my studio.

Somebody has it in their computer, and there's something like, "Oh my God."

That's why I try to create this energy of invention in my studio every day.

Such a effervescent, idea-conveying soupy feeling of full charge.

One-sided products.

How to get your feet off the ground.

I would love to make this someday. Maybe flour, sugar, polymers, wood chips, I don't know, maybe even human hair.

don't know. I would love to try it. don't know. if you have a little time.

It also comes with a weird side. Many companies don't understand that.

Three weeks ago I was at Sony in Tokyo.

They said, "Give us a dream. What is our dream? How can we beat Apple?"

I said, 'You don't copy Apple, that's for sure.

What a waste. anyway.

(laughs) No, it's true. Fuck you. I mean -- (laughter) I'm telling you. they didn't take

For 20 years, I have had the image of water droplets on a hot bed.

That's my image of the car.

That's the car of the future. It's a drop of water.

I've been banging about this incredulously.

Cars are all wrong.

I'm going to show you something a little different.

Everywhere in the world they laughed when I showed this.

The only place that didn't laugh was Moscow.

How ridiculous is that? Can you make from 300?

A vacuum-formed carbon nylon pan is used.

Everything is comprehensively integrated. It opens and closes like a bread box.

No engine. There is a solar panel on the rear and a battery on the wheel. They fit like F1.

Simply remove it from the wall, plug it into an electrical outlet, and you're ready to go.

Tricycle: slow, feminine, and transparent so you can see the person riding it.

you drive differently.

I understand that. you do. you do.

And they are not anesthetized and cut off from life.

There is a hole in the front for a reason.

It's a city car. Please drive with me. Get out.

You make your way towards the proboscis. Get out.

Light up the solar panel to the sun and become a street light at night.

(Applause) If you take inspiration first from streetlights and then cars, this is what happens.

Driven by AI, bubbles containing hydrogen packages can be seen floating on the ground.

When I showed this in South Africa, afterward everyone was like, 'Hey, it's a car on a stick.

Can you imagine? A car on a stick.

(Laughter) If you put it side by side with modern architecture, it feels completely natural to me.

And that's what I do with furniture.

I will no longer have Charles Eames furniture in my building.

We aim to create furniture that matches the architecture.

I'm trying to build a transportation system.

I work with Airbus aircraft, and I do all this stuff to force myself to bring back these natural, nature-inspired dreams.

This is stereolithography of stairs.

This is a little dedication to James, James Watson.

I made this for my studio.

It cost $250,000 to make this.

Most people go buy an Aston Martin.

This is the data that accompanies it. Incredibly complicated.

It took me about two years as I was looking for a fat free design.

Lean and efficient. healthy products.

It is built with composite materials.

A single element rotates to create the overall element, which is a carbon fiber railing supported in only two places.

Modern materials make modern things possible.

Here is a shot in the studio.

I feel like this almost every day.

Don't be afraid to descend from heights.

Very few handrails. It doesn't pass any criteria.

(Laughter.) Who cares?

(Laughs) There is a handrail inside, so the strength is outstanding.

It's this whole integration. That's my studio. It's underground.

It's in Notting Hill, next to crappy stuff like prostitutes.

It's next door to David Hockney's original studio.

It features a lighting system that changes throughout the day.

Our children are going out to lunch. the door is open. They come back home because it is often raining and they prefer to stay at home.

This is my studio.

I bought it last year. Very hard to find.

If someone has a whale skeleton and wants to sell it, put it in the studio.

So just a few words about some of the things you see in the video.

This is a homemade video I made myself at 3am to show you what my real world is like.

Architects and designers never show us the real world.

This is called "Plasnet".

A new bio-polycarbonate chair made in Italy.

The world's first bamboo bike with folding handlebars.

We should all ride one of these.

If China is buying these crap cars, we should be driving them.

Like I said, it's like a natural history museum combined with a NASA lab.

Again, it's self-inspiration.

I mean, on the rare occasions I'm there, I enjoy it.

And many children will come.

I am a polluter to the children of investment bankers, perverts.

sorry.

(laughter) It's a sun seed. A new architectural concept.

At the top is the world's first solar-powered garden lamp. It was manufactured first.

Giles Revell should be here today to talk about the wonderful photos of the unseen.

The first sculpture model made for the object in Tokyo.

lots of stuff. I have a small leaf chair. The gold-looking ones are called "leaves".

On the wall hangs my book "Supernatural". When you read this book, you forget what you did, but you can remember it.

There is an air-filled brick that I made in Limoges last year as part of the 'new concept of ceramics in architecture'.

Gernot Oberfel, I've been working since 3:00 a.m. and I'm not getting paid overtime.

Overtime is a design passion, so it doesn't matter if you join the club or not.

(laughs) No, it's true. Guys like Tom and Greg, we travel like you can't, but it all fits.

Next week I'm going to Electrolux in Sweden and on Friday I'm going to Beijing.

And when I look at Ed's photos, I wonder why the hell he's going to China.

That's true. That's true.

We must have new instincts for the 21st century.

All of these must be combined.

It would be really fun if all the people we talked to during this period were working on the car together.

So I am developing a new X-light system in Japan.

Tuareg shoes of North Africa. I have a Kifwebe mask.

These are my sculptures.

Copper jelly mold.

(laughs) Sounds like a quiz show or something.

That's it, it's over.

Thank you James for your great inspiration.

thank you very much.

(applause)

So can we be optimistic?

Now, the "bottom billion" claim is that one billion people have been forced to live in a stagnant economy for 40 years and are thus alienated from the rest of humanity.

So the real question to ask is not "Can we be optimistic?"

The question is, "How can we give that billion people a certain hope?"

In my opinion, that is the fundamental challenge in current development.

What I am about to offer you is a recipe that combines two forces that have changed the world for the better: the alliance of compassion and enlightened selfishness.

Mercy. Because a billion people live in a society that doesn't give them any sure hope.

It is a human tragedy.

wise selfishness. For another 40 years of this economic disconnect, combined with global social integration, will create a nightmare for our children.

It takes compassion to get us started, and enlightened selfishness to get serious.

That is the alliance that will change the world.

So what does it mean to get serious about giving hope to the bottom billion?

What can we actually do?

Well, a good guide is to think, "The last time the wealthy world got serious about developing another part of the world, what did we do?"

I found this to provide a very good clue, except that I had to go back quite a long time.

The last time the wealthy world got serious about developing another region was in the late 1940s.

The world of prosperity was yours, America, and the region in need of development was my world, Europe.

It was post-war Europe.

Why did America get serious?

It wasn't just compassion for Europe, but it was.

Because in the late 1940s, as country after country in Central Europe fell into the Soviet bloc, they knew they had to, and they knew they had no other choice.

Europe had to be dragged into economic development.

So what did you do the last time you got serious?

Yes, there was a large aid program. thank you very much.

It was Marshall's aid. we have to do it again. Aid is part of the solution.

But what else did you do?

Well, you've scrapped your trade policy and completely reversed it.

Before the war, America was very protectionist.

After the war, you opened your markets to Europe, drew Europe into the world economy of the time, your economy, and institutionalized its trade liberalization through the establishment of the General Agreement on Tariffs and Trade.

In other words, a complete reversal of trade policy.

what else did you do?

Yes, we have completely reversed our security policy.

Before the war, your security policy was isolationism.

After the war you tore it apart and kept 100,000 troops stationed in Europe for over 40 years.

In other words, a complete reversal of security policy. anything else?

Yes, you are breaking the 11th Commandment, which is national sovereignty.

Before the war, you treated national sovereignty as sacred and didn't even want to join the League of Nations.

After the war you set up the United Nations, set up the Organization for Economic Co-operation and Development, set up the IMF, and encouraged Europe to set up the European Community. These are all systems for mutual government assistance.

It remains at the forefront of effective policies of aid, trade, security and government.

Of course, because the challenges are different, the policy details are different.

It is not about rebuilding Europe, it is about reversing the inequality of the bottom billion so they can actually catch up.

Is it easy or difficult?

We need to be at least as serious as we were back then.

Well, today we'll cover just one of those four.

I'll take the weakest sounding thing -- motherhood and nothing more than apple pie -- governments, mutual support systems for governments, to give one idea of ​​how we can strengthen governance. And show that it is very important now.

The opportunity we are about to focus on is real grounds for optimism for the bottom billion, and that is the commodity boom.

Commodity booms are pouring unprecedented amounts of money into many, but not all, countries in the bottom billion.

Partly, it's injecting money because of high commodity prices, but it's not the only one. There are many new discoveries.

Uganda has just discovered oil in one of the most miserable places on earth. Ghana discovered oil. Guinea is undergoing a new large-scale development of iron ore extracted from the ground.

So, a bunch of new discoveries.

Meanwhile, these new revenues dwarf aid.

To give just one example, Angola alone has $50 billion in annual oil revenues.

Last year, aid to 60 of the bottom billion countries was $34 billion.

The flow of resources from the commodity boom to the bottom billion is therefore unprecedented.

So there is some optimism.

The question is, how does it help them develop?

It is a great opportunity for transformative development.

Will it be taken?

Now, let's talk a little science here. This is a bit of science that I've been doing since 'The Bottom Billion', so it's new.

I have been looking at what is the relationship between rising commodity prices in exports and the growth of commodity exporters.

And I look to the world and for the last 40 years I've taken every country in the world and what their relationships are like.

And in the short term, say the first 5-7 years, it's great.

In fact, it's a hunky dolly. everything rises.

Better terms of trade means more money, but it also increases overall production.

Therefore, GDP will increase significantly. That's great. That's the short term.

And what about the long term?

Please come back in 15 years.

Well, Hunky Dolly in the short term, but Humpty Dumpty in the long term.

It will go up in the short term, but then most societies historically end up worse off than they would have been if there had been no boom at all.

It does not predict what the commodity price will be. It's the impact of price increases, the long-term impact projections.

So what could be wrong? Why does such a "resource curse" exist?

I looked it up again and found that the key issue is the level of governance, the initial level of economic governance when resource booms occur.

In fact, with good governance, resource booms don't happen.

It will rise in the short term and rise further in the long term.

Norway is the richest country in Europe. it's australia. Canada.

The resource curse is confined to countries that are completely underperforming in governance.

However, it will rise in the short term.

That's what we're seeing across the bottom billion right now.

This is the highest growth rate ever recorded.

And the question is whether the short-term situation will last.

And the last 40 years have historically been badly governed, but they weren't.

Countries like Nigeria are in worse shape than they would have been without oil.

So in the long run there is a threshold level above which it drops.

To benchmark that threshold, it corresponds to the level of Portuguese rule in the mid-1980s.

So the question is, are the bottom billion people above or below that threshold?

Well, there's one big change since the 1970s commodity boom. It is the spread of democracy.

So I thought maybe that changed the governance of the bottom billion.

The spread of democracy may make us more optimistic.

So I looked. Democracy does have great benefits, but unfortunately, it also has negative effects.

Democracies make these resource booms even more disruptive than dictatorships.

At that stage, I wanted to abandon research, but (laughs) it turns out that democracy is a little more complicated than that.

Because democracy has two different sides. One is the electoral race that determines how power is gained, and the other is the checks and balances that determine how power is used.

It turns out that strong checks and balances make resource booms good, while electoral competition is bad for democracy.

So what the bottom billion countries need is very strong checks and balances.

they don't have it

They got instant democracy in the 1990s with elections without checks and balances.

How can we improve governance and introduce checks and balances?

In any society with the bottom billion people, there is a fierce struggle to do just that.

A simple suggestion is that there should be an international standard, albeit voluntary, that details the key decision points that need to be taken to exploit these resource revenues.

We already have international standards, so we know these international standards work.

It's called the Extractive Industries Transparency Initiative.

It's a very simple idea that the government should report income to the public.

As soon as the bill was proposed, reformers in Nigeria adopted it, promoted it, and published its proceeds in newspapers.

Nigerian newspaper circulation soared.

People wanted to know how much the government was getting in revenue.

So we know it works. What is the content of this international standard?

I can't explain everything, but I'll give you an example.

The first is how to get resources out of the ground, an economic process that takes resources out of the ground and puts assets above ground.

And the first step is to sell the resource extraction rights.

Do you know how resource mining rights are sold today and how they have been sold over the last 40 years?

A company flies in and makes a deal with the minister.

And it's great for companies, but it's often great for ministers -- (laughter) -- but it's not great for their countries.

There is a very simple institutional technology that can change that, called Verified Auctions.

The public body with the greatest expertise on the planet is, without a doubt, the Treasury - the UK Treasury.

And the UK Treasury saw the value of the third-generation mobile phone rights and decided to sell them.

They calculated them to be worth £2 billion.

At just the right moment, some economists came in and said, ``Why don't you try an auction?

It was sold at auction for £20 billion.

If the UK Treasury could suffer a loss tenfold, just think what would happen to the Sierra Leone Treasury.

(Laughter.) I took that to the President of Sierra Leone, and the next day he asked the World Bank to send a team to provide expertise on how to conduct the auction.

There are five such decision points. Each requires an international standard.

If we can do that, the world will change.

We will support these social reformers who are striving for change.

That is our humble role. We can't change these societies, but we can help those in societies who are compounded, struggling, and usually failing.

But we don't have such rules yet.

Come to think of it, the cost of promulgating international rules is minimal.

Why aren't they there?

I realized that the reason they weren't there was because until our society had enough educated citizens, politicians would get away with gestures.

Unless we have an informed society, what politicians do, especially when it comes to Africa, is a gesture, something that looks good but doesn't work.

So I realized we had to work on building an informed nation.

That's why I broke all my professional codes of conduct as an economist and wrote an economics book you can read on the beach.

(laughter).

However, I must say that the process of communication is not natural for me.

That's why I'm standing on this stage, and it's worrying.

I grew up in a culture of self-hiding.

My wife showed me a blog comment about my last talk. A comment on that blog said, "Collier isn't charismatic (laughs), but he makes a point."

(Laughter.) (Applause.) If you agree with that, and agree that we need an informed public, then you know I need you.

Please become an ambassador.

thank you.

(applause)

What if our plants could sense toxicity levels in the soil and express that toxicity through leaf color?

What if those plants could remove toxins from the soil?

What if those plants were instead grown in their own packages or designed to be harvested only by the owner's own patented machinery?

What happens when biological design is driven by mass-produced commodity motives?

What kind of world would that be?

My name is Ani. Designer and researcher at the MIT Media Lab. I am part of a relatively new and unique group called Design Fiction. This group sits between science fiction and science fact.

And at MIT, I've been lucky enough to sit alongside scientists working in all sorts of cutting-edge fields: synthetic neurobiology, artificial intelligence, artificial life, and everything in between.

And all around campus, there are really good scientists asking questions like, "How can we make the world a better place?"

And one of the things my group often asks is, "What's better?"

What would be better for you, for me, for a white woman, for a gay man, for a veteran, for a kid with a prosthetic leg?

Technology is never neutral.

It constructs reality and reflects context.

If work-life balance in your office was a standard issue on day one, can you imagine what it would be like?

(Laughter) I believe it is the role of artists and designers to pose critical questions.

Art is a way to see and feel the future, and with all the new tools available, it's an exciting time for designers.

For example, synthetic biology attempts to describe biology as a design problem.

And through these developments, my lab asks what are the roles and responsibilities of artists, designers, scientists, and business people.

What do synthetic biology, genetic engineering mean, and how do they shape our notions of what it means to be human?

What impact will this have on society and evolution, and what risks does this game pose?

My own speculative design research at the moment draws on synthetic biology, but is aimed at more emotionally driven outcomes.

I am obsessed with smell as a design space and this project started with the idea of ​​what if you could take a selfie of smell.

(laughs) What if you could take your own natural body odor and send it to your lover?

Interestingly, this was a 19th-century Austrian tradition where courting couples would stuff apple slices under their armpits during the dance, and at the end of the night, the girl would give the man she liked the most the fruit she had used, and if they liked each other, he would chew on the smelly apple.

(Laughter) Famously, Napoleon wrote many love letters to Josephine, but perhaps the most memorable is this short, urgent note. "Go home in three days. Don't bathe."

(laughs) Both Napoleon and Josephine loved violets.

Josephine wore violet-scented perfume and carried violets with her on her wedding day, and Napoleon gave her a bouquet of violets every year on her wedding anniversary.

When Josephine died, he planted violets on her grave, and just before his exile he returned to the site of that grave, picked some of the flowers, buried them in a locket, and wore them until his death.

And I found this very moving, so I wondered if it was possible to modify the violets to make them smell like Josephine.

What if you could smell Josephine when visiting her site forever, just as Napoleon loved her?

Can we devise new ways of mourning, new rituals of remembrance?

After all, we've engineered genetically engineered crops that maximize profits, crops that can withstand transportation, crops that can be stored for a long time, sweet-tasting but resistant to pests, sometimes at the expense of nutritional value.

Can these same technologies be used for emotion-sensitive outputs?

Therefore, in my laboratory, I am currently researching the question of why humans smell like humans.

And it turned out to be rather complicated.

Factors such as diet, medications, and lifestyle can all contribute to odor.

And while our sweat is mostly odorless, it turns out that it's the bacteria and microbiome that determine our smell, mood, identity, and more.

And there are all sorts of molecules that you emit that we only know subconsciously.

So I've been cataloging and collecting bacteria from different parts of the body.

After talking with the scientist, we wondered if Ani's perfect formula might be 10 percent collarbone, 30 percent armpit, 40 percent bikini line, and occasionally let researchers in other labs sniff my samples.

And it was interesting to hear how body odors are perceived outside the context of the body.

We've received feedback that it smells like flowers, like chicken, like corn flakes, like beef carnitas.

(Laughter) At the same time, I'm cultivating a series of carnivorous plants that have the ability to emit meaty odors and attract prey, creating a sort of symbiotic relationship between the bacteria and these organisms.

And it just so happened that I was at MIT in a bar and I happened to be talking to a scientist who happens to be a chemist and a plant scientist, and we were talking about my project. And he said, "Well, this sounds like botany for lonely women."

(Laughter) Unfazed, I said, "Okay."

I challenged him.

"Can't I develop a plant that will love me back?"

And somehow he was like, "Of course, why not?"

So we started with, can plants grow towards me as if I were the sun.

Therefore, we focus on plant mechanisms such as phototropism, which causes plants to grow toward the sun by producing hormones such as auxin that induce cell elongation on the shade side.

And now I am creating a set of these chemical-infused lipsticks. This allows us to interact with plants based on their own chemical signatures. A lipstick that makes plants grow where you kiss them, and flowers where you kiss them.

And through these projects, I'm asking questions like how do I define nature?

If we could redesign the properties of nature, how would we define nature, and when would we do it?

Should it be done for profit or practicality?

Can it be done for emotional purposes?

Can biotechnology be used to create works that are as moving as music?

What is the line between science and its ability to shape our emotional landscape?

Form follows function is a well-known tenet of design.

Now, halfway between science, design, and art, I sometimes ask what would happen if fiction were telling the truth.

What kind of R&D lab is it and what questions do we ask together?

We often look to technology for answers, but as an artist and designer, I would like to ask, what is the question?

thank you.

(applause)

(guitar) (singing) Roller coaster, carousel.

High is heaven, but low can be hell.

You can grab the ring, ring the bell, and you never know when the ride will end.

People tell you this one thing. It makes your life complete.

So you give your all and end up on the street.

And then one day you wake up and are told, "You're the Queen," but then you realize someone else is pulling the strings.

Roller coaster, merry-go-round.

High is heaven, but low can be hell.

You can grab the ring, ring the bell, and you never know when the ride will end.

The one you love, they love you -- oh yes -- until the end of time.

But lose your edge or lose your cool and they'll drop you like a penny.

When luck is on your side, everyone gathers.

When your luck runs out, you will be alone again.

Roller coaster, merry-go-round.

Heaven can be high, and hell can be low.

You can grab the ring, you can ring the bell, but you never know when the ride will end.

Well, maybe I'm just being perverse and all these words are lies, but experience continues to teach me that prudent people are wise.

However, when you are cautious, you hesitate, and you hesitate to get lost. So grab the opportunity and never count the cost.

Roller coaster, merry-go-round.

High is heaven, but low can be hell.

You can grab the ring, you can ring the bell, and when the ride is over, it's over, it's over, you never, never know.

Roller coaster, carousel, roller coaster, yeah, yeah, yeah, carousel.

Carousel, carousel, carousel, carousel.

(Applause.) Michael Pemberton.

(Applause.) Thank you very much.

thank you.

Eight years ago I was possessed by an evil spirit.

I was 25 years old at the time and lived in a small house behind someone else's house in Los Angeles.

It was this guesthouse that hadn't been taken care of in a long time and was a bit run down.

As I was sitting there one night, I had this really eerie feeling, like I was being watched.

But there was no one there except my two dogs, just chewing on their paws.

and looked around. there was no one there.

And I thought, "Okay, that's just my imagination."

But it just kept getting worse, and I started feeling a tightness in my chest, like when you get bad news.

But I was sinking more and more, almost in pain.

And as the week went on, this feeling got worse and I began to believe that something was haunting me in my little guesthouse.

And I started hearing these sounds, this whispering sound, like something was going through me.

I called my best friend Claire and said, "This sounds crazy, but...

I think there is a ghost in my house and I need to get rid of it. ”

And she said--she's a very open-minded person--"I don't think you're crazy.

I think you need to perform a purification ritual. ”

(Laughter) "So I told him to buy some sage, burn it, and disappear."

So I said, "Okay," and went to buy some sage.

I had never done anything like this before, so I lit a sage and waved it around and said, "Go away! This is my house. I live here."

You don't live here! ”

But the feeling remained. Nothing got better.

Then I started thinking, okay, now this being is probably just laughing at me because it's not gone, and maybe I just look like this helpless, helpless being that I couldn't get rid of.

So, every day when I came home, folks, this feeling got worse, and I laugh at it now, but every night I sat on my bed and cried.

And the feeling in my chest was getting worse and worse.

It was physically painful.

And I went to my psychiatrist and tried to prescribe medicine, but she wouldn't prescribe it just because I wasn't schizophrenic.

(Laughter) So I finally got on the internet and googled 'ghost'.

And then I came across this ghost hunter forum.

But they were a special kind of ghost hunters and skeptics.

They believed that science had clarified every ghost case they investigated so far.

And so I thought. "Okay, smart people, this is what's happening to me. If you have an explanation, I'd love to hear it."

One of them said, "Okay.

Ever heard of carbon monoxide poisoning? ”

And I said, "Yes.

Like gas poisoning? ”

Carbon monoxide poisoning is a disease that causes gas to leak into your home.

Research has shown that the symptoms of carbon monoxide poisoning include chest tightness, whistling hallucinations, and unexplained fears.

So I called the gas company that night.

I said, "There is an emergency and I want you to come out."

I don't want to get involved in this story right now, but I want you to come out. ”

(Laughter) They came out. I said, "I suspect a gas leak."

They brought a carbon monoxide detector and the man said, "I'm so glad you called me tonight. I could be dead soon."

Thirty-seven percent of Americans believe in haunted houses, but how many of them have been in haunted houses and how many of them have been in danger?

That haunting story led to my work.

I am an investigator, and an investigator in two senses. I am an investigative journalist as well as an investigator of paranormal and spiritual claims.

It means several things.

In some cases, that means I'm pretending I need an exorcism, so oh yeah! -- So I can go to the exorcist and see if he's using gimmicks or psychological tricks to make him believe he's possessed.

Sometimes that means going undercover in fringe groups that report on podcasts I co-host.

And I've done more than 70 surveys like this with co-moderator Ross.

I want to say that 9 times out of 10 science wins and saves the day and everything is explained.

it's not true.

The truth is that 10 times out of 10 science will win and save the day.

(Applause.) That doesn't mean there are no mysteries.

Of course there are mysteries, but mysteries are mysteries.

it's not a ghost.

Well, I believe there are two types of truth, and it took me a while to get here, but I think they're right, so hear me out.

I believe there is an outer truth and an inner truth.

So if you say to me, "There was a man named Jesus, and he once existed," that is the outer truth, right?

And you can go see the historical records.

You can decide if it's true or not.

And I would argue that it seems to be true.

If you say, "Jesus rose from the dead," it's even more troublesome.

(Laughter) I think it's an outer truth claim. Because either he physically got back on his feet or he didn't.

I'm not going to go into whether he stood up or not, but I can say that it's an outside truth claim.

Did it happen or did it not happen?

But if you say, "I don't care if he rises from the dead.

It's symbolically important to me, that metaphor is very meaningful to me, very purposeful, and I'm not going to try to persuade you about it', now you've transferred it from the outer truth to the inner truth, from science to art.

And I think we tend to not be clear about this, trying to transfer our inner truth to the outer truth, not being fair to each other about it, or trying to make people hold it by the standards of the outer truth when they tell us their inner truth.

So what I am talking about here is the outer truth, the objective.

And my haunted house had an objective reality, right?

I've talked about gas leaks, but I don't think anyone here would say, "I still believe there were ghosts," -- (Laughter) because I know we should give up on ghosts as soon as we have these scientific explanations.

We use these things as a stopgap for the unexplainable.

We do not believe them because we have evidence. We believe them because there is no evidence.

There's a group in Los Angeles called the Independent Investigation Group (IIG) that does a great job.

They offer a $10,000 prize to anyone who can prove they have paranormal powers under scientific conditions.

No one has achieved it yet, but there are some who claim to be superhearing. This means they can hear voices or read minds from beyond.

And they had one very sincere person who believed they could read minds.

So they set him a test and this is how it always works.

The group said, "Okay, we have a protocol, we have a way to test this scientifically.

Do you agree with that too? ”

The person says yes. Then they test it.

It is very important that both sides agree.

They did it and tried him.

They said, 'Okay, what do you know?

I couldn't predict what Lisa was thinking.

It almost coincided.

You seem powerless. ”

And it gave them the opportunity to sit with him in compassion and have a very difficult discussion, which basically comes down to, "Hey, we know you're being sincere, and what that means is, I hear something in your head."

And the man had to make a very difficult, but truly life-changing, decision to go get help.

We are, in fact, making connections with people who previously seemed like otherworldly descriptions, pulling us into reality and perhaps helping change our lives for the better.

Now, on the other hand, maybe one day it will turn out to be true.

Maybe it turns out there are ghosts, and oh my god, that would be awesome!

And every time I do one of these surveys, I still get super excited, and even though I'm 75 and obsessed with them, I still swear about number 76, I would be like, "Here's that survey!"

(Laughter) Maybe I'm forever optimistic, but I hope I never lose this hope. And I encourage you to take the same attitude when people share their outward beliefs with you.

When talking about testable claims, respect them enough to ask these good questions.

The idea is that while you respect beliefs, you can't challenge them, so challenge them and see how you can weigh them together. But that's not true.

When we rock the keys, when we test the claims, we say, okay, I respect you, I hear you, I'm going to test it with you.

We've all had the experience of telling someone something and they say, "Oh, that's very interesting."

But if someone says, "Really? Huh?"

It may sound a little sketchy, but I'm listening,' and at least you know you're involved and respected.

And that is the attitude we should have towards these claims.

It shows that you care about what they say.

It's respect.

Yes, most of these searches will be empty, but that's how all science works.

So far, all cancer treatments have been unsuccessful, but we continue to search for two reasons.

First, because the answer matters.

Whether you look at afterlife, the paranormal, or a cure for cancer, you end up with the same question. "How long will we be here?"

And second, it's awe-inspiring to search for the truth, keep an open mind, and be willing to do something wrong or change your whole worldview.

Even now, ghost stories still excite me every time.

I still think that any group I join could be right and I hope I never lose hope.

Seeking what's there will help you figure out what's here, so let's all never lose that hope.

Also, install a carbon monoxide detector in your home.

thank you.

(applause)

When I first joined my family on the picket line, I was a blue-eyed, plump-cheeked five-year-old.

My mother told me to leave the doll in the minivan.

On a damp corner in Kansas, surrounded by dozens of relatives, I was clenching in my small fist an unreadable "homosexuals deserve death" sign.

This was the beginning.

Our protests quickly became a daily occurrence, an international phenomenon, and as a member of the Westboro Baptist Church, I became a regular at picket lines across the country.

The end of my anti-gay picketing career and life came 20 years after I knew it. Part of that was when a stranger on Twitter taught me the power of involving others.

In my house, life was framed as an epic spiritual battle between good and evil.

The good guys were my church and its members, the bad guys were everyone else.

The antics of my church were such that we were always at odds with the world, which reinforced our heterogeneity day by day.

“Distinguish between the unclean and the clean,” says the verse, and we have done so.

From baseball games to military funerals, we walked across the country with protest neon signs to tell people exactly how "dirty" they were and why they were headed for ruin.

This has been the focus of our entire life.

This was the only way I could do good in a world sitting on Satan's lap.

And like the other ten brethren, I pursued the Westborough task with a special zeal, with a heartfelt belief in what I was taught.

In 2009, that enthusiasm led me to Twitter.

At first, the people I met in the Home were predictably hostile.

They were the digital version of the screaming hordes I had seen at protests since I was a kid.

But in the midst of that digital brawl, a strange pattern emerged.

When someone arrived on my profile with their usual anger and contempt, I responded with a custom mix of Bible verses, pop culture references, and smiles.

They are understandably confused and caught off-guard, but then the conversation begins.

And it was polite, and both sides were genuinely curious.

How did the other come to such outrageous conclusions about the world?

Sometimes the conversation even seeped into real life.

When I was protesting in their city, people who sparred with me on Twitter came to the picket line to see me.

A man named David was one such person.

He runs a blog called Jewlicious, and after months of heated, friendly discussions online, he came to see me in Pickett, New Orleans.

He brought me some Middle Eastern desserts from Jerusalem where he lives, and I brought him kosher chocolate and a placard that said "God hates Jews."

(Laughter) There was no confusion in our position, but the line between friend and foe became blurred.

We began to see each other as human beings and the way we spoke to each other changed.

It took time, but ultimately these conversations planted seeds of doubt in me.

My friends on Twitter took the time to understand the Westborough doctrine, and in doing so were able to find contradictions I had missed all my life.

Why do we advocate the death penalty for homosexuals when Jesus said, "Let the innocent cast the first stone"?

How can you claim to love your neighbor when you pray that God will destroy him?

In fact, the care shown to me by strangers on the Internet was contradictory.

There is growing evidence that the people on the other side are not the devil I have been led to believe.

These realizations were life-changing.

Once we knew that we were flawed humans and not the final arbiters of God's truth, we could not pretend otherwise.

There was no justification for our actions, especially the cruelty of protesting funerals and celebrating a human tragedy.

This change in my perspective caused an even greater loss of faith in my church, and ultimately made it impossible for me to stay in the church.

Despite overwhelming grief and fear, I left Westboro in 2012.

In those days, right after I retired, my instinct to hide was almost paralyzed.

I wanted to hide from my family's judgment. My family were people whose thoughts and opinions meant everything to me, and I knew they would never speak to me again.

And I wanted to hide from a world I had long rejected—people who had absolutely no reason to give me a second chance after a lifetime of antagonism.

Incredibly, however, they did.

Thousands of tweets, hundreds of interviews, everything from local TV news to "The Howard Stern Show" was on the internet, so the world had access to my past, but many people accepted me with open arms anyway.

I wrote an apology letter for the harm I had caused, but I also knew that an apology would never undo it.

All I could do was build a new life and somehow find a way to repair the damage.

People had good reason to doubt my integrity, but most didn't.

And given my background, it was more than I could have hoped for. Forgiveness and doubt benefited.

It still amazes me.

I spent my first year away from home adrift with my sister who chose to leave home with me.

We stepped into the abyss and were shocked to find light and a way forward in the same communities we had targeted for so long.

David, my "Jewish" friend on Twitter, invited us to spend time with the Jewish community in Los Angeles.

We slept on the couch in the home of a Hasidic rabbi, his wife, and their four children — the same rabbi I protested three years ago with a placard that read, "Your rabbi is a whore."

We had long conversations about theology, Judaism, and life as we washed dishes and chopped vegetables for dinner in their kosher kitchen.

They treated us like family.

They put up no resistance against us, but again I was amazed.

That period was full of turmoil, but what I often return to is the amazing realization I felt during that period. I mean, it was a relief and an honor to let go of the harsh judgments that instinctively ran through my head about almost every character I saw.

I realized that now is the time to learn.

I needed to hear.

This has been popping into my head lately. Because I can't help but see many of the same destructive impulses that dominated my former church in our public discourse.

We celebrate tolerance and diversity more than any other time in our memory, yet we are increasingly divided.

We want good things: justice, equality, freedom, dignity and prosperity, but the path we chose is very similar to the one I left four years ago.

We tore the world apart to us and them, but only came out of the bunker long enough to drop rhetoric grenades on the other camps.

We see half the country as either a marginalized liberal elite or a racist, misogynistic bully.

No nuance, no complexity, no humanity.

Even if someone asks for empathy or understanding, the conversation almost always boils down to an argument about who deserves more empathy.

And as I have learned to do, we routinely refuse to acknowledge the shortcomings of our position or the strengths of the other.

I hate compromise.

We even target those on our own side who dare to question party lines.

This road has brought us brutal sniping, deepening polarization and even outbreaks of violence.

I remember this road

It doesn't take us where we want to go.

What gives me hope is that something can be done about this.

The good news is that it's easy, the bad news is that it's hard.

We have to talk and listen to people with whom we disagree.

It's hard because we often don't understand how the other got to where we are.

It's hard because righteousness, the conviction that we're on the right side, is so seductive.

It is difficult because it means extending empathy and compassion to those who show hostility and contempt.

The urge to respond to kindness is very tempting, but that's not who we want to be.

we can resist.

And I'm constantly inspired to do so by the people I meet on Twitter who were seeming enemies who turned into my dearest friends.

And especially in the case of my husband, an understanding and generous man.

There was nothing special about my reaction to him.

What was special was their approach.

Over the past few years, I've thought a lot about this. It turns out that they do four different things to enable real conversation.

These four steps were small but mighty. I am doing my best to use these in difficult conversations today.

The first is not to assume malicious intent.

I noticed that my friends on Twitter genuinely believed I was doing the right thing, even if my words were offensive and offensive.

Assuming malicious intent almost instantly prevents us from truly understanding why the person acts and believes the way they do.

We forget that they are human beings with lifelong experiences that have shaped their minds, stuck from that initial wave of anger, making it very difficult for the conversation to move beyond.

But assuming good or neutral intentions, we give our minds a stronger framework for dialogue.

The second is to ask questions.

When engaging with people across ideological differences, asking questions helps map the disconnect between our different perspectives.

This is important because you cannot present an effective argument without understanding where the other side is really coming from, and it gives the other side the opportunity to point out flaws in your position.

But asking questions also serves another purpose. It lets someone know they can hear you.

When my friends on Twitter stopped blaming and started asking questions, I almost automatically mirrored them.

Their questions gave me room to speak, but they also gave me permission to ask them questions and actually hear their answers.

It fundamentally changed the dynamics of our conversations.

Third, stay calm.

This takes practice and patience, but it is powerful.

At Westboro, I've learned to care less about how the way I speak affects other people.

I used to think that my righteousness justified my rudeness (stern tone, hoarseness, insults, interruptions, etc.). But that strategy ultimately backfires.

It's natural to turn up the volume and swear in stressful situations, but conversations tend to end in an unsatisfying and explosive manner.

When my husband was still just an anonymous Twitter acquaintance, our arguments were often bitter and pointed, but we always refused to escalate.

Instead, he changed the subject.

He joked, recommended books, and softly excused himself from conversations.

We knew the discussion wasn't over, but just paused briefly to get things back on track.

People often lament the loss of civility in digital communication, which is one of the advantages that online conversations have over face-to-face conversations.

There is a time and space buffer between us and the people whose ideas we find so frustrating.

You can use that buffer.

Instead of lashing out, we can stop, take a breather, change the subject, walk away, and come back to it when we are ready.

And finally ...

have a discussion.

This may seem obvious, but one of the side effects of having strong beliefs is that I sometimes assume that the value of my position is or should be obvious and self-evident, that I don't need to defend my position, that it's so obviously right and good that if someone doesn't understand it, it's their problem and it's not my job to educate them.

But if it were that simple, we would all see things the same way.

My friends on Twitter were very nice, but if they hadn't made their point, it would have been harder for me to see the world differently.

We are all products of the environment in which we were raised, and our beliefs reflect our experiences.

We cannot expect others to voluntarily change their minds.

If you want change, you have to advocate for it.

Our friends on Twitter didn't abandon their beliefs and principles, they just looked down on them.

They came up to me with endlessly legitimate attacks, asking penetrating questions with a mix of kindness and humor.

They treated me as a person. It made a bigger difference than two full decades of anger, contempt and violence.

Some people may not have the time, energy or patience to engage extensively, but reaching out to those with whom we disagree is an option available to all of us, even if it is difficult.

And we truly believe that we can accomplish the hard things, not just for them, but for us and our future.

Growing hatred and unruly conflicts are not what we want for ourselves, for our country, or for our future generations.

A few weeks before I left Westboro, when I desperately wanted a way to spend time with my family, my mom told me,

People I've loved with all my heart since before I was a chubby-cheeked five-year-old standing in a picket line with signs I couldn't read.

she said: "You're only human, my dear baby."

She wanted me to be humble, to trust God and the elders instead of questioning them.

But to me, she seemed to have missed the bigger picture: we are all just human.

We should be guided by that most basic fact and treat each other with generosity and compassion.

Each of us contributes to the community, culture and society that we constitute.

The end of this spiral of anger and blame begins with one person who refuses to indulge in these destructive and seductive impulses.

It just decides to start with us.

thank you.

(applause)

When I was a kid, I was obsessed with Guinness World Records and had a strong desire to set a world record myself.

But there was one small problem. That is, I had no talent at all.

So I decided to set a world record for something that didn't require any skill at all.

I decided to set a world record in the crawl.

(Laughter) Well, the record at the time was 12.5 miles, but somehow this seemed totally manageable.

(Laughter) I recruited my friend Anne and decided I didn't even have to train.

(Laughs) And on the day of the record attempt, I put furniture pads on the outside of my lucky jeans and left. Then things got really rough. The denim started rubbing against my skin, and soon my knees were digging in.

A few hours later it started to rain.

After that, Anne dropped out.

Then it got dark.

By now my knees were bleeding through my jeans and I was hallucinating from the cold and the pain and monotony.

And to describe the festival of agony I was going through, it took me 10 minutes to make one lap around the high school track.

The final lap took nearly 30.

After crawling for 12 hours, we stopped and went 8.5 miles.

In other words, I fell short of the 12.5-mile record.

Well, for many years I thought this was a story of miserable failure, but today my perspective has changed. Because when I was trying for the world record, I was doing three things.

I was stepping out of my comfort zone, seeking resilience, and beginning to feel confident in myself and my decisions.

I didn't know it at the time, but that's not the hallmark of failure.

That is the quality of courage.

Well, in 1989, at the age of 26, I became a San Francisco firefighter, the 15th woman in a fire department of 1,500 men.

(Applause.) As you can imagine, when I arrived there were a lot of questions about whether I could do the job.

So, even though I'm a 5'10" tall, 150 lb college rower who can handle 12 hours of searing knee pain (lol), I knew I had to prove my strength and fitness.

One day, I got a call about a fire, and just as I expected, when my locomotive team stopped, black smoke was rising from a building far away from the alley.

And I was with a big guy named Skip and he was on the nozzle and I was right behind and it was a typical kind of fire.

It was smoky, it was hot, there was a sudden explosion, Skip and I were blown backwards, our masks were slammed to the side, and there was a moment of confusion.

Then I got up, fumbled with the nozzle, and did what a firefighter should do. Charged forward, opened the water, and tackled the fire himself.

The explosion was caused by a water heater, so no one was hurt, and in the end, it was nothing serious, but then Skip came up to me and said, "Well done, Caroline," in a startled voice.

(laughter) So I was puzzled, why was he looking at me in amazement when it wasn't physically difficult to light a fire?

And it became clear. By the way, Skip was a very nice guy and a good firefighter, but he thought women couldn't be strong, they couldn't be brave either.

And he wasn't the only one.

Throughout my career, friends, acquaintances, strangers, men and women ask me again and again. "Caroline, aren't you afraid of that fire, dangerous things?"

I honestly have never heard a male firefighter ask this question.

And then I became interested.

Why was courage not expected of women?

Well, the answer began to emerge when a friend of mine lamented that her little daughter was a very scared cat. So I started noticing too. Yes, my daughter was worried, but more than that, her parents were worried.

Most of the words they said to her on outings started with "be careful", "be careful" and "no".

Okay, my friends weren't bad parents.

They just do more to warn their daughters than they do to their sons, as most parents do.

Ironically, there was a study on fire extinguishing poles in playgrounds. The study found that little girls were most likely to be warned about the dangers of fire poles by both their mothers and fathers, and that if a girl still wanted to play with fire poles, parents were very likely to help her out.

But little boys?

Children were encouraged to play on the pillar of fire, regardless of their fears, and parents often taught themselves how to use it.

So what message does this convey to both boys and girls?

Well, girls are vulnerable and need more help, boys can and should master difficult tasks on their own.

It says that girls should be afraid and boys should have guts.

Now, ironically, at this young age, girls and boys are actually very similar physically.

In fact, girls are often stronger and more mature until puberty.

Yet we adults act as if girls are more vulnerable, need more help, and can't handle as much as we do.

This is a message that we absorb as children and a message that permeates us fully as we grow up.

We women believe it, men believe it too, and guess what?

When we become parents, we pass it on to our children and so on.

Well, now you have the answer.

This is why women, even firefighters, were expected to be scared.

This is why women are often terrified.

Now, some people may not believe me when I say this, but I am not against fear.

I know it's an important feeling and it's there to keep us safe.

But the problem is that fear is the primary reaction we teach and encourage girls when faced with something outside their comfort zone.

So, I was a paraglider pilot for many years -- (applause) paragliders have wings like parachutes that fly very well, but I think to many people it looks like a bed sheet with strings attached.

(Laughter) And I spent a lot of time on top of mountains inflating this bedsheet, running away, flying.

And I know what you're thinking

Caroline, it seems to me that a little fear makes sense here.

You're right, you're right.

I swear I was terrified.

But on that mountaintop, waiting for the right wind, I felt so much more. Elation, self-confidence, etc.

I knew I was a good pilot.

I knew that if the conditions were right, I wouldn't be able to go there.

I knew how great it would be at 1,000 feet.

There was fear, sure, but I watched it closely, assessed how relevant it was, and put it where it should be. That was mostly behind my elation, anticipation, and confidence.

So I'm not against fear.

I'm just advocating bravery.

Now, I'm not saying your daughters have to be firefighters or paragliders. But I am saying that we are raising our daughters cowardly and even helpless. And it starts by warning you about physical dangers.

The fears and experiences we have learned remain with us as women and morph into everything we face and want to throw off: our reluctance to speak up, our respect for being liked, and our lack of confidence in our decisions.

So how can we be brave?

Well, good news.

Courage is learned, and like what is learned, it must be practiced.

So first, we have to take a deep breath and encourage girls to skateboard, climb trees, and scale fire pillars in playgrounds.

This is what my mother did.

She didn't know it at the time, but the researchers gave it a name.

They call it risky play, but research shows that risky play is really important for kids, all kids. Because it teaches risk assessment, it teaches delayed gratification, it teaches resilience, it teaches self-confidence.

In other words, when kids go out and practice bravery, they learn valuable life lessons.

Second, we have to stop giving girls so much attention.

So next time you say, "Be careful, you'll get hurt," or "Don't do that, it's dangerous," be careful.

And remember, what you're really telling her is that you shouldn't push yourself, that she really isn't good enough, that she should be afraid.

Third, we women must also start practicing bravery.

We cannot teach girls until we teach ourselves.

Here's one more thing. Fear and elation are very similar. Hand trembling, heart rate increase, nervous tension, and I'm sure for many of you, it was mostly elation when you finally lost your mind and felt scared. And now you're missing your chance.

Practice with it.

And while girls should go outside to develop their courage, I understand adults don't want to ride hoverboards or climb trees. So we all need to be brave and practice at home, in the office, and even here, to talk to people we truly admire.

Finally, for example, when my daughter is riding her bike at the top of a steep hill and insists she's too scared to get off, guide her to be brave.

After all, the slope may be really too steep, but she will come to that conclusion through courage, not fear.

Because this is not about the steep slope in front of you.

This is about her life ahead, all the dangers we can't protect her from, all the challenges we can't guide her through, and all the things our girls here and around the world face in the future, that she has the tools to deal with and assess.

By the way, today's crawl world record is (laughs) 35.18 miles, and I would love to see a girl break that.

(applause)

Hello, I'm Joy, the poet of code. It's on a mission to thwart a growing invisible force, a force I've called "coded gaze," in algorithmic bias terminology.

Algorithmic bias, like human bias, also leads to unfairness.

However, algorithms, like viruses, can spread bias rapidly and at scale.

Algorithmic bias can also lead to exclusive experiences and discriminatory behavior.

Tell me what you mean

(Video) Joy Buorumwini: Hi Camera. I have a face.

can you see my face

A face without glasses?

I can see her face.

what about my face

have a mask can you see my mask

Joy Buorumwini: So how did this happen?

Why am I sitting in front of my computer in a white mask trying to be detected by a cheap webcam?

Well, when I'm not battling the coded gaze as a code poet, I'm a graduate student at the MIT Media Lab, where I have the opportunity to work on all sorts of whimsical projects. That includes Aspire Mirror, a project I did to project a digital mask onto my mirror.

So if you wanted to feel powerful in the morning, you could wear the lion.

If you want to lift your spirits, you might as well get a quote.

So I built a system using common facial recognition software, but found it very difficult to test without wearing a white mask.

Unfortunately I've run into this issue before.

When I was an undergraduate computer science student at Georgia Tech, I worked on social robots. One of its tasks was to have robots play peek-a-boo. This is a simple turn-based game where the partner covers their face and says "peek-a-boo!"

The problem is, if I couldn't see you and my robot couldn't see me, peek-a-boo wouldn't really work.

But I used my roommate's face to finish the project, submit the assignment, and figured someone else would solve the problem.

Not long after that, I was in Hong Kong for an entrepreneurial contest.

Organizers decided to take participants on a tour of local startups.

One of the startups is developing a social robot and decided to demo it.

This demo worked for everyone until it got to me. You can probably imagine that.

Couldn't detect my face.

When I asked the developer what was going on, it turned out they were using the same general-purpose facial recognition software.

Halfway around the globe, I learned that algorithmic biases can propagate as quickly as you download a file from the internet.

what happened? Why is my face not detected?

Well, we need to consider how to give machines vision.

Computer vision uses machine learning techniques for facial recognition.

How this works is to create a training set containing example faces.

this is a face this is a face this is not a face

And over time, we can teach computers how to recognize other faces.

However, if the training set is not very diverse, it will be difficult to detect faces that deviate significantly from established norms. This is what was happening to me.

But don't worry. I have good news for you.

The training set doesn't just pop up out of nowhere.

can actually be created.

Therefore, there is an opportunity to create a full-spectrum training set that reflects a richer depiction of human nature.

My example shows that social robots were the catalyst for my discovery of algorithmic bias exclusion.

However, algorithmic biases can also lead to discriminatory behavior.

Police across the United States are beginning to use facial recognition software to combat crime.

The Georgetown Act released a report showing that one in two adults in the United States, or 117 million people, has registered their face with a facial recognition network.

Police departments can now monitor these networks without regulation using algorithms that have not been audited for accuracy.

However, we know that face recognition is not infallible and labeling faces consistently remains a challenge.

You may have seen this on Facebook.

My friends and I always laugh when we see other people mislabeled in our photos.

But misidentifying criminal suspects is no laughing matter, nor is it a violation of civil liberties.

Machine learning is used for facial recognition, but it extends beyond the realm of computer vision.

Data scientist Cathy O'Neill talks about the rise of new weapons of mass destruction in her book, Weapons of Math Disaster. Weapons of mass destruction are ubiquitous, mysterious and destructive algorithms that are increasingly being used to make decisions that affect more aspects of our lives.

So who gets hired or fired?

can you get that loan? Do you have insurance?

Did you get into the university you wanted?

Do you and I pay the same price for the same product purchased on the same platform?

Law enforcement agencies are also beginning to use machine learning for predictive policing.

Some judges use machine-generated risk scores to determine how long an individual will spend in prison.

Therefore, we need to think seriously about these decisions.

are they fair?

And we've learned that algorithmic biases don't always lead to fair results.

So what can we do about it?

Well, you can start thinking about how to write more inclusive code and adopt inclusive coding practices.

It really starts with people.

So it matters who writes the code.

Are you building a full-spectrum team of diverse people who can check each other's blind spots?

On the technical side, how you code matters.

Do you consider fairness when developing your system?

And finally, why you write code matters.

We have used the tools of computational creation to unlock vast wealth.

We now have an opportunity for greater equality if we make social change a priority, not an afterthought.

These are the three principles that make up the "Incoding" movement.

It matters who codes, how they code, and why they code.

So, to go into incoding, you can start looking at building a platform that can identify bias by auditing existing software, not just collecting people's experiences like the one I shared.

You can also start building a more comprehensive training set.

Imagine a "Selfies for Inclusion" campaign where you and I help developers test and create a more comprehensive training set.

We can also start thinking more conscientiously about the social impact of the technologies we are developing.

To start the coding movement, I launched the Algorithmic Justice League. Anyone who cares about fairness can help combat the coded gaze.

At codedgaze.com you can report bias, request an audit, become a tester and participate in the ongoing conversation #codedgaze.

So join me in creating a world where technology works for all of us, not just some – a world that values ​​inclusivity and is central to social change.

thank you.

(Applause.) But I have one question. Will you join me in battle?

(laughter) (applause)

Why are men's stories considered universally important and women's stories simply about women?

My grandmother left school when she was 12.

She had 14 children.

My mother left school when she was 15.

she was a secretary

I graduated from college to be a theater director, and my progress has to do with the fact that people I'll never meet fought for women's rights, voting rights, education, and progress.

And I am determined to do the same, and of course you will too.

why not?

(Applause) So seven years ago I started a festival called WOW, Women of the World. It is now held in 20 countries on 5 continents.

And one of those countries is Somaliland in Africa.

So I traveled there last year and one of the pleasures of going there was going to these caves.

Ras Hale Cave.

These caves now contain some of the oldest cave paintings in the world.

These paintings are believed to be around 9,000 to 11,000 years old.

Art: What humans have been doing since evolution.

It's about how we talk about ourselves, how we understand our identities, how we see our surroundings, and how we get to know each other for the meaning of life.

That's what art is.

So look at this little photo.

I think it's a little girl.

I thought it looked a little like me when I was younger.

And I wondered who painted this playful, youthful figure.

And I asked the cave curator.

I said, "Tell me about the man and woman who painted this."

And he looked at me with complete suspicion and said, 'A woman did not draw these pictures'.

And I said, "Well, that was 11,000 years ago."

I said, "How do you know?"

(Laughter.) And he said, 'Women don't do that.

Men made these marks. Women are not. ”

It didn't surprise me much. Because that's the attitude I've seen all my life as a theater person.

We are told that the knowledge of God is transmitted through the masculine, whether it be an imam, a priest, a rabbi or a saint.

Similarly, we are told that creative genius resides in masculinity, that it is masculinity that tells us who we really are, that masculinity tells universal stories on behalf of all of us, whereas female artists really only talk about women's experiences, about women's issues that really only relate to women, that they only care about men, and really just some men.

And I think it's that very belief that we're taught that really determines whether or not we're ready to believe that women's stories really matter.

And unless we are prepared to believe that women's stories really matter, women's rights don't really matter, then real change can't happen.

I would like to talk about two examples of stories that are considered universally important. and "Hamlet".

(Laughter) So when my two kids were little, Caroline was 8 and Robbie was 5, so I took them to see "E.T."

And this is a great story of this little alien who ends up living in an American family with a mother, two brothers and a sister, but he wants to go home.

Not only that, some really bad scientists want to do experiments on him and are looking for him.

So children have a conspiracy.

They decided to get him back to their spaceship as soon as possible, put him in a bicycle basket and off they went.

But, unfortunately, the thugs have caught on and are catching up, some with sirens, guns and yelling to stop them. It's so scary and they're getting close to children, and children are never going to survive.

And suddenly, like magic, a motorcycle flies through the sky, above the clouds, above the moon, trying to save E.T.

So I turn around to see the children's faces and Robbie is gleeful, being with the children, saving E.T., a happy boy.

And when I turned to Caroline, she had tears in her eyes.

And I said, "What's wrong?"

And she said, "Why can't I save E.T.? Why can't I come?"

And suddenly I realized they weren't children. They were boys – all boys.

And although Caroline had invested heavily in E.T., she felt humiliated and rejected because she was not invited to save him.

So I wrote to Steven Spielberg -- (laughter) (applause) and said, "I don't know if you understand the psychological significance of what happened, but are you ready to pay for the treatment?"

(Laughter) Twenty years later, I still haven't heard back from him, but I'm still hopeful.

(Laughter) But I thought this was interesting. Because if you read a review of what he intended with E.T.

But for some reason, he didn't include the idea of ​​women's differences in this line of thinking.

He thought he was writing a story about all mankind.

Caroline considered herself alienating half of humanity.

I thought he was writing a story about human goodness. She thought he was writing the heroic adventures of a young man.

And this is common.

Men feel they are entrusted with the role of universal communication, but of course, how can they do that?

They write about men's experiences through their eyes.

We'll have to see this for ourselves.

We have to be prepared to go back through our books and movies and everything we love and say, "Actually, this was written by a male artist, not an artist."

We need to understand that many of these stories are written through the male perspective.

That's fine, but in that case women should have 50 percent of the rights in the stage, film, novel, and creative space.

I'm talking about "Hamlet".

Will it or won't it?

That's the question.

But that's not my question.

My question is why, as a young woman, I was taught that this is a classic example of the human dilemma and human experience.

It's a great story, but it's really about a young man who fears he won't be able to make ends meet in the world of men unless he avenges his father's murder.

He tells us a lot about having the option of committing suicide, but the reality is that Ophelia, who actually commits suicide, never gets a chance to talk to the audience about how she feels after being humiliated and abused by him.

And when his relationship with Ophelia ends, he becomes hostile to his mother. Basically because she has the audacity to fall in love with and enjoy sex with her uncle.

(Laughter) It's a great story, but it's about a man's conflict, a man's dilemma, a man's struggle.

However, I was told that this was a human story, even though only two women were featured.

And unless you reeducate yourself, you will always think that women's stories are less important than men's stories.

A woman could have written Hamlet, but she would have written it differently and would not have gained worldwide acclaim.

Writer Margaret Atwood said, "When a man writes about washing dishes, it's realism.

It's unfortunate genetics when women write about doing it. ”

(Laughter) Now, this is not just for those days.

So when I was a young girl, when I had a strong desire to become a theater director, my male lecturer said to me, "There are three women directors in England, Jude," he said.

"There's Joan Knight, who's a lesbian, Joan Littlewood, who's retired, and Buzz Goodbody, who just committed suicide.

So which of these three would you like to be? ”

(Laughter) Now, apart from the offensive slurs against gay women, the fact is he wanted to humiliate me.

He thought it was ridiculous that I wanted to be a director.

So when I told my friend Marin Alsop, the conductor, she said, 'Oh yeah, my music teacher said the exact same thing.

He said, 'Women don't command.' But in the years since then, we've had a track record.

“Well, it will be different now,” I think.

Unfortunately, it's still the same.

The current director of the Paris Conservatoire recently said, ``It takes great physical strength to conduct a symphony, but women are too weak.''

(Laughter) Artist George Basselitz said, "The fact is, women can't paint.

Well, they can't draw very well. ”

Writer V.S. Naipaul said two years ago, "I read two paragraphs and immediately know if it was written by a woman, but I stop reading because it doesn't suit me."

Audience: Oh!

And so it goes on.

We must find ways to stop young girls and women from feeling that not only is their story unimportant, but that they are not allowed to be storytellers.

Because once you feel like you can't stand in a central space and speak for the world, you feel like you can offer your product to a small select group.

They tend to do small jobs on small stages, which means they have less financial power, less reach, less credibility as artists.

And we finally offer artists such an incredibly outstanding space in the world. Because they are our storytellers.

Now, if you're not an artist, why does it matter to you?

Assuming you're an accountant, entrepreneur, doctor, or scientist, should you care about female artists?

Because all civilizations, all human beings, have relied on artists to tell their human stories, as evidenced by cave paintings. And if the human story is ultimately told by men, take my word for it, it will be about men.

Now let's make some changes.

Let's change all our institutions, not just the West.

Please do not forget. This message is being conveyed to girls and women in Nigeria, China, Russia and Indonesia that women are not creatively gifted.

All over the world, girls and women are said to have finally run out of creative inspiration.

And I ask you, do you believe it?

Do you think women can be creative geniuses too?

(Applause and cheers) So please go ahead and find a platform where you can support women artists, buy their work, claim their voices are heard, and have their voices heard.

And remember this. In a way, artists have to imagine another world if they are to get through this moment in a world we know to be unequal.

And I call on all artists, women and men, to imagine a world of gender equality.

Let's paint it. Let's draw.

Let's write about it. Let's shoot.

And if you can imagine it, you will have the energy and stamina to work towards it.

When I look at this little girl 11,000 years ago, I want to know that this little girl can stand there now and think she has a right to her dreams, a right to her own destiny, a right to speak up for the whole world and be recognized and celebrated for it.

thank you.

(applause)

When I die, I want my body to be laid out side by side for animals to eat.

Spreading out to be eaten by animals is not good for anyone.

(Laughter) Maybe you've already discussed end-of-life with your family and decided, I don't know, to be cremated.

And for full disclosure, what I'm proposing to my dead body isn't strictly legal at this point, but it's not unprecedented.

We have been lining up the dead throughout human history. It is called an exposed burial.

In fact, it could be happening right now as we speak.

In the mountainous regions of Tibet, corpses are left to be eaten by vultures in a ritual called "empty burial."

In Mumbai, India, the Parsis believers bury their dead in a structure called the Tower of Silence.

These are interesting cultural tidbits, but they are not very popular in the Western world. Not what you would expect.

In America, our death tradition has evolved to chemical embalming followed by burial in local cemeteries or, more recently, cremation.

I myself recently became a vegetarian. So I spent the first 30 years or so of my life desperately sucking up every animal I could get my hands on.

Why shouldn't they keep watch with me when I die?

(laughs) Am I not an animal?

Biologically speaking, aren't we all animals in this room?

Accepting the fact that we are animals can have potentially terrifying consequences.

It means accepting that we are destined to decay and die, just like any other creature on earth.

For the last nine years I have worked in the funeral industry first as a crematorium operator, then as a funeral director, and most recently as an owner of my own funeral home.

And there is good news. If you want to avoid the whole "doomed to rot" thing, the funeral industry has all the help in the world to avoid it.

This is a multi-billion dollar industry whose economic model is based on the principles of carcass protection, hygiene and beautification.

Whether intended or not, the funeral industry promotes this idea of ​​human exceptionalism.

It doesn't matter what it takes, how much it costs, or how bad it is for the environment. We do it because humans are worth it.

It ignores the fact that death can be an emotionally troubling and complex event, and that there is beauty in decay, in a natural return to Earth where we came from.

Now, don't get me wrong, I fully understand the importance of ritual. Especially when it comes to those we love.

But we need to be able to create and practice this ritual without harming the environment, so we need new options.

So let's go back to the idea of ​​protection, hygiene and beautification.

Start with the corpse.

The funeral industry protects your remains by selling hardwood or metal caskets with rubber sealants to families.

On the day of burial, the cemetery lowers the coffin into a large concrete or metal vault.

We waste resources like concrete, metal, and hardwood hiding them in vast underground fortresses.

If you choose to be buried in a cemetery, your body will never come close to the surrounding soil.

You are not food for bugs.

Next, the industry disinfects your body by embalming, or chemically preserving the dead.

This procedure drains the blood and replaces it with formaldehyde, which is toxic and carcinogenic.

They say they're doing this for public health because dead bodies can be dangerous, but the doctors in this room would say the claim applies only if the person dies from a wild infection like Ebola.

Let's be honest, it's perfectly safe, even if it's a bit stinky and disgusting human rot.

Disease-causing bacteria are not the same as spoilage-causing bacteria.

Finally, the industry will glorify the corpse.

It will be said that the natural corpses of fathers and mothers are not good as they are.

They put it in cosmetics.

They put it in their suits.

They inject dye so the person looks a little more alive - just resting.

Embalming is a cheat code that gives the illusion that death and subsequent decay is not the natural end for all organic life on Earth.

Now, if this system of beautification, hygiene and protection doesn't appeal to you, you're not alone.

Funeral directors, designers, environmentalists and many others are trying to come up with greener ways to die.

For these people, death isn't necessarily a clean, make-up, powder blue tuxedo event.

There is no doubt that current methods of dying, such as wasting resources and relying on chemicals, are not particularly sustainable.

Cremation, which is usually considered an eco-friendly option, also uses natural gas equivalent to traveling 500 miles by car for each cremation.

So where do we go from here?

Last summer I was carrying a bucket of wood chips in the summer sun in the mountains of North Carolina.

I was at Western Carolina University in what is called a "body farm," or more precisely, a "human decomposition facility."

Corpses donated to science are brought here to study their decay for the future of forensics.

On this particular day, twelve bodies were laid out in various stages of decomposition.

Some were skeletonized, some were wearing purple pajamas, and some still had their blonde beards visible.

The forensic aspect is very interesting, but not really why I was there.

I got in there because a colleague of mine named Katrina Spade is trying to create a system that composts the dead instead of cremating them.

She calls this system “re-synthesis” and we have been doing it for cattle and other livestock for years.

She envisions a facility where families would come and bury their deceased loved ones in a nutrient-rich mixture, turning all their bones to dirt in four to six weeks.

During these 4-6 weeks, your molecule transforms into another molecule. You literally transform.

How does this align with the more recent desire of many to be buried under a tree, or to become a tree when they die?

In traditional cremation, the leftover ash (inorganic bone fragments) forms a thick, chalky layer that can actually damage or kill trees if not properly dispersed in the soil.

But when you recompose and actually become dirt, you can nourish the trees and become the afterlife contributor you've always wanted to be. you deserve it.

So this is one of the future options for cremation.

But what about the future of cemeteries?

Many people think that they should not even have cemeteries anymore because they are running out of land.

But what if we reconstructed it, and the corpse was not the enemy of the land, but a potential savior?

I'm talking about conservation burials where large tracts of land are purchased by land trusts.

The advantage of this burial is that once you have buried some corpses on the land, the land cannot be touched or developed. Hence the term “preserved burial”.

It's the same as chaining yourself to a tree after death: "No, I'm not going!"

No, really -- you can't. I am rotting under this. ”

(Laughter) The money that the family donates to the cemetery goes back to land conservation and management.

There are no tombstones or graves in the typical sense.

The tombs are scattered around the grounds under elegant mounds, marked only by stones or small metal discs, or sometimes identifiable only by GPS.

No embalming, no heavy metal coffins.

My funeral home sells a few coffins made from willow, woven bamboo, etc., but honestly, most families choose a simple shroud.

Most cemeteries don't have the large vaults that most cemeteries require, simply because they make landscaping easier.

Families can also come here. They can luxuriate in nature. You can also plant trees and shrubs, but only plants that are native to the area are allowed.

The dead then blend seamlessly into the landscape.

There is hope in conservation cemeteries.

Provide dedicated green spaces for both urban and rural areas.

These provide an opportunity to reintroduce native plants and animals into the area.

They provide public paths, places for spiritual practice, places for classes and events, where nature and remembrance meet.

Most importantly, they again offer us the opportunity to just rot in a hole in the ground.

Let me tell you, the soil misses us.

I think a lot of people are starting to feel that the current funeral industry isn't doing much for them.

For many of us, being sanitized and beautified is not a reflection of who we are.

It doesn't reflect what we stood for in life.

Could climate change be solved by changing the way the dead are buried?

no.

But it will make a bold move in how we see ourselves as inhabitants of this earth.

I believe we have a chance if we die in a more humble and conscious way.

thank you.

(applause)

For the last few years, we have been working on a national debate about sexual assault on campus.

There can be no doubt. It's important for young people to understand the ground rules of consent, but that's where the conversation about sex ends.

And in that information vacuum, the media and the Internet, the new digital street corner, are educating our children for us.

If we really want young people to be safe, ethical and yes, fun to engage with, then it's time to have a frank and candid discussion about what happens after "yes". That includes breaking the biggest taboos and speaking to young people about women's capacity and right to sexual pleasure.

yes.

(Applause.) Come on, folks.

(Applause.) I spent three years talking to girls between the ages of 15 and 20 about their attitudes and experiences with sex.

And what I discovered is that while young women may feel entitled to sexual activity, they don't necessarily feel entitled to enjoy it.

For example, an Ivy League sophomore told me: "I come from a long family of bright, strong women.

My grandmother is a firecracker maker, my mother is a professional, my sister and I are loud, and that is the form of our female power. ”

Then she started explaining to me about her sex life. It was a series of one-off sex that started when I was 13.

It's not particularly responsible, it's not reciprocal, it's not particularly fun.

she shrugged.

"I think we girls are just socialized as submissive creatures who don't express their wants and needs."

"Wait a minute," I replied.

"Didn't you tell me how smart and strong a woman you are?"

She lifted the hem to dry.

"Maybe no one told me that that smart, strong image applies to sex," she eventually said.

It should be said first that despite the hype, teens aren't having sex as often or at a younger age than they did 25 years ago.

But they act differently.

And ignoring it and labeling it 'not sex' opens the door to risky behavior and disrespect.

This is especially true for oral sex. For teenagers, oral sex is considered less intimate than sexual intercourse.

Girls would tell me, "No big deal," as if they were all reading the same instruction manual -- at least if boys were the ones receiving it.

There are many reasons for young women to participate.

It made them feel wanted. It was a way of increasing social status.

In some cases, it was a way out of uncomfortable situations.

As a West Coast college freshman told me, "Girls give guys blowjobs at the end of the night because they don't want to fuck him, and because they expect him to be satisfied."

So if I want him to leave but nothing happens..." I heard a lot of stories of girls having unsolicited oral sex, so I started asking, "What if every time you were alone with a man he told you to bring him a glass of water from the kitchen and he didn't bring you a glass of water? Or if he brought you a glass of water it was like...

"Um, do you want me to do that?"

I can't stand it.

But that doesn't mean the boys didn't necessarily want it.

That's what the girls didn't want.

Girls expressed feelings of shame around their genitals.

A feeling that is both offensive and sacred at the same time.

Feelings about a woman's genitals are directly linked to the enjoyment of sex.

But Indiana University researcher Debbie Harbenick believes that girls' self-image of their genitals is under siege and under ever-greater pressure to see them as unacceptable in their natural state.

About three-quarters of college girls shave all their pubic hair at least occasionally, and more than half regularly shave, according to the study.

Girls often said that it was a personal choice that they felt prettier when they shaved their hair.

But I wondered for a moment if they were left alone on an uninhabited island, how would they spend their time?

(Laughter.) And as I pushed further, a dark motive emerged to avoid humiliation.

“Men have an aversion to it,” one young woman told me.

"Nobody wants to be spoken to like that."

Seeing the rise in pubic hair removal reminded me of the 1920s, when women began shaving their armpits and legs on a regular basis.

That's when the flapper dress came into vogue, and when women's limbs were suddenly exposed and in the spotlight.

There are places where I think this is also a sign.

The most intimate part of a girl is in the public eye, she is subject to criticism, and how she looks to others is more important than how she feels.

Labiaplasty is on the rise again due to the shaving trend.

Labiaplasty, which trims the inner and outer labia, is the fastest growing cosmetic surgery among teenage girls.

An 80% increase from 2014 to 2015, girls under the age of 18 now account for 2% of all cosmetic surgeries, compared to 5% for labiaplasty.

By the way, the most popular look is the one in which the external labia appear to be fused together like seashells and is called ...

wait for it...

"Barbie"

(groans) Barbie dolls are a) made of plastic and b) have no genitals.

(Laughter) The labiaplasty trend has become so alarming that the American College of Obstetricians and Gynecologists has issued a statement about the procedure, which has little medical indication, unproven safety, and side effects that include scarring, numbness, pain, and decreased sexual sensation.

Admittedly, and fortunately, the number of girls involved is still fairly low, but they look like canaries in a coal mine and teach us something important about how girls view their bodies.

Sarah McClelland, a psychologist at the University of Michigan, coined my favorite phrase when talking about all this: “intimate justice.”

The idea is that sex has not only personal meaning but also political meaning. For example, the person who washes the dishes in the house or vacuums the rug.

And it raises similar issues of inequality, economic disparity, violence, and physical and mental health.

Intimate justice asks us to consider who has the right to participate in the experience.

Who has the right to enjoy it?

Who are the primary beneficiaries?

And how does each partner define "good enough"?

I honestly think these questions are difficult and sometimes traumatic to face for adult women, but when we talk about girls, I always come back to the idea that their early sexual experiences don't have to be surmountable.

In his research, McClelland found that young women were more likely than young men to use their partner's pleasure as a measure of their own satisfaction.

So they say things like, "If he's sexually satisfied, I'm sexually satisfied."

Young men were more likely to measure satisfaction by their orgasms.

Young women also had different definitions of bad sex.

The largest survey ever conducted on American sexual behavior reported that 30 percent of sexual activity was painful.

They also used words like "depressing," "humiliating," and "degrading."

Young people never used that word.

Therefore, if young women report as much or more sexual satisfaction than young men, and even in research, it could be deceptive.

If a girl wants to be painless, wants to be close to her partner, and expects him to orgasm, she will be happy if those criteria are met.

And there's nothing wrong with wanting to feel close to your partner or wanting your partner to be happy. Orgasm is not the only measure of experience...

But being pain-free means your own sexual satisfaction is a very low bar.

Hearing and thinking about all this, we started to realize that we were doing a kind of mental clitorectomy on American girls.

Parents of baby boys are more likely to name each part of their body from infancy, and will at least say, "Here's my pee."

The baby girl's parent is straight from navel to knee and leaves this whole situation here without a name.

(Laughter) There's no better way to create something indescribable than without a name.

The children then attend an adolescent education class where they learn that boys have erections and ejaculation, girls have erections and ejaculation...

Menstruation or unwanted pregnancy.

And they see an internal view of the female reproductive system -- you know, like a bull's head -- (Laughter) and there's always gray between the legs.

Therefore, we never say the vulva, and certainly not the clitoris.

Not surprisingly, less than half of teenage girls between the ages of 14 and 17 have masturbated.

And we hope that they will enter into their experiences with their partners and somehow come to see sex as their own matter and be able to articulate their needs, desires and limitations.

It's unreal.

However, there is something here.

A girl's investment in her partner's pleasure remains the same, regardless of the partner's gender.

Therefore, in same-sex encounters, the orgasm gap disappears.

And young women climax at the same rate as men.

Lesbian and bisexual girls told me they felt liberated by being able to break out of the script, meaning they were free to create encounters that worked for them.

Gay girls also challenged the idea of ​​first intercourse as a definition of virginity.

Not because intercourse is a big deal, but it's worth wondering why we consider this act, which most girls associate with discomfort and pain, to be borderline sexual adulthood, something much more meaningful and much more transformative than anything else.

And it's worth considering how this can help girls. Whether it protects them from disease, coercion, betrayal and assault.

Whether it encourages reciprocity or compassion. What do their views on other sexual practices mean? Whether it will give them more control and pleasure in their experience, and what it means for gay teens who can have multiple sex partners without heterosexuality.

So I asked a gay girl I met, "How did you know you weren't a virgin anymore?"

She said I'd have to google it.

(Laughter) And Google wasn't sure.

(Laughter) After she had her first orgasm with her partner, she finally decided that she was no longer a virgin.

And I thought – oops.

What if, just for a second, we imagined that it was the definition?

Again, not because intercourse is a big deal, of course it's a big deal, but it's the only thing that's a big deal. Instead of thinking of sex as a goal-oriented competition, it helps us reconceptualize sex as a pool of experiences that includes warmth, affection, excitement, lust, touch, and intimacy.

And it's worth asking young people. Who is really sexually experienced?

The one who flirts with a partner for three hours to test their sensual tension and communication, or the one who squanders and hangs out at parties to shed their "virginity" before college?

But the only way a shift in thinking can happen is if we talk more about sex to young people – if we normalize that discussion, integrate it into our daily lives, and talk about sexuality differently – the way we talk about women in public has changed dramatically.

Consider a survey of 300 randomly selected female students from similar colleges in the Netherlands and the United States who spoke about their early sexual experiences.

Dutch girls embodied everything we wanted in a girl.

Negative outcomes such as illness, pregnancies, and regrets were few, while positive outcomes were more common, such as being able to communicate with a partner you know well. Prepare for the experience responsibly. enjoying.

What was their secret?

From an early age, the Dutch girls said their doctors, teachers and parents spoke openly about the importance of sex, pleasure and mutual trust.

Furthermore, while American parents weren't always comfortable talking about sex, we tend to frame those conversations entirely in terms of risk and danger, whereas Dutch parents talk about balancing responsibility and pleasure.

As a parent myself, I must say this was a complete shock. Because if I hadn't delved into that study, I would, as a modern parent, be talking to my kids about birth control, disease prevention, consent...

Work went well.

We now know that it is not enough.

I also know what I want from my daughters.

I want them to see sexuality as a source of self-awareness, creativity, and communication despite the potential risks.

I want them to enjoy the sensuality of their bodies without being reduced to it.

I want to be able to ask for what I want in bed and get it.

I want them to be protected from unwanted pregnancies, diseases, cruelty, dehumanization and violence.

If they are assaulted, they seek redress from schools, employers and courts.

There's a lot to ask, but there's no such thing as too much.

As parents, teachers, advocates and activists, we have raised a generation of girls who expect equal treatment at home, in the classroom and at work and have a voice.

Now is the time to demand that intimate justice in your private life as well.

thank you.

(applause)

Today I want to talk about what the word means, how we define it, and how it defines us as if it were revenge.

English is a great sponge.

i love english I am happy to speak to you.

But, nevertheless, there are many holes.

There is a Greek word "Lakeshism" which means hunger for disaster.

When you see a thunderstorm on the horizon, you may find yourself cheering for the storm.

Mandarin has a word "yù yī". I'm not pronouncing it correctly, but it means a desire to feel as intense again as it did when you were a child.

In Polish there is a word "jouska". This is the kind of hypothetical conversation that is forced to play in your head.

And finally, in German, of course German, there is the word "zielschmerz", which means fear of getting what you want.

(Laughs) Finally my long-time dream came true.

I'm German too, so I know how you feel.

Now, I'm not sure if I use these words in my daily life, but I'm really happy that they exist.

But the only reason they exist is because I made them up.

I am the author of The Dictionary of Obscure Sorrows, which I have been writing for the past seven years.

And the whole mission of this project is to try to find holes in the emotional language and fill them. Then you will have a way of talking about all the pecadillos and quirks of the human condition that everyone feels but doesn't want to talk about because they don't have the words.

And about halfway through this project, I defined "Sonder". This is the idea that we all consider ourselves to be the main character and others to be just extras.

But really, we are all protagonists and you yourself are an extra in someone else's story.

So, as soon as I published it, I got a lot of responses like, 'Thank you for voicing what I've been feeling in my life, but couldn't put into words.

So they don't feel lonely anymore.

That is the power of words to ease our loneliness.

And not long after that, I started noticing serious use of Sonder in online conversations, and not long after actually noticing it, I found it being used next to me in real conversations.

There is no stranger feeling than making a word and watching it take on a life of its own.

No word on that yet, but I will.

(Laughter) I'm working on it.

I started thinking about what makes words real. Because a lot of people ask me. The most common question people ask me is, "Wow, is this word made up? I'm not sure."

And once Sonder started to take off, I really didn't know who I could tell what words were true and what wasn't, or what to tell them.

It made me feel like Steve Jobs. He expressed his epiphanies, like when most of us find ourselves trying to get things done somehow, avoiding too much bouncing off walls as we go about our day.

But when you realize that there are people and that this world was built by people who are no smarter than you are, you can reach out and touch those walls, even put your hands into them, and realize that you have the power to change them.

And when people ask me, "Are these words true?"

I tried it and got different answers.

Some of them made sense. Some did not.

But one of the words I tried was, "Words are real if they want to be real."

The reason this road is real is because people wanted it to be there.

(Laughter) It's a common occurrence on college campuses.

It is called the "Way of Desires".

(Laughter.) But I've decided that what people are really asking when they ask if that term is real is they're really asking, "How much brain will this give me access to?"

Because I think that's a lot of how we look at language.

Words are essentially keys to getting into certain people's heads.

And even if it keeps us focused on one brain, it's really not worth it, really not worth knowing.

Two brains, uh, it depends on who it is.

A million brains, OK, we're talking now.

A real language is therefore one that has access to as many brains as possible.

That's why it's worth knowing.

By the way, the most realistic word on this scale is this.

[OK] That's it.

The most real words we have.

This is the closest thing to a master key.

It is the most commonly understood language in the world, wherever you are.

The problem is that no one seems to know what those two letters stand for.

(Laughter) That's kind of weird, isn't it?

That is, it could be a misspelling of "all right" or "old kinderhook".

No one really seems to know, but the fact that it doesn't matter says something about how we add meaning to words.

The meaning is not in the words themselves.

We are the ones who pour ourselves into it.

And I think when we're all looking for the meaning of our lives, when we're looking for the meaning of life, words have something to do with it.

And I think dictionaries are a good place to start if you're looking for the meaning of something.

It brings a sense of order to a very chaotic universe.

Our view of things is so limited that we have to come up with patterns and abbreviations and interpret them to figure out how to get through our days.

We need words to contain us and define ourselves.

I think many of us feel trapped in the way these words are used.

We forget that words are made up.

It's not just my words. All words are made up, but not all mean something.

We're all just trapped in our own vocabularies that don't necessarily correlate with people who aren't like us, and I feel like the more we take words seriously, the more we drift apart year after year.

Remember, words are not reality.

they have no meaning. that's right.

And I would like to introduce a reading by Bill Watterson, author of Calvin and Hobbes, one of my favorite philosophers.

“Creating a life that reflects your values ​​and satisfies your soul is a rare achievement,” he said.

It's not easy to figure out the meaning of your life on your own, but it's acceptable, and I think it makes me happier. ”

thank you.

(applause)

So, I'm in the Atacama Desert in Chile, sitting in a hotel lobby. Because that's the only place I can connect to Wi-Fi. And as I was putting this photo on my screen, a woman came up behind me.

She said, "Oh, that's beautiful.

what is that? Is that Jackson Pollock? ”

And unfortunately I may be a little too honest.

I said, "No, it's—penguin shit."

(Laughter.) And, you know, "Excuse me!"

And I could see that she thought I was speaking sympathetically.

(Laughter.) So I said, "No, no, really—penguin shit."

(Laughter) I had just been to the Falkland Islands and was photographing penguins.

This is a gentoo penguin. And she was still skeptical.

So, literally minutes before that, I downloaded this scientific paper on bird defecation calculations. This is very interesting. Because it turns out that this can be modeled as something called the "Poiseuille way", and we can learn so much about the physics of the rectum in birds.

Actually, strictly speaking, it's not the rectum. It is called the cloaca.

At this point she stopped me and said, "Who are you?"

What are you doing? ”

And I got stuck because I had no way of explaining what I was doing.

So in a way, this talk today is my answer to that.

It's a random pick from what I do.

It's very difficult for me to understand, so I don't know if you can understand it either.

It's the kind of thing I sometimes sit late at night thinking about - often at 4 in the morning.

So some people are afraid of my actions.

Some people think I'm the nerdy Tony Soprano, so in response, I ordered a bulletproof pocket protector.

I don't speak Norsk so I don't know what these people are thinking.

(laughs) But I don't think "Monsterlet" is a good thing.

I don't understand, do you understand?

So one of my favorite things to do is travel around the world and see ruins.

Because archeology gives us the opportunity to study past civilizations and see where they succeeded and where they failed.

Use science to work backwards and ask, "What were they really thinking?"

And recently I went to Easter Island. It's an incredibly beautiful place, an incredibly mysterious place. Because wherever you go on Easter Island, you will be amazed by these statues called Moai.

The location is 64 square miles.

As far as we know they made 900.

why on earth? If you haven't read Jared Diamond's book Collapse yet, I highly recommend reading it.

he has a great chapter about it.

Basically these people committed ecological suicide to make more.

And somewhere, someone said, "Okay! Let's kill ourselves by cutting down the last tree. We need more of the same statues."

(Laughter) And, actually, it's not a mystery, but as I grew older, seeing these pictures when I was a kid, I thought,

why those eyebrows ’ So that’s a very powerful thing.

Where did they get that inspiration from?

Then we met Yoyo, a Rapa Nuiang native guide. You can tell where they got it by looking at the yo-yo's face.

These statues are full of mysteries.

Everyone wants to know, how was it made, how was it transported?

The woman in the foreground is Jo Ann Van Tilberg.

She is the leading archaeologist currently working on Easter Island.

She has been studying statues for over twenty years and has detailed records of all of them.

What's on the page here is the same as what's there.

One interesting problem is that the stone is not very hard.

I mean, it used to be perfectly smooth.

In fact, many of the statues, when excavated, have perfectly smooth backs, almost as smooth as glass.

But this is what happens when you spend 1,000 years in the elements.

Jo Ann and I have just embarked on a project to digitize it all. First, I'm going to do a very high resolution digitization as a way of preserving them.

Then I have the following ideas on how to use algorithms to learn some mysteries about them.

How long were they standing and in what position?

And maybe, indirectly, you can understand some of the problems that got them where they are.

While I was on Easter Island, Comet McNaught was also there, so I was able to get a complimentary photo of the Moai with the comet.

We also have an archaeological project in Egypt.

"Move on" might be a bit strong.

We are trying to get all the powers to get everything ready and running.

So we'll talk about that at a future TED.

But Egypt also has some great opportunities.

My other job is to invent something.

Actually, I'm designing a nuclear reactor.

no kidding.

This is the conventional nuclear fuel cycle.

The red line is what most reactors do. It's called an open fuel cycle.

The white line is the so-called pre-fuel cycle with reprocessing.

Well, this is the usual way.

It has the great advantage of not causing carbon pollution.

This has many drawbacks. Each of these procedures is very expensive, potentially dangerous, and also has the interesting property that this procedure cannot be done in anyone's backyard, which is the problem.

So our reactor eliminates those steps, and it would be pretty cool if we could actually make it work.

Now, working on a new reactor seems a bit insane.

In the last 25 years, the United States has not had a reactor built to a new design, let alone an old one.

What we do is very high risk but potentially very high return.

Moving on to a completely different field, we do a lot in solid state physics, especially in a field called metamaterials.

Metamaterials are man-made materials, in which they manipulate electromagnetic radiation in ways otherwise impossible.

In other words, this device is an invisibility cloak.

It may not seem like it, but if you were a microwave, you would think:

A ray of light, in this case microwave light, comes in, squashes around the cell, and comes back out on the other side.

Well, you can do it with a mirror from an angle.

What's great is that this is done from all angles.

Metamaterials unfortunately -- A, they only work in the microwave, B, they still don't work very well.

But metamaterials are an incredibly exciting field.

It's -- you know, today I'd like to say this is a zero billion dollar business, but it's actually negative.

But someday, someday, it might work.

We do a lot of research in the biomedical field.

In this case, we are working with major medical foundations to develop inexpensive ways to diagnose diseases in developing countries.

So while we say that the eyes are the windows to the soul, it turns out that the eyes are actually the windows to much more.

By the way, this happens to be my eye.

Now I am also very interested in cooking.

While at Microsoft, I took a leave of absence to attend culinary school in France.

When I was at Microsoft, I worked at a top-notch restaurant in Seattle, so I often cook.

I was on the team that won the barbecue world championship.

But barbecue is interesting. Because barbecue is one of those cult foods like chili and bouillabaisse.

In different parts of the world there will be cult foods that people are very attached to. There are tremendous traditions and secrets.

And I'm trying to use a very scientific approach.

This is my newest cooker. If this looks more complicated than a nuclear reactor, it really is.

But if you can play with all those knobs and dials, although of course all the controllers out there run in software, you can make some great ribs.

(Laughter) This is a high speed centrifuge.

You should have one next to your Turbo Chef in your kitchen.

This subjects the food to about 50,000 times the force of normal gravity.

You won't believe it!

I conduct a series of brutal experiments on food. In this case, we are trying to tune the mathematical model to accurately predict the internal cooking time.

After all, A, this is useful and fun for geeks like me.

Theory is red, black is experiment.

I mean, either I'm very good at faking it, or this particular model seems to work.

So, another random thing I do is search for extraterrestrial intelligent life (SETI).

You may know the movie Contact that popularized it.

It turns out that there are real people who go out looking for extraterrestrial life in a very scientific way.

In fact, almost everyone in the movie is based on real people, real people.

So Jodie Foster's character here is actually this woman, Jill Tarter, to whom Jill has devoted her life.

Many risk their lives for a brief act of heroism. It's kind of cool, but Jill has what I call slow heroism.

She risks her professional life that according to her calculations, it may go wrong for a thousand years, or it may go wrong forever.

That's why I want to support those who are putting their lives on the line.

After the release of the film, of course, there was a lot of interest in SETI.

My kids saw the movie and then came up to me and said, "So, Dad, so, so, that character is Jill, right?"

I said, "Oh, yes, yes, absolutely."

'And another person, that's someone-' I said 'yes'.

They said, "Do you know that creepy rich guy in the movies?"

is that you? "

I said, "Well, it's just a movie! Come on."

(Laughter) So the SETI Institute, with a little help from me and a lot of help from Paul Allen and various others, is building a dedicated radio telescope in Hut Creek, California to do this SETI work.

Now I travel a lot and change my cell phone a lot. Jill is always up to date on her cell phone, pager, and everything else. Because I don't want to miss a "call".

(Laughter.) I mean, can you imagine? Like E.T. is calling home and I'm not there? It is terrible!

So I do a lot of work on dinosaurs.

Among TEDsters, I'm known as the guy who fucks dinosaurs.

And I am similar to that statement.

I will talk about another aspect of dinosaurs: the discovery of dinosaurs.

Now, to find dinosaurs, you'll roam through a terrifying environment looking for dinosaurs.

It sounds really silly, but it's the truth.

If the weather is fine, plants grow everywhere, erosion does not occur, and dinosaurs cannot be seen.

Therefore, dinosaurs are always found in deserts and badlands, areas with little vegetation growth and flash floods in the spring.

Skiers pray for snow, right?

Paleontologists pray for erosion.

So I walked around and this is what it looked like after I dug it up.

As you walk around you find stuff like this.

Well, this is what I found, so take a closer look here.

This bentonite clay will swell and expand.

And something is popping out. So you look at it, look closer and say, "Well, that's interesting. What are all these pieces?"

Well, if you look closely, you can actually see that this is a fragment of a skull by its shape.

And when he sees this, he says, "This is a tooth."

Those are big teeth. ”

It's about the size of a banana.

It has large serrations on the edges.

This is what a Tyrannosaurus looks like on the ground.

And this is kind of like finding a Tyrannosaurus, which I was lucky enough to find a few years ago.

Well, this is what the Tyrannosaurus Rex looks like in my living room.

They are not actually the same thing. This is the cast I purchased, I found my own cast after purchase and I don't have room for two.

Look.

What's great about discovering dinosaurs for me is that it's also an intellectual thing because you're trying to reconstruct an environment that was millions of years old.

It is something that can inform all kinds of science in unexpected ways.

Studies of dinosaurs have recognized problems with asteroid impacts, for example.

Dinosaur research could literally save the planet one day.

Studying ancient climates is very important.

In fact, the Mesozoic Era, when dinosaurs lived, had much more CO2 and was much warmer than it is today, providing one of the most interesting pieces of evidence for CO2's impact on climate.

But it's so different from anything else I do because it's not only intellectually and scientifically interesting, but it also allows me to hike wastelands.

In fact, this is what most dinosaur research looks like.

This is one of my papers. "Pygostyle of non-avian theropods".

I won't go into more detail about it because it's not as glamorous as dinosaur sex.

Now I also love photography.

I travel all over the world taking pictures, some are good, some are not.

Bits are cheap these days. Unfortunately, that means you'll have to spend more time sorting them out.

This is a photo of a King Penguin taken on a beach in the Falkland Islands.

This is a picture of a killer whale I took in Alaska a few years ago.

I went to take pictures of killer whales, looked for a week and never saw a killer whale.

And on the last day, the sun came out, the killer whales came and they were right there on the boat. amazing.

And you can take a lot of pictures like this.

After a while, you will be able to take pictures like this.

Now, I have to explain to our human readers that if Penthouse magazine had a Marine Mammal edition, this would be the insert.

That's true.

So there was more and more activity near the boat, and suddenly someone shouted, "What's that thing in the water?"

I said, "Well, I think it's called free will."

(Laughter) You can learn a lot from watching whale sex.

(Laughter) The first thing that comes to mind is the overwhelming importance of hands.

they don't have it

(Laughter) I think Paul Simon is in the audience, and he does - he may not be aware, but he wrote the song "Slip-Slidin' Away," which is all about whale sex.

That's how it feels.

Another interesting thing I learned about whale sex is that they curl their toes as well.

(Laughter) So where do you put these pieces together?

It takes an enormous amount of wisdom to find the great things and passions in life and focus all your energies on them, and I just couldn't do it.

I just -- you know, I'm going to be passionate about something, and then something else happens, and then something else.

And I've been battling this for a long time, and I was like, 'Oh, I really should sit down.

You know, when I was at Microsoft, I was obsessed with it and the industry as a whole was so expansive that most other things in my life tended to get buried.

But in the end, I decided that what I really should do is accept myself for who I am instead of fighting it.

Then he says: "Yeah, for me, this whole story was a mile wide and an inch deep. But that's what really works for me."

And whether it's nuclear reactors, metamaterials, or the gender of whales, the one thing they have in common, or the lowest common denominator, is me.

That's it, thank you.

(applause)

Take a moment and think about viruses.

What comes to your mind?

disease?

fear?

Perhaps there was something really unpleasant.

Still, not all viruses are the same.

Indeed, some of them cause devastating diseases.

But some people can do just the opposite. In other words, the disease can be cured.

These viruses are called "phages".

Well, the first time I heard about phages was in 2013.

My father-in-law, a surgeon, told me about a woman he treats.

The woman suffered a knee injury that required multiple surgeries, developing a chronic bacterial infection in her leg in the process.

Unfortunately for her, the bacteria that cause the infection also did not respond to available antibiotics.

So at this point, the only option usually left is to amputate the leg to prevent further spread of the infection.

Well, my father-in-law was desperate for a different kind of solution and applied for an experimental last-resort treatment using phages.

And what do you think? done.

Within three weeks of administering the phage, a chronic infection previously resistant to antibiotics was cured.

I was fascinated by this strange concept of viruses curing infections.

I am still fascinated by the medical potential of phages.

And actually I quit my job last year to start a company in this field.

So what are phages?

The image shown here was taken with an electron microscope.

So what we see on the screen is actually very small.

A central grain with a head, long body, and many legs. This is an image of a typical phage.

It's kind of cute, isn't it?

(Laughter) Now, look at your hands.

Our team estimates that there are over 10 billion phages on each human hand.

what are they doing there?

(Laughter) Well, viruses are good at infecting cells.

And phages are excellent at infecting bacteria.

And like the rest of our bodies, your hands are hotbeds of bacterial activity, making them an ideal hunting ground for phages.

Because phages hunt bacteria, after all.

It's also important to know that phages are highly selective hunters.

Phages typically infect only a single bacterial species.

In this rendering, the phage is searching for a bacterium called Staphylococcus aureus. Staphylococcus aureus is known as MRSA in its drug-resistant form.

It causes skin and wound infections.

Phages hunt with their feet.

Feet are actually very sensitive receptors, looking for suitable surfaces for bacterial cells.

When it finds a phage, it sticks to the bacterial cell wall and injects its DNA.

The DNA is located in the phage head and travels through the long trunk into the bacterium.

At this point, the phage reprograms the bacterium to generate many new phages.

In effect, bacteria become phage factories.

After approximately 50-100 phages accumulate inside the bacterial cell, the phages are able to release proteins that disrupt the bacterial cell wall.

When the bacterium bursts, the phages go outside and start looking for new bacteria to infect again.

Sorry, this may have sounded like a horrible virus again.

But it is this very ability of phages, to multiply inside bacteria and then kill them, that makes them so interesting from a medical point of view.

Another part that I find very interesting is the scale at which this is going.

Well, just five years ago, I knew nothing about phages.

Yet today I would like to say that they are part of a natural principle.

Phages and bacteria date back to the early days of evolution.

They have always existed in tandem and have kept each other in check.

So this is really a microscopic tale of yin and yang, hunter and prey.

Some scientists even estimate that phages are the most abundant organisms on earth.

Therefore, before continuing to talk about the medical potential of phages, I think everyone should know about phages and their role on Earth in hunting, infecting, and killing bacteria.

So, if there is something that works so well all around us in nature, every day, why is it that in most parts of the world there is not a single drug on the market that uses this principle to fight bacterial infections?

The short answer is that no one has yet developed this kind of drug. At the very least, they have not developed a drug that complies with Western regulatory standards that set standards in many parts of the world.

To understand why, we need to go back in time.

This is a photo of Felix Derrell.

He is one of two scientists credited with discovering phages.

However, when he discovered them in 1917, he had no idea what he had discovered.

He was intrigued by a disease called erythematosus, a bacterial infection that causes severe diarrhoea, but at the time no cure had been invented for bacterial infections, and many people actually died.

He was looking at a sample of patients who survived the disease.

And he realized that something strange was happening.

Something in the sample was killing the disease-causing bacteria.

To find out what was going on, he conducted an ingenious experiment.

He took a sample, filtered it until he was sure there was very little left, then took just a drop and added it to the freshly cultured bacteria.

And he observed that within hours the bacteria had died.

He then repeated this, filtered again, took just a drop, and added it to the next batch of fresh bacteria.

He did this 50 times in a row and always observed the same effect.

And at this point he made two conclusions.

The first thing that is clear is that yes, something was killing the bacteria and it was in the liquid.

The other is that a tiny drop is enough to have a big impact, so it has to be biological in nature.

He called the agents he discovered "invisible microbes" and gave them the name "bacteriophage", which literally translates to "bacteria eaters".

By the way, this is one of the most fundamental discoveries of modern microbiology.

Much of modern technology, not only in genome editing but also in other fields, reverts to our understanding of how phages work.

And just today the Nobel Prize in Chemistry was announced for two scientists who studied phages and developed medicines based on them.

Well, even in the 1920s and 1930s, people quickly realized the medical potential of phages.

After all, there was something you couldn't see, but it definitely killed germs.

Companies still in existence, such as Abbott, Squibb, and Lilly, sold phage preparations.

But the reality is that if you start with invisible microbes, getting to a reliable drug is very difficult.

Imagine going to the FDA today and telling them all about the invisible virus they want to give their patients.

So with the advent of chemical antibiotics in the 1940s, the situation changed completely.

And this person played an important role.

Alexander Fleming.

He was awarded the Nobel Prize in Medicine for his contribution to the development of penicillin, the first antibiotic.

And the work of antibiotics is completely different from that of phages.

Most of the time, they inhibit the growth of bacteria, so it doesn't really matter what kind of bacteria are present.

What we call broad-spectrum also works against all the bacteria in the world.

Comparing this to phages, which have a very narrow range of action against a single bacterial species, shows a clear advantage.

Now, it must have felt like a dream come true at the time.

After administering antibiotics to patients with suspected bacterial infections, many recovered without needing to know anything about the bacteria that cause the disease.

And as we develop more and more antibiotics, they have naturally become the first-line treatment for bacterial infections.

And by the way, they have made a huge contribution to our life expectancy.

We are able to perform complex medical interventions and medical surgeries today because we have antibiotics and because the patient is not at risk of dying the next day from a bacterial infection that can be acquired during the procedure.

So, especially in Western medicine, we started to forget about phages.

And even when I was a kid, to some extent, I had this idea of, "We solved bacterial infections. We solved bacterial infections." we have antibiotics

Of course, today we know this is wrong.

Most of you have heard of superbugs today.

These are bacteria that have become resistant to many, if not all, of the antibiotics we have developed to treat this infection.

how did we get here

Well, we weren't as smart as we thought we were.

We started using antibiotics everywhere. In hospitals, for treatment and prevention. At home, if it's just a cold. On farms, bacteria evolved to keep animals healthy.

The most adaptable bacteria survived the onslaught of antibiotics that flooded the environment.

Today we call these “multidrug-resistant bacteria”.

And let me give you some scary numbers.

A recent study commissioned by the UK government estimated that by 2050, 10 million people could die each year from multidrug-resistant infections.

Compare that to the current 8 million deaths per year from cancer and you'll see that this is a frightening number.

But the good news is that phages are still everywhere.

And let me tell you, they are not impressed with multidrug resistance.

(Laughter) They are happy to kill and hunt the bacteria that surround us.

And they've continued to be selective, which is really good today.

Today, we can reliably identify bacterial pathogens that cause infections in many environments.

And that selectivity helps avoid some of the side effects commonly associated with broad-spectrum antibiotics.

But perhaps the best news is that they are no longer invisible microbes.

Let's see them.

And we've done so together before.

We can sequence their DNA.

We understand how they are replicated.

And we understand our limits.

We are now in the perfect position to develop potent and reliable phage-based medicines.

And that is what is happening all over the world.

More than 10 biotechnology companies, including us, are developing applications of human phages to treat bacterial infections.

Many clinical trials are underway in Europe and the United States.

We therefore believe that we are on the brink of a phage therapy revival.

And for me the correct way to draw a phage is something like this:

(Laughter) To me, phages are the superheroes we've been waiting for in the fight against multidrug-resistant infections.

So keep this image in mind the next time you think about viruses.

After all, a phage might save your life one day.

thank you.

(applause)

What if I told you that there are new technologies that, in the hands of doctors and nurses, will improve outcomes for patients of all ages, children and adults? Was there an ultimate dose-response curve of less pain and suffering, less time in the operating room, less time under anesthesia, more patient benefit?

Here comes the kicker. It has no side effects and is available regardless of where the treatment is provided.

As an ICU doctor at Boston Children's Hospital, I can tell you this will be a game changer for me.

The technology is like a real rehearsal.

This authentic rehearsal takes place through a medical simulation.

I thought I'd start with a case study to really illustrate the challenges ahead, and why this technology is important to healthcare, not just to improve it.

This is a born child, a young girl.

"Day of Life Zero" is the first day of life, shortly after being born into this world.

And when she's about to be born, we quickly realize she's gone from bad to worse.

Her heart rate increased, her blood pressure dropped, and her breathing became very rapid.

And the reason is shown in this chest x-ray.

It's called a babygram, a gross x-ray of a child's body, an x-ray of the body of a small infant.

If you look at this top side, you should see the heart and lungs there.

If you look at the bottom edge, that's the abdomen, where the intestines should be.

And you can see that there is some sort of translucent area on the right side of this child's chest.

And those are the intestines - in the wrong place.

As a result, the lungs are squeezed, making it very difficult for this poor baby to breathe.

The solution to this problem is to take the child to the operating room immediately, put the intestines back into the abdomen, and expand the lungs so that the child can breathe again.

But before she can go to the operating room, she has to be taken to the ICU where I work.

I work with the surgical team.

We gathered around her and put her on cardiopulmonary bypass.

We put her to sleep, make a small incision in her neck and insert a catheter into a major blood vessel in her neck. We can say that these blood vessels are the size of the tip of a pen. Blood is then drawn from the body, run through a machine, oxygenated, and returned to the body.

We will save her life and get her safely to the operating room.

Here's the problem. These disorders, also known as congenital diaphragmatic hernias, are conditions in which the diaphragm is perforated and the intestine can sneak in. These diseases are rare.

Even with the best minds in the world, there is still the challenge of understanding a patient's natural volume to achieve 100% of our expertise curve.

They don't show up very often.

So how do you turn a rare into a common?

There is another problem here. In the currently existing medical system where I have been training for over 20 years, the training model is called the apprenticeship model.

It has existed for centuries.

The idea is that you'll probably do the surgery once, maybe a few times, then you'll do that surgery, and eventually you'll teach that surgery to the next generation.

And implicit in this model is that we are working with the very patients we care for. No need to say this.

That's a problem.

I think there are better approaches.

Healthcare is very likely to be the last high-stakes industry that doesn't practice before game time.

I would like to explain a better approach through medical simulation.

Well, the first thing we did was go to other high-stakes industries that have been using this kind of methodology for decades.

This is nuclear power.

Nuclear power plants periodically run scenarios to put into practice what they hope will never happen.

And as we all know very well, in the aviation industry, pilots and crews are trained in simulators like this, and now I'm on a plane taking comfort in the thought that they're training on scenarios that I hope will never happen, but I know I'm prepared for the worst if it does happen.

In fact, the aviation industry has gone so far as to create aircraft in simulated environments because it's important for teams to stick together.

This is an evacuation training simulator.

Again, they are ready to act even if a rare event like this happens.

In some ways, the most attractive to me is probably the high-stakes sports industry.

You think of a baseball team. Baseball players practice.

I think this is a great example of progressive training.

The first thing they do is go to spring training.

They go to spring training camp, possibly a baseball simulator.

They are playing in the pre-game season on a mock field, not the actual field.

Then they head onto the field during a game of the season and what is the first thing they do before starting a game?

They enter the batting cage, practice batting for hours, are thrown with different types of balls, and hit ball after ball to loosen up their muscles and prepare them for the game.

This is the most amazing part of this phenomenon, and if you are a spectator of a sporting event, you will see it happen.

The batter enters the batter's box and the pitcher prepares to pitch.

What does the batter do just before pitching?

The batter comes out of the box and makes a practice swing.

He wouldn't do it any other way.

I would like to talk about how we are building these practices in medicine.

We are building batting cages for the patients we care for at Boston Children's Hospital.

I would like to use this case that I made recently.

This is the case of a 4-year-old child whose head gradually grew and consequently missed developmental and neurological milestones. Here is the cause of this problem, it is called hydrocephalus.

Let's take a quick look at neurosurgery.

The brain is there, and you can see the skull surrounding the brain.

Surrounding the brain between the brain and skull is something called cerebrospinal fluid or cerebrospinal fluid, which acts as a shock absorber.

Right now, inside your head, cerebrospinal fluid is permeating your brain.

Produced in a region, flowed and exchanged again.

And this beautiful flow pattern happens to all of us.

But unfortunately for some children, this flow pattern is disrupted, much like traffic jams.

As a result, fluid builds up and the brain is pushed aside.

It's difficult to grow.

As a result, the child misses neurological milestones.

This is a deadly disease for children.

The way to fix this is surgery.

Traditional surgery involves removing part of the skull, draining this fluid, sticking a drain in place, and finally introducing the drain into the body.

great strategy.

However, some great news is that advances in neurosurgical treatments have enabled the development of minimally invasive approaches to this surgery.

A camera can be inserted through a small pinhole, guided into deep brain structures, a small hole can be made in the membrane, and all fluids can be drained out, just like in a sink.

Suddenly the brain is no longer compressed and can be expanded again, healing the child through a single hole incision.

But here's the problem. Hydrocephalus is relatively rare.

And there's no great training method to get really good at getting this scope to the right place.

But surgeons, myself included, are very creative about this.

And they devised a training model.

The current training model is:

(Laughter) I'm not kidding.

This is red pepper, not made in Hollywood. Real red pepper.

What the surgeon does is insert an endoscope into the pepper and perform a so-called "seedectomy".

(Laughter) They use this scope to remove the seeds with little tweezers.

And it's a way to understand the basic elements of doing this surgery.

Then they go straight to the apprentice model, watch a lot of patients present themselves, actually do it, then teach it and wait for these patients to arrive.

We could do better.

We manufacture pediatric replicas so that surgeons and surgical teams can rehearse in the most appropriate way.

Let me show you this.

This is my team called the SIM Engineering Department of the Simulator Program.

This is a great team of individuals.

They are mechanical engineers. All you illustrators out there.

They take primary data from CT scans and MRIs, convert it to digital information, animate it, put it together into the child's own components, and create surface scan elements of the child cast as needed, depending on the surgery itself. This digital data is then made ready for output by state-of-the-art 3D printers. This allows us to print components with micron-accurate accuracy of what the child's anatomy will look like.

Here you can see this child's skull was printed hours before this surgery.

But we couldn't have done this work without our dear friends on the West Coast of Hollywood, CA.

They are incredibly talented people who are able to recreate reality.

It wasn't a long leap for us.

As we got deeper into the field, it became clear that what we were doing was cinematography.

We do filmmaking, it's just that actors aren't actors.

They are real doctors and nurses.

These are photos of our dear friends at Fractured FX, an Emmy Award-winning special effects company in Hollywood, California.

This is Justin Lowry and his group -- this is not our patient -- (Laughter) but the kind of fine work these people do.

We are currently working together to merge our experiences and bring a group of them to Boston Children's Hospital and a group of us to Hollywood, CA to discuss this so that we can develop this kind of simulator.

What I'm about to show you is a copy of this child.

Here you can see that all the hair on the child's head has been reproduced.

And in fact, this is also its recreated child. I apologize if my stomach hurts, but this is a reproduction and simulation of a child undergoing surgery.

Here are the membranes we talked about, inside this child's brain.

What you see here is a real patient on one side and a simulator on the other.

As I said earlier, the scope, the little camera, had to go down and here we see it.

A small hole must be made in this membrane to allow this liquid to permeate.

I don't do a quiz show about who thinks which one, but the right side is a simulator.

Therefore, surgeons have had the opportunity to train and perform these operations to their heart's content as many times as they wish.

And only then take the child to the operating room.

But it doesn't stop there.

We know that a key step towards this is not just the skill itself, but the combination of that skill with the team that provides that care.

Now back to F1.

Here's an example of a technician putting tires on this car and doing it over and over.

However, it quickly became part of the team training experience and now the entire team is coordinating tire changes and getting this car back on the speedway.

We have completed that step in the medical field, so what we are going to see is simulation operations.

We're taking the simulator just described into the operating room at Boston Children's Hospital, and these people -- the native team, the surgical team -- are doing the surgery before surgery.

Operate twice. Cut once.

Let me show you.

(Video) Surgical Team Member 1: Do you want your head down or up?

STM 2: Can you turn it down to 10?

STM 3: Then lower the whole table a bit?

STM 4: The table is lowered.

STM 3: Okay, this works like a ship.

Can you give me back the scissors?

STM 5: I'll take the gloves, 8 to 8 1/2, okay?

STM 6: Wow! thank you.

Peter Weinstock: Really great.

An important second step in this is to immediately withdraw these teams and hold debriefing sessions.

We use the same technologies that are used in the military in Lean and Six Sigma, and we bring them up and talk about what worked, but more importantly what didn't work and how we fix it.

Then quickly put it back on and repeat the same thing again.

Contemplative batting practice at the most important moments.

Let's go back to this subject.

It's the same child, but let me explain how Boston Children's Hospital cares for this child.

This baby was born at 3am.

At 2am we assembled a team, took the reconstructed anatomy from scans and images, and took the team to a virtual bedside, a simulated bedside. This is the same team that will be operating on this child in the next few hours. And we had them operate.

Let me show you the moment.

This is not a true incision.

And the baby hasn't been born yet.

Imagine this.

So the conversation I have with my family in the intensive care unit at Boston Children's Hospital is very different now.

Imagine this conversation. "Not only have we been treating this condition frequently in the ICU, we have not only performed operations similar to what you will have on your child, but we have performed operations on your child as well.

And did it 2 hours ago.

And did it 10 times.

And now we are ready to take them back to the operating room. ”

In other words, the new technology in healthcare, it's a real rehearsal.

Practice before game time.

thank you.

(applause)

We all have milestones in life that we remember vividly.

My first experience was when I entered kindergarten.

My brother was in school, and hey, it was my time.

And I trotted down the corridor.

I was so excited that I almost got wet.

And when I went to the door, the teacher greeted me warmly. She took me into her classroom and showed me a small room. We all remember that little cubicle, don't we? I put my luggage there.

And she said, "Go to the circle and play with the kids until class starts."

So I went there and I was sitting on the floor playing like I owned the place and suddenly the boy next to me was wearing a white shirt and blue shorts.

I remember it like it was yesterday.

Suddenly he stopped playing and said, "Why are you so short?"

And I just kept playing. I didn't think he was talking to me.

(Laughter.) And he said even louder, "Hey, why are you so short?"

So I looked up and said, "What are you talking about? Let's just play. We're happy."

i was waiting for this. ”

So we played, and about a minute later, a girl next to him in a white shirt and pink skirt stood up, put her hands on her hips, and said, "Yes, why do you look so different?"

And I went, 'What are you talking about?

It doesn't look any different. I am not short. Let's play again. ”

Around this time, when I looked around the circle I was in, all the kids had stopped playing and they were all looking at me.

And I'm thinking In today's parlance it would be "OMG" or "WTF".

(laughs) What the hell happened?

So the confidence I had that morning waned as the morning wore on, and questions came one after another.

Then, at the end of the morning, before we went home, the teacher put us in a circle, but I realized that I was actually outside the circle.

I couldn't even look at anyone.

I didn't understand what happened.

And in the years that followed, I hated public appearances.

I felt every glance, every giggle, every finger, I felt every finger, not a finger, and I hated it.

I hid behind my parents legs so no one could see me.

And as children, we cannot understand the curiosity of other children or the ignorance of adults.

It became very clear to me that the real world was not built for humans my size, both literally and figuratively.

So, as you can probably tell, I have no anonymity. Knowing my size, we all go through many hardships throughout our lives.

And some, like me, are visible.

Most can't.

I don't know if someone has a mental illness, is struggling with their gender identity, is caring for an aging parent, or is having financial difficulties.

I can't see anything like that.

So I can see that one of my challenges is my size, but just because I can see it doesn't mean I understand what it really is or what I go through on a daily basis.

So I am here to debunk the myth.

I believe that you cannot walk in someone else's shoes. So we have to adopt new ways of giving ourselves.

Simply put, I'll never know what it's like to be you, and you'll never know what it's like to be me.

I can't face your fears or chase your dreams, and you can't do it for me, but we can support each other.

We must adopt new ways of giving ourselves instead of trying to walk in each other's shoes.

I learned at an early age that I have to do things differently than others, but I also learned that sometimes I am on an equal footing with myself and one of those things is the classroom.

Hehehehe. I was equal

In fact, I got excellent grades in the classroom.

This is very important, but as I grew up I realized that I could not do any physical work.

I needed an education.

So I went on and got a college degree, but I felt I needed to be one step ahead of everyone else to get a job, so I needed an advanced college degree, so I went ahead and got it.

You are now ready for your interview.

Remember your first interview? What to wear?

what kind of question?

And don't forget a firm handshake.

i was there with you

So, 24 hours before the interview, a friend I've known for a long time called me and said, "Michele, there's a step in the building you're about to enter."

And she knew I couldn't climb stairs.

Then suddenly my focus changed.

I was worried how would I get there, in my shoes.

So I got there early, found a loading dock, boarded, and got a great interview.

They had no idea what I was going through that day, but that was fine.

Perhaps my biggest challenge that day was the interview or getting into the building.

In fact, my biggest challenge that day was getting through the loading dock without getting run over.

It is very weak in certain situations such as airports, corridors, parking lots and loading areas.

So I have to be very careful.

You need to be predictable, flexible, and sometimes act as quickly as possible.

So I took the job and in my current job I travel a lot.

And travel is a challenge for all of us today.

Then you'll probably arrive at the airport, go through security, and reach your gate.

Got an aisle seat or a window seat?Did you upgrade?

I, first of all, do nothing.

(Laughter) And it's going to go through a personal patrol, so it won't specifically go through TSA.

I will not comment on that.

Then I headed to the gate and, with the talent my parents said I was born with, I spoke to the gate agent and said, "By the way, my scooter weighs this much and has batteries, so I can drive it to the plane door."

I also called the city I was traveling to the day before to find out where I could rent a scooter in case it broke on the way.

So with my shoes it's a little different.

When I board a plane, I use my talents to ask women to lift their bags. And they kindly responded.

I try not to eat or drink on the plane because I don't want to get up and walk, but nature has its own schedule, there was a knock a little while ago, and I responded.

So I walked up to the front of the plane, chatted with the flight attendants, and said, "Can you look at the door? I can't reach the keys."

So while I was running some errands there, the door flung open.

And there is a gentleman with a look of fear on his face.

I'm sure I had the same expression.

When I went outside, I noticed that he was sitting across from me. And he is utterly, utterly perplexed.

So I walked over to him and said quietly: "Do you remember this as well as I do?"

(Laughter.) And he said, "I think so too."

(Laughter) He probably hasn't talked about it publicly, but I do.

(Laughter) But for the rest of the flight we kept talking and getting to know each other, family stuff, sports stuff, work stuff, and when we landed he said, 'Michele, I noticed someone left your bag.

May I have it? ”

And I said, "Of course, thank you."

And we wished each other well, and the most important thing that day was that he wasn't going to leave with that embarrassment, that embarrassing experience.

He won't forget it and neither will I, but I think he remembers more of our conversations and our different perspectives.

Traveling abroad can be even more difficult in some ways.

A few years ago I was in Zanzibar and I drove over and thought about it.

A short, Caucasian, blonde woman sitting on a chair.

It probably doesn't happen every day.

So I got up and started talking to my agent with a gifted orator.

Very friendly so when I asked about their culture etc. I realized there was no jet bridge.

So I had to say, "Can you help me not only lift the chair, but also up the stairs?"

So we ended up spending about an hour together while we waited for our flight, and it was the most amazing time.

That day changed the way we both looked.

And when I got on the plane, he patted me on the back and wished me well, and I was very grateful to him.

And also, I think he remembers the experience better than when I first came, and there was a little hesitation.

And as you can see, I get a lot of help.

I wouldn't be here if it wasn't for my family, friends, colleagues, and the many strangers who help me every day.

And it's important that we all have a support system.

Asking for help is a strength, not a weakness.

(Applause.) We all need help throughout our lives, but it's just as important to be part of other people's support systems.

We must adopt such a way of giving back.

Clearly we all have a role to play in our own success, but just as people do for me every day, think about the role we all have in the success of others.

Society is increasingly siled based on prejudices and ideologies, and it is vital that we help each other.

And we must look beyond the surface and face the truth that none of us are visible.

We have so much more and we are all working on the unseen.

So living a life without judgment allows us all to share that experience and have a completely different perspective, like the few people I mentioned in my talk earlier.

So remember, the only shoes you can really walk in are your own.

I can't walk in your house

I know my size 1 can't walk -- lol, but you can try.

But we can do better than that.

With compassion, courage and understanding, we can walk side by side, support each other, and think about how we can all change society instead of just judging what we see.

thank you.

(Applause.) Thank you.

Over the last few years, I've made 32 short films about Dead Mall, which I call the "Dead Mall Series."

Now, for those unfamiliar with what a dead mall is, it's basically a shopping mall in trouble.

So either there are few shops and few shoppers, or they are abandoned and in ruins.

Not sold at Penny's.

(Laughter) I started working on this series in early 2015 after a dark period in my life when I didn't want to make films anymore.

I put away my camera and stopped.

So in 2015, I decided to make a short film about Owing Mills Mall.

Owing Mills Mall opened in 1986.

I went on the first day it opened so I should know.

I was there with my family along with other families from Baltimore and had to drive around for 45 minutes just to find parking.

So, as you can imagine, none of that is happening in malls today.

My first mall job as a teenager was at a sporting goods store called Herman's World of Sports.

Maybe you remember.

(singing) Herman's World of Sports.

Do you remember that?

(Laughter) Well, I worked at a women's shoe store.

I worked in a leather store, I worked in a video store, but I didn't really like retail -- (laughs) I got fired from all the jobs.

(Laughter) In between these low-wage retail jobs, I was doing what any normal teenager was doing in the 1990s.

I shoplifted.

i'm just kidding.

I played with my friends at the mall.

(Laughter) People are like, "Oh my God, what kind of story is this?"

(Laughter) Hanging out at the mall can be fun, but it can also be really boring, like sharing a cigarette with a 40-year-old unemployed mall rat who wears black lipstick overnight during a break from a crappy minimum wage job.

As I stand here today, Owings Mills is destroyed and ready for the wrecking ball.

The last time I was there was in the evening, about three days before the mall closed completely.

And you had this kind of feeling, this eerie feeling, like the mall never announced it was closing, but something big happened and it was as if it was the end of the road.

Walking through the mall was so creepy.

let me show off

(music) So when I started working on The Dead Mall Series, I put the video up on YouTube. I thought it was funny, but frankly, I didn't expect others to share my enthusiasm for such drab and depressing subjects.

But apparently I was wrong as many started commenting.

And the first comment was something like - basically, 'Oh my God, this is the mall from my childhood.

what happened? "

Then I got comments like, 'There's a dead shopping mall in my town. You should come and shoot it.'

So I started traveling across the Mid-Atlantic region to photograph these dead malls.

some were open.

some were abandoned.

It's always been difficult to get into abandoned things, but somehow I always found a way to get in.

(Laughter) The malls that are still open do this weird thing all the time -- the same as the dead malls.

There are three remaining stores, but they are trying to decorate them to make it look like things are booming.

For example, there is an empty store and the gate is lowered.

So at Owings Mills, for example, we installed this tarp over the gate.

right?

There was a stock photo of a very happy woman, holding a blouse, she was like this (lol) and a man was standing next to her with an espresso cup and he was like this (lol) and it said, "What did you bring today?"

(Laughter) I wanted to be scared and depressed.

thank you.

So comments continued to flood the video from across the country and around the world.

And I started to think that this might really be something. But I had to be creative. Because how long are people going to sit and watch me toddle through an empty mall?

(Laughter) So that's the original episode that I filmed on my iPhone.

So I was walking through the mall with my iPhone.

so.

(Laughter.) And security said, malls don't like taking pictures, so security comes up and says, 'Put it away,' and I said, 'Okay.'

So I had to get creative and sneaky, so I started using hidden cameras and different techniques to get the footage I needed. Basically what I wanted to do was make the video as if it were a first person experience. It's like you're sitting there, wearing headphones and looking at a screen, basically like a video game, like you're there in the video.

I also started working with music and collaborating with an artist who creates music called vaporwave.

And vaporwave is a musical genre that emerged in the internet community in the early 2010s.

Here is an example.

(Music) This is from the album "Hologram Plaza" by the artist Discious.

So you can listen to more of those songs if you look it up.

Vaporwave is more than just an art form. It's like movement.

It's nihilistic, anxious, but somehow comforting.

The whole aesthetic is how I deal with things I can't do anything about, like not having a job or eating ramen in my parents' basement.

Vaporwave was born out of a desire to express the desperation of this generation in the same way pre-internet generations sat down in food courts.

One of my favorite malls I've been to is in Corpus Christi and it's called Sunrise Mall.

When I was a kid, I loved watching movies the most, and I watched movies over and over again.

One of my favorite movies was The Legend of Billie Jean.

Now, if you've seen The Legend of Billie Jean, you know it's a great movie.

I love it.

And Helen Slater and Christian Slater--and if you didn't know, they had nothing to do with it.

Many thought of them as brother and sister. it's not.

Anyway, Sunrise Mall was used as a filming location for the movie.

This shopping mall looks exactly like it did in 1984.

32 years later. let me show off

(Video) Dan Bell: And this is Billie Jean running across the fountain, being chased by Hubie Pyatt's friends.

And she jumps over here.

And you can see that the shot here is what it looks like today.

That's pretty incredible.

It's exactly the same, to be honest.

And there they fall into a fountain and she runs up the stairs.

This is a great shot of the whole thing here.

Dan Bell: I love it.

(Laughter) I always think in my head, if I owned a dead mall, why wouldn't they embrace that vintage look?

Add a bar, put vegan food in the food court, invite millennials and hipsters to come drink and eat, and within three weeks I guarantee that H&M and Levi's will be knocking on your door for space.

I don't know why they don't, but apparently it's just in my head and it's been going on all day.

(Laughter) Anyway, in the end -- (Laughter) When they first asked me to do this talk, I said, "Do you have the right person?"

(Laughter) These talks are supposed to be kind of inspirational, but -- (Laughter) I just remembered something.

I gave up my camera three or four years ago and needed to go to these malls to get inspired again.

And it's incredible to see my viewers and people all over the world writing to me and saying, "God, I love your videos."

As an artist, I don't know how to describe how fulfilling it is.

If you had told me a year ago that I would be standing on this stage and talking to all these amazing people, I would never have believed you.

I am humbled and very grateful.

thank you very much.

(applause)

As many of you know, here are the results of the recent elections. Democratic candidate Hillary Clinton won the election with 52% of the vote.

Green Party candidate Jill Stein was a big second with 19%.

Republican candidate Donald J. Trump followed with 14%, with the remaining votes split between abstainers and Liberal candidate Gary Johnson.

(Laughter) Now, which parallel universe do you think I'm living in?

Well, I don't live in parallel worlds.

I live in the world and that's how the world voted.

So let's go back and explain what that means.

In June of this year I launched something called Global Vote.

And Global Voting does exactly what it says on the tin.

For the first time in history, anyone anywhere in the world can vote in elections for other countries.

Now why would you do that?

what's the point?

Well, let me show you what it looks like.

Visit the website, a pretty beautiful website, and choose your election.

Here are some of the things we've already covered.

I do it about once a month.

So you can see that Bulgaria, the United States, the UN Secretary General and finally the Brexit referendum are there.

Select the election you are interested in and choose your candidate.

These are the candidates in the recent presidential election in Sao Tome and Principe, a small island nation of 199,000 off the coast of West Africa.

And see a brief overview of each candidate. I really hope it is very neutral, very informative, and very concise.

And when you find something you like, vote for it.

These are the candidates for the recent Icelandic presidential election, and that's the way it is.

So why would anyone want to vote in another country's elections?

Well, the reason you don't want to do that, rest assured, is to interfere with other countries' democratic processes.

It's not the purpose at all.

Actually you can't. Usually what I do is to announce the results after voters in each country have already voted. Therefore, it is not possible to intervene in that process.

But more importantly, I'm not really interested in the domestic issues of each country.

That's not what we're voting for.

So what Donald J. Trump or Hillary Clinton proposed to do for the American people is frankly none of our business.

Only Americans can vote.

No, in a global vote, are you only considering one aspect of it, which is what those leaders are going to do for the rest of us?

that is very important. Because it must be tiring to listen to people, but we live in a globalized, hyper-connected and interdependent world where the political decisions of other peoples can and will affect our lives no matter who we are or where we live.

Just as the wings of a butterfly fluttering on one side of the Pacific Ocean can cause a hurricane on the other side, so is the world we live in today and the world of politics.

There is no longer a line between domestic and international affairs.

Even if it's Sao Tome and Principe, or even the smallest country, it has the potential to produce the next Nelson Mandela or the next Stalin.

They can pollute the air and oceans that belong to us all. Alternatively, they could be responsible and help us all.

Yet what makes this system so strange is that it has not kept up with this globalized reality.

Only a few people are allowed to vote for these leaders, despite their influence being enormous and almost universal.

What number was it?

140 million Americans have voted for the next President of the United States, but as we all know, in a few weeks someone will hand over the nuclear launch code to Donald J. Trump.

Now, if it's not potentially affecting us all, I don't know what it is.

Similarly, millions of British people voted in the Brexit referendum election, and the outcome of either vote will have a profound impact on the lives of tens of millions and hundreds of millions of people around the world.

Even then, only a small number could vote.

What kind of democracy is that?

Big decisions that affect us all are made by relatively few people.

I don't know about you, but that doesn't sound very democratic.

So I'm trying to clear it.

But as I say, we don't ask about domestic issues.

In fact, I ask all candidates only two questions.

I send them the same two questions every time.

I would say, number one, if you were elected, what would you do for the rest of us, the rest of the 7 billion people on this planet?

Second question: What is your vision for the future of your country?

What role do you think it plays?

I send those questions to all candidates.

they don't all answer. Don't get me wrong.

If you're in a position to be the next president of the United States, I think you're probably pretty tied up for the most part. So I'm not at all surprised that they don't all answer, but many do.

more each time.

And some do more than answer.

Some of them answer in the most enthusiastic and exciting way imaginable.

I would like to say a few words to our savior Chisimba, one of the candidates for the recent presidential election of Zambia.

His answer to these two questions was essentially an 18-page paper on his views on Zambia's potential role in the world and the international community.

I posted it on my website for everyone to read.

Well, the Saviors won the global vote, but they didn't win the Zambian election.

So I wondered myself what I was going to do to this extraordinary group of people.

Here are some great people who won the world vote.

By the way, we always make mistakes.

The people we choose are never chosen by domestic voters.

It may partly be that we seem to want women all the time.

But I think it also shows that domestic voters still have a national mindset.

They are still thinking inwardly.

They still ask themselves: what good does it do for me? ...

Instead of what they should ask today, what is it going to be for us?

But that's it.

So please give me your suggestions. Not right now, but if you have any ideas on what you can do against this team of glorious losers, drop me an email.

(Laughter.) We have a savior, Chisimba, whom I spoke of earlier.

Hala Tomasdottir, runner-up in the Icelandic presidential election.

Many of you may have seen her amazing talk at TEDWomen just a few weeks ago on the need for more women to participate in politics.

Meet María das Neves from Sao Tome and Principe.

There is Hillary Clinton.

I don't know if she is available.

I have Jill Stein.

We also covered the next United Nations Secretary-General election.

We have the former prime minister of New Zealand and he would be a great member of the team.

So perhaps people like this, the glorious club of losers, can travel around the world where elections are held and remind people of the need to look a little outward and think about international implications in our time.

So what happens next for a global vote?

Well, obviously, the Donald and Hillary show is a little harder to follow, but there are some other really important elections coming up.

In fact, they seem to be on the rise.

As you are all aware, something is happening in the world.

And the next series of elections is all very important.

With Austria's re-election just days away, Norbert Hofer is set to become what is commonly described as Europe's first far-right head of state since World War II.

Next year, presidential elections will be held in Germany, France and Iran.

It doesn't make it any less important.

It becomes more and more important.

Clearly, the Global Vote is not an independent project.

It's not just there by itself.

It has some background.

This is part of a project I started in 2014 called "Good Country".

The idea of ​​a "good country" is basically very simple.

This is my quick diagnosis of what's wrong with the world and how I can fix it.

What's wrong with the world I've already hinted at.

Fundamentally, we face enormous and growing existential global challenges such as climate change, human rights abuses, mass migration, terrorism, economic turmoil and the proliferation of weapons.

All these problems that threaten to exterminate us are inherently global problems.

No country has the capacity to deal with these problems alone.

So it is clear that we have to work together, and we need to work together as a nation, to solve these problems.

It's so obvious, but we don't understand it.

We don't do it often enough.

For the most part, nations still continue to behave as if they were at war, as if selfish tribes were fighting each other since the nation-state was invented hundreds of years ago.

And this has to change.

This is not a change of political system or a change of ideology.

This is a culture change.

We all need to understand that thinking inwards is not the solution to the world's problems.

We have to learn how to work together and work together more, but we need to be a little less competitive.

If you don't, things will continue to get worse, and they will get worse much faster than you expected.

This change will only happen if we ordinary people tell politicians that things have changed.

We have to tell them that the culture has changed.

We must tell them that we have a new mission.

The old mission was very simple and single. If you're in a position of power or authority, you're responsible for your people and your little realm, and that's it.

And it's even better if it ruins the rest of the planet in order to do what's best for its own people.

It seems a little macho.

I think everyone who is in a position of power and responsibility today has a double duty. Those in positions of power and responsibility are responsible to their own people and to every man, woman, child and animal on earth.

You are responsible for a portion of your territory, and every square mile of the Earth's surface and the atmosphere above it.

And if you don't like the responsibility, you shouldn't be in power.

To me that's the rule of the day, that's the message we have to get to our politicians, that's the way things are done these days.

Otherwise, we are all ruined.

In fact, I have no problem with Donald Trump's "America First" mantra.

It seems to me that this is a rather banal statement about what politicians have always done and probably should always do.

Of course, they are elected to represent the interests of their own people.

But what I find so boring, outdated and unimaginative about his view is that America first means everyone else comes last, and making America great again means everyone else gets small again, which is not true at all.

In my work as a policy adviser over the past two decades or so, I have seen hundreds of examples of policies that reconcile international and domestic needs to produce better policies.

I am not asking the state to be altruistic or self-sacrificing.

that would be ridiculous.

No country would do that.

I am asking them to wake up and understand that a new form of governance is needed. It is possible, and it reconciles two needs: one that is good for one's own people and one that is good for others.

Since the US election and the UK's exit from the EU, it has become increasingly clear to me that the old distinction between left and right no longer makes sense.

They don't really fit the pattern.

What seems important today is very simple. Does your worldview find comfort in looking inwards and backwards, or, like me, does it find hope in looking forwards and outwards?

That is the new politics.

That is the new schism that bisects the world in the middle.

Now, that may sound critical, but it's not.

I have no idea why so many people find comfort in looking inward and backwards.

In times of difficulty, when money is scarce, when we feel insecure and vulnerable, it is almost a natural human tendency to turn inward, to consider our own needs and cut off the needs of others, and begin to imagine that the past was somehow better than the present and the future.

But I happen to believe it's a dead end.

History shows it to be a dead end.

When people turn inward and turn backward, human progress will be reversed and the situation will actually get worse very quickly for everyone.

If you, my friends, believe in the positive and the outward, as I do, that the best thing about humanity is its diversity, and that the best thing about globalization is the way it stirs up that diversity, its mix of cultures, to produce something more creative, more exciting, more productive than ever before in human history, then we have a job for you, my friends. Because the inward and backward brigades are united like never before, and the tenets of inward and backward. Fear that anxiety based on the simplest instincts is prevalent throughout the world.

Those of us who believe, positively and outwardly, as I believe, must sort ourselves out. Because time is passing very quickly.

thank you.

(applause)

So I don't like to brag, but I'm good at finding things that annoy me.

That's my real area of ​​expertise.

You hear a hundred compliments and one insult, do you remember what?

insult.

And according to research, I'm not alone.

Unfortunately, the human brain is wired to focus on the negative.

Now, this might have been useful when we were living in caves and trying to avoid predators, but now it's a horrible way to live life.

It's a real major factor in anxiety and depression.

So how can we combat the negative biases in our brains?

According to many studies, one of the best weapons is gratitude.

Knowing this, I started a new tradition in my home a few years ago.

Before eating with my wife and children, I said a prayer of thanksgiving.

The word prayer is not very appropriate.

I'm an agnostic, so instead of thanking God, I thank the few people who helped make my food a reality.

I would like to say, "Thank you to the farmer who grew these tomatoes, to the truck driver who brought these tomatoes to the store, and to the cashier who went to get these tomatoes."

And I thought this tradition was going pretty well.

And then one day my ten-year-old son said, 'Dad, they're not in our apartment.

they can't hear you

If you really care, you should go and thank them in person. ”

And I was like, "Hmm, that's an interesting idea."

(Laughter) Now I'm a writer, but I like to venture out to write a book.

Go on a quest.

So I decided to give my son a try.

It seemed easy enough.

For the sake of further clarity, we decided to focus on just one item.

The item I can't live without is my morning cup of coffee.

Well, it turns out not so simple.

(Laughter) This quest took months.

It took me around the world.

Because I realized my coffee wouldn't exist without the hundreds of people I take for granted.

So I would like to thank the truck driver who brought the coffee beans to the coffee shop.

But without roads he would not have been able to carry out his work.

So I want to thank those who paved the way.

(Laughter) And thank you to the guys who made the asphalt for the pavement.

And I realized that my coffee, like so many others around the world, required the collaboration of an amazing number of people from all walks of life.

Architects, biologists, designers, miners, goat herders, and more.

I decided to call my project "Thanks a Thousand".

I ended up thanking over 1000 people.

And it was overwhelming, but wonderful at the same time.

Because instead of focusing on three or four things that go wrong every day, I can now focus on hundreds of things that work every day.

And it reminded me of our amazing interconnectedness and our world.

I learned dozens of lessons during this project, and today I want to focus on five.

The first one is "Look up".

I started by thanking the barista at Joe Coffee, a local coffee shop in New York.

Her name is Chung. Chung is one of the most hilarious people you will ever meet.

People with big smiles and enthusiastic hugs.

However, it is difficult for Chung to become a barista.

That is because you are encountering people who are in great danger.

(laughter) You know what it is, pre-caffeine.

(laughter) That's why people have been yelling at him until he cries. Among them was a 9-year-old girl who didn't like the design of the hot chocolate whipped cream that Chong made.

So I thanked Ms. Chung and she thanked me too.

I cut off there.

I didn't want to get into an endless loop of gratitude.

(laughter) But the hardest part, she said, is when people don't even treat her as a human being.

They treat her like a vending machine.

So they hand her a credit card without looking up from their phone.

While she was saying this, I realized I had done it.

I have been in that hole.

And in that moment, I made a vow. When interacting with people, take two seconds to look at them and make eye contact.

Because it reminds you that you are dealing with someone with family, aspirations, and embarrassing high school memories.

And that little moment of connection is crucial to both humanity and well-being of people.

Now, the second lesson is "Smell the roses". and dirt. and fertilizer.

After Mr. Chong, I thanked this man.

Ed Kaufman.

And it's Ed who chooses the coffees served at my local coffee shop.

He travels to South America, Africa and around the world in search of the best coffee beans.

So I thanked Ed.

And in return, Ed taught us how to taste coffee like a pro.

And it's quite the ritual.

Take a spoon, dip it in the coffee, and sip it loudly.

Almost cartoonish noise.

It's for spraying coffee all over your mouth.

Taste buds are located on the sides of the cheeks and on the top of the mouth. You have to know everything.

So Ed would do this, and he would too - his face lit up and he said, "This coffee tastes like honey crisp apples, and it smells like earth and maple syrup."

And I took a sip and said, "I'm having coffee."

(Laughter) It tastes like coffee. ”

(Laughter) But Ed inspired me to actually put coffee on my tongue for five seconds. We're all busy, but it gave us five seconds to really think about texture, acidity, and sweetness.

And I started doing that with other foods as well.

And this idea of ​​tasting is very important for gratitude.

Psychologists say that gratitude is about taking some time and holding onto it for as long as possible.

and slow down time.

As is often the case, so that life does not go by in a blur.

The third is finding hidden masterpieces around you.

Well, one of my favorite conversations this year was with the man who invented my coffee cup lid.

And up until this point, I had given very little thought to coffee cup lids.

But I loved talking to this inventor, Doug Fleming. Because he was so passionate.

And the blood and sweat and tears he poured into this lid and I had no idea.

A bad lid can ruin your coffee, he says.

That means it can block scents that are so important to the experience.

So he is a very innovative person.

He's like Elon Musk on the coffee lid.

(Laughter) So he designed an inverted hexagonal lid for quick nose reach and maximum scent.

So I had the pleasure of talking to him and realized that there are hundreds of masterpieces all around us that we take completely for granted.

Just like the on/off switch on a desk lamp, it has a small thumb indentation that fits your thumb perfectly.

And when something goes well, the process behind it is largely invisible.

But by paying attention to it, we can harness that sense of wonder and enrich our lives.

The fourth is "disguise until you feel it."

By the end of the project, I was just overwhelmed with gratitude.

I was the same. I spent a few hours awake writing emails, sending notes, making phone calls, visiting people to thank them for my role in coffee.

And some, to be honest, are not very interesting.

They will say, 'What is this?

Is this a pyramid scheme, what do you want, what are you selling? ”

But most people were surprisingly impressed.

I remember calling the pest control lady at the warehouse where my coffee is served--sorry, the warehouse where my coffee is stored.

And I said, "I know it sounds weird, but thank you for keeping bugs out of my coffee."

And she said, "Well, that may sound strange, but you made my day so much fun."

And it was like a prank call.

And it didn't just affect her, it affected me too.

Because I woke up every morning in my usual default mood, grumpy, and I wanted to force myself to write a thank you letter and then a thank you letter.

And what I've found is that when you act like you're grateful, you end up being truly grateful.

The power of action to change our minds is amazing.

Therefore, we often think that our thoughts change our actions, but very often our actions change our thoughts.

And finally, the last lesson I would like to share with you is to practice the 6 levels of gratitude.

And at every stop, every stop along this road of gratitude, there will be 100 other people I can thank.

So I went to Colombia to thank the farmers who grow the coffee beans.

It's a small mountain town, and I drove there along the winding roads along the cliffs.

And at every hairpin turn, the driver was doing a cross sign.

And I said, "Thank you for that.

(laughter) But can you do that while behind the wheel?

Because I'm scared. ”

But we made it through.

And then I met the peasants, the Guarniso brothers.

It's a small farm, but it makes great coffee and gets paid more than fair trade prices for it.

And they showed us how the coffee is grown.

This fruit, called a coffee cherry, actually contains beans.

And I thanked them.

And they said, "Well, we can't do our job without 100 other people."

The fruit pulping machines are made in Brazil, and the pickup trucks that drive around the farm are made from parts sourced from around the world.

In fact, the United States exports steel to Colombia.

So I went to Indiana and thanked the steelmakers.

And I remembered that you don't need a village to make a cup of coffee.

It takes the world to make a cup of coffee.

And this world economy, globalization, has a negative side as well.

But I believe the long-term positives are far greater and the progress is real.

Over the past 50 years, we have made progress and reduced poverty around the world.

And that means you need to resist the temptation to withdraw into a silo.

And we must resist this rise in isolationism and patriotism.

This brings us to our final point.

I hope that gratitude will be the driving force behind your actions.

Some people worry that gratitude has a downside.

We will be very grateful and satisfied.

We think, "Oh, everything is great, I really appreciate it."

Well, as it turns out, the opposite is true.

Studies show that the more gratitude you have, the more likely you are to help others.

When I'm in a bad state, I often focus on my needs.

But gratitude is something that makes you want to put it off.

And I have personally experienced this.

In other words, I am not Mother Teresa. I'm still a selfish bastard.

But I am better than before this project.

It was because I became aware of exploitation in the supply chain.

It reminded me that what I take for granted is not available to millions of people around the world.

like water.

Coffee is 98.8% water.

So I thought I should thank the people of the New York Reservoir, the hundreds of people who supply me with water, and thank them for this miracle of being able to turn a lever and have safe water.

And millions of people around the world lack this luxury and have to walk for hours to get safe water.

That led me to think about what I could do to help people have access to more water, so I did some research and found a great group called Dispensers for Safe Water.

And I got involved.

Not that I expect the Nobel Prize committee to knock on my door, but it's a baby step and kind of.

It's all out of gratitude.

That's why I encourage people, friends, and family to follow their own gratitude trajectories.

Because it's a life-changing experience.

And it doesn't have to be coffee.

It can be anything.

It could be a sock, or it could be a light bulb.

No need to travel around the world. All it takes is a simple gesture like making eye contact or sending a note to your favorite logo designer.

It's more a matter of mindset.

We realize that thousands of people are involved in every little thing we do.

Remember, there is a person in the factory who made the fabric for the chair you are sitting on right now.

Someone went to the mines and got copper for this mic so that I could give my final thanks, say thank you.

Thank you to the thousands of people who listened to my story.

(applause) (cheers)

Today we will talk about statistics.

So if you feel a little alarmed right away, that's fine. It doesn't make you some kind of crazy conspiracy theorist, it makes you skeptical.

And when it comes to numbers, especially now, we should be skeptical.

However, we also need to be able to determine which numbers are reliable and which are not.

So today, I'd like to introduce you to some tools to help you do just that.

Before we get into that, I want to clarify which numbers we're talking about here.

I'm not talking about claims like "9 out of 10 women recommend this anti-aging cream."

I think most of us always roll our eyes when we see numbers like that.

What's different now is that people question statistics like 5% unemployment in the US.

What makes this claim different is that it comes from the government, not from a private company.

About 4 in 10 Americans don't trust the economic data released by the government.

Even higher among Trump supporters. About 7 out of 10.

I don't need to tell anyone here, but there are many boundaries in our society right now, and many of them start to make sense once you understand the relationship between people and government numbers.

On the one hand, some argue that these statistics are important and that we need them to go beyond emotional anecdotes and understand society as a whole to measure progress in an [objective] way.

And some say these statistics are elitist and perhaps even fraudulent. They don't make sense and don't really reflect what happens in people's daily lives.

For now, I feel like the latter group is winning the debate.

We live in a world of alternative facts, where people can't find this kind of common ground or statistics to start their discussion.

This is a problem.

In fact, there is currently a move in the United States to completely remove some government statistics.

A bill on measuring racial inequality is now before Congress.

The bill says government funds should not be used to collect data on racism.

This is a total disaster.

Without this data, how can discrimination be observed, let alone corrected?

In other words, how can governments formulate equitable policies if current levels of injustice cannot be measured?

This is not just about discrimination, it applies to everything. please think about it.

How can we enact health-care legislation without good data on health and poverty?

How can we have a public debate about immigration if we can't agree on at least how many people are coming in and out?

Statistics are provided by the state. That's where their name comes from.

The key was to better measure the population for better service.

So while we need these government figures, we also need to go beyond blind acceptance or blind rejection.

We need to learn the skill of spotting bad statistics.

I started learning some of these while working in the statistics department, part of the United Nations.

Our task was to find out how many Iraqis have been forced from their homes as a result of the war and what they need.

It was a very important job, but it was also very difficult.

Every day we were making decisions that impacted the accuracy of our numbers, such as which part of the country to go to, who to talk to, what questions to ask.

And then I started to get really disillusioned with our work. Because we thought we were doing a really good job. But the only group of people who could tell us the truth were the Iraqis, who barely even got a chance to find our analysis, much less question it.

So I became very determined that one way to make the numbers more accurate was to ask as many people as possible.

So I became a data journalist.

My job is to find these datasets and share them with the public.

Anyone can do this and you don't have to be a nerd or a geek.

Feel free to ignore those words. It is used by people who pretend to be humble while trying to claim to be smart.

Absolutely anyone can do this.

I want to give you three questions to help you find bad stats.

Question 1 is "Can you see the uncertainty?"

One thing that has greatly changed people's relationship to numbers and even their trust in the media is the use of political polls.

I personally have a lot of problems with political polls. Because I think the role of the journalist is really to report the facts, not to try to make predictions. Especially when such predictions can actually undermine democracy by signaling to people, "Don't bother voting for him, he doesn't stand a chance."

Let's put that aside for now and talk about the accuracy of this effort.

Based on national elections in the UK, Italy and Israel, and of course the recent US presidential election, using polls to predict election outcomes is almost as accurate as using the month to predict hospitalizations.

No, seriously, I used actual data from an academic study to draw this.

There are many reasons why polls have become so inaccurate.

Our society is highly diverse, which makes it difficult for pollsters to obtain a truly adequately representative sample of the population for their polls.

People are very reluctant to answer pollsters on the phone, and surprisingly, people may lie.

However, even if you look at the media, you can't always tell that.

For one thing, Hillary Clinton's odds of winning were conveyed in decimal places.

No decimal places are used to represent temperature.

How can we predict the behavior of this country's 230 million voters with such accuracy?

And then there was that sophisticated chart.

See, many data visualizations exaggerate certainty, but it works. These graphs can numb our brains to criticism.

The stats may sound skeptical.

As soon as it gets buried in the charts, it feels like some kind of objective science, but it's not.

So I was trying to find a way to better communicate this to people and show them the uncertainty of the numbers.

What I did was take a real data set and turn it into a hand-drawn visualization so people can understand how inaccurate the data is. This tells us that a human did this, that a human found the data and visualized it.

For example, instead of looking at the probability of getting the flu in a particular month, you can see the general distribution of flu seasons.

This is -- (laughter) a bad shot to show in February.

But it's also a more reliable data visualization, as showing exact probabilities could encourage people to get the flu vaccine at the wrong time.

The purpose of these vague lines is not just to help people remember these inaccuracies, but to help them remember the important facts, not necessarily telling them a specific number and walking away.

Facts such as injustice and inequality leave a huge mark on our lives.

The fact that people like Black Americans and Native Americans have shorter life expectancies than other races isn't going to change anytime soon.

Facts like US prisoners are sometimes kept in cells smaller than the size of an average parking space.

The purpose of these visualizations is also to remind people of very important statistical concepts such as averages.

For example, let's say you hear a claim that "the average pool in the United States has 6.23 fecal incidents."

That doesn't mean that all pools in this country contain exactly 6.23 feces.

So, to show that, we went back to the original data from the CDC's survey of 47 swimming facilities.

And I spent one evening redistributing poop.

So you can see how the average is misleading.

(Laughter) Now, the second question you have to ask yourself to find bad numbers is, "Can you see yourself in the data?"

This question is also, in a way, about averages. Because one of the reasons people are dissatisfied with these national statistics is that they don't really tell who wins and who loses because of national policies.

It's easy to see why people get annoyed when global averages don't match their personal experience.

I wanted to show people how data relates to their daily lives.

I started an advice column called "Dear Mona". People write me questions and concerns, and I try to answer them with data.

People asked me anything.

Questions like, "Is it normal for you and your wife to sleep in separate beds?"

"Do people regret their tattoos?"

"What do you mean by natural death?"

All of these questions are great questions that make you think about how to find and communicate these numbers.

When someone asks, "How much do you pee?"

This is a question I was asked, but I want to make sure my visualization is meaningful to as many people as possible.

These numbers are not unavailable.

In some cases, it can be buried in the appendices of academic research.

And they are by no means mysterious. If you really want to test these numbers on urine output, pick up a bottle and try it yourself.

(Laughter) The point is that not all datasets necessarily have to be specifically relevant to you.

Even if I don't live in France or don't wear a face veil, I'm curious how many women have been fined in France for wearing a face veil or niqab.

The point of asking where you fit in is to get as much background as possible.

That is, zooming out from one data point, such as the unemployment rate of 5 percent, and observing how it changes over time and how it varies with educational attainment. This is why my parents always wanted me to go to college. Or to observe how it changes with gender.

Male unemployment is now higher than female unemployment.

Until the early 80's it was the other way around.

This is the story of one of the biggest changes in American society, and looking beyond the average, it's all reflected in this chart.

Axes are everything. Changing the scale also changes the story.

Now, the third and final question I want you to think about when looking at statistics is, "How was the data collected?"

So far we've only talked about how data is communicated, but how data is collected is just as important.

I know this is difficult as the methodology can be opaque and actually tedious, but there are some simple steps you can take to ensure this.

I'll use the last example here.

One poll found that 41 percent of the country's Muslims support jihad, which is clearly pretty scary and was widely reported in 2015.

If you want to check those numbers, start by looking for the original survey.

It turned out that the journalists who covered the statistics ignored a sub-question in the survey on how to define "jihad."

And most of them defined it as "the personal and peaceful struggle of Muslims to become more religious."

Only 16% defined it as a "violent crusade against unbelievers."

This is a very important point. Based on these figures, it is quite possible that the people who defined this as a violent jihad in this survey also did not support it.

These two groups may not overlap at all.

It's also worth asking how the survey was conducted.

This was called opt-in voting, and anyone could find it on the internet and answer.

There is no way to even know if those people are Muslim.

Ultimately, the poll attracted 600 respondents.

There are about 3 million Muslims in the country, according to the Pew Research Center.

That means the poll was conducted on about 1 in 5,000 Muslims in the country.

This is one reason government statistics are often better than private ones.

A poll might give you the opinion of hundreds, maybe even a thousand people. Or if L'Oréal was trying to sell skin care products in 2005, it would have spoken to 48 women and claimed that they worked.

(Laughter) Private companies don't really care about getting the numbers right, they just need the numbers right.

Government statisticians are not.

At least in theory, most of them do their jobs regardless of their position of power, so they're perfectly fair.

they are civil servants.

And to get the job done properly, they don't just talk to hundreds.

The unemployment rate figures I always refer to are from the Bureau of Labor Statistics, and I have drawn from over 140,000 businesses in this country to create that estimate.

I get it, it's frustrating.

If you want to test statistics from a private company, buy a face cream for yourself and a bunch of friends, test it, and if it doesn't work, the numbers are wrong.

But how do you question government statistics?

Just keep checking everything.

Find out how they collected the numbers.

But don't give up on numbers altogether. Then we will make public policy decisions in the dark, guided only by our own interests.

thank you.

(applause)

It was a normal Saturday.

My father was outside mowing the lawn, my mother was folding laundry upstairs, my sister was doing homework in her room, and I was playing video games in the basement.

And when I went upstairs to get some drinks, I looked out the window and realized I had work to do, and this is what I saw.

No, this was not my family's dinner.

This was my science project.

Flames erupted, smoke hung in the air, and the wooden deck looked like it was about to catch fire.

I immediately started screaming.

My mother panicked, my father ran around to put out the fire, and of course my sister started recording Snapchat videos.

(Laughter) This was just the beginning of my team's science projects.

My team consists of me and 3 other students who are here today.

We competed in the FIRST LEGO League, an international Lego robotics competition for kids, but in addition to robot games, we were also working on another science project and this was the project we were working on.

The idea for this project started a few months ago when a couple of teammates went on a trip to Central America and saw a beach strewn with Styrofoam or expanded polystyrene foam.

And when they came back and told us about it, we started thinking seriously about how we look at Styrofoam every day.

Buying a new flat screen TV?

The end result is a styrofoam block larger than the TV itself.

Do you drink coffee?

Well, Styrofoam coffee cups certainly cost money.

And where do all these items go after one use?

There is no good solution for used Styrofoam, so almost all of it ends up in landfills or in oceans and beaches, where it takes 500 years or more to decompose.

And in fact, each year the United States alone produces more than 2 billion pounds of Styrofoam, filling a staggering 25 percent of landfills.

So why does this ghostly buildup of Styrofoam waste exist?

Why can't it be recycled like most plastics?

Simply put, recycled polystyrene is too expensive and potentially polluting, so there is little market demand for Styrofoam that needs to be recycled.

As a result, Styrofoam is considered a non-renewable material. Because recycling polystyrene is both feasible and unfeasible.

And in fact, many cities across the United States have even passed ordinances that simply ban the manufacture of many products containing polystyrene. This includes products such as disposable tableware, peanut wrappers, to-go containers, and even plastic beach toys that are so useful in today's society.

And now France has become the first country to completely ban all plastic utensils, cups and plates.

But what if you could continue to use Styrofoam and continue to benefit from its cheap, lightweight, insulating and excellent packaging capabilities, but not have to suffer the consequences of having to throw it away?

What if you could turn it into something that actually works?

What if you could make the impossible possible?

My team hypothesized that the carbon already contained in Styrofoam could be used to create the activated carbon used in nearly all water filters today.

Activated carbon also uses very small pores to filter contaminants from water and air.

So we started by doing various heating tests, but unfortunately there were many failures.

Literally nothing worked.

My father's grill caught fire, and most of the samples either evaporated to nothing or exploded in an expensive furnace to a very sticky state.

In fact, we were so saddened by our failure that we almost gave up.

So why did we keep trying when all the adults said it was impossible?

Well, maybe it's because we're kids. I don't know any more.

But the truth is, we thought it was still possible and kept trying.

We knew that if we were successful, we would contribute to the environment and make the world a better place.

So we tried and failed, tried and failed again and again.

We were ready to give up.

But it happened.

Using the right temperature, time and chemistry, we had successful test results showing that we had finally created activated carbon from Styrofoam waste.

And in that moment, what was previously impossible suddenly became possible.

We had a lot of setbacks at first, but we overcame them and found that we were able to get the test results we wanted.

Additionally, not only were we able to create activated charcoal to purify water, we were also able to reduce Styrofoam waste, solving two global problems with just one solution.

So since then, we've been inspired to take the project further, run more tests to make it more effective, and test it in real-life situations.

It was subsequently funded by NSTA's eCYBERMISSION STEM-in-Action program sponsored by the U.S. Army and the FIRST Global Innovation Awards sponsored by XPRIZE.

It also won the Scientific American Innovator Award from the Google Science Fair.

And we plan to use these funds to apply for a full patent on our process and continue working on the project.

Yes, we started out by lighting my dad's grill, but I almost gave up after failing so many times, but looking back on it now, it was well worth it.

We took a problem that many said was impossible, made it possible, and persevered even when it seemed like nothing was going to work.

We have learned that success is not possible without a few or a lot of failures.

So, in the future, if your grill catches fire, you don't have to worry about it. Because you never know when an idea will catch fire.

thank you.

(applause)

Philosophers, playwrights, and theologians have grappled with this question for centuries. What leads people in the wrong direction?

Interestingly, I asked this question as a child.

I grew up in the South Bronx, the inner-city ghetto of New York, and like all inner-city kids, I was surrounded by evil.

And I had a friend, Robert Louis Stevenson, who was a really good kid and lived through the Dr. Jekyll and Mr. Hyde scenario.

I mean, they took drugs, got into trouble, and went to jail.

Some were killed, some were killed without the aid of drugs.

So when I read Robert Louis Stevenson, it wasn't fiction.

The only question is what was in the juice?

And more importantly, I knew that the line between good and evil—that privileged people like to think they were on the good side and others on the bad side, fixed and impenetrable—was movable and permeable.

Good people can be tempted to cross that line, and under good or rare circumstances, bad children can be rehabilitated through help, reform, and rehabilitation.

So I'd like to start with this amazing illusion by [Dutch] artist M.C. Escher.

Focusing on the white, you will see a world full of angels.

But let's look deeper, and as we do, what emerges is the devil, the devil of the world.

It tells us a few things.

The first is that the world is, was, and will always be filled with good and evil, because good and evil are the yin and yang of the human condition.

It tells me another thing.

As you may remember, God's favorite angel was Lucifer.

Lucifer means "light".

In some scriptures, it also means "morning star."

And apparently he has disobeyed God, which is the ultimate disobedience to authority.

And when he did, Archangel Michael was sent to cast him out of Heaven along with other fallen angels.

And Lucifer descends into Hell, becomes Satan, becomes the devil, and the evil powers of the universe begin.

Paradoxically, God created hell as a storehouse for evil.

But he didn't do a good job of keeping it there.

Thus, this arc of God's favorite angel's cosmic transformation into a demon sets the context for me to understand humans transforming from good ordinary people to perpetrators of evil.

So the Luciferian effect brings me to a psychological definition, even though it focuses on the downsides, the downsides that a person can become, rather than the downsides of humans themselves.

And that's the key. It's about power.

Intentionally harming a person psychologically or physically, fatally destroying a person or idea, or committing a crime against humanity.

A Google search for the word "evil" yields 136 million hits in a third of a second for what is now surely dead.

I think you were just as shocked as I was by the revelations that American soldiers were abusing prisoners of war in Abu Ghraib, Iraq, in an unfamiliar location during a controversial war years ago.

And these were the men and women who were inflicting incredible humiliation on the prisoners.

I was shocked, but not surprised, as I had seen the same visual similarities when I was a prison warden in Stanford Prison Studies.

What did the Bush administration forces say immediately?

What every administration says when a scandal hits: "Don't blame us. It's not the system's fault."

It's a few bad apples, a few rogue soldiers. ”

My hypothesis is that American soldiers are usually better.

Maybe the barrel was bad.

But how do we deal with that hypothesis?

I became an expert witness for one of the guards, Sgt.

I was able to get in touch with him.

I studied him, had him come to my house, got to know him, did some psychoanalysis and was able to know if he was a good apple or a bad apple.

And third, I had access to all 1,000 photos taken by these soldiers.

These photos are of a violent or sexual nature.

They are all from American soldiers' cameras.

We all have digital cameras and cell phone cameras, so I took over 1,000 pictures of everything.

And what I did was organize them into different categories.

But these are from the U.S. Military Police and Army Reserves.

They are not soldiers prepared for this task at all.

And it all happened in one place, Tier 1-A during the night shift.

why?

It was pending inquiry.

All of the Titan Inc. Inquisitors are there, but we haven't gotten any information about the rebellion.

So they will press the soldiers, the gendarmes, to cross the line, to give them permission to break the will of the enemy, to prepare them for interrogation, to soften them, to take off their gloves.

These were euphemisms and thus interpreted.

Let's go to that dungeon.

(typewriter) [Abu Ghraib Iraq Prison Abuse, 2008 photo of gendarme guards] [The following images contain graphic depictions of nudity and violence] (camera shutter) (thump) (camera shutter) (camera shutter) (breathing) (bell) (end of bell) So it's pretty frightening.

It is one of the visual representations of evil.

And you can't miss that the reason I combined the outstretched prisoner with Leonardo da Vinci's hymn to humanity was because the prisoner was mentally ill.

The prisoner wore poop every day and had to roll it up in dirt to keep it from smelling.

But the guards called him a "fucking bastard".

What was he doing in that prison instead of the mental hospital?

In any case, here is former Secretary of Defense Rumsfeld.

He came down and said, "I want to know, who is in charge?

who is the bad apple? ”

Well, that's a bad question.

"What" can be about people, but it can also be about situations, and obviously that's wrong.

If they believe they were good soldiers before going to the dungeon, how are psychologists going to make sense of such changes in human character?

There are 3 ways. The main method is called temperament.

We look inside the person, the bad apple.

This is the basis of all social sciences, the basis of religion, the basis of warfare.

Social psychologists like me say, "Well, people are actors on stage, but they have to be situational aware.

Who is the cast of characters? what is the costume?

Do you have a stage director? ”

So we're interested in the external factors around the individual: are the barrels bad?

Social scientists stop there and miss an important point they discovered when I became an expert witness for Abu Ghraib.

Power is inside the system.

It is the system, and the system is the legal, political, economic and cultural context that creates the conditions that corrupt the individual.

And here is where the power of the bad barrel maker comes from.

If you want to change people, change the situation.

To change that, we need to know where the power is in the system.

Therefore, the Luciferian Effect involves understanding the changes in human personality caused by these three factors.

And it's a dynamic interaction.

What do people bring into this situation?

What will this situation bring to them?

And what is the system that creates and maintains that situation?

My recent book, The Lucifer Effect, is about how we understand how good people turn evil.

And it pretty much spells out what I'm going to talk about today.

So Dr. Z's "Lucifer Effect", though focused on evil, is actually a celebration of the infinite capacity of the human mind to make us both kind and cruel, compassionate and indifferent, creative and destructive, thereby demonizing some of us.

And the good news that hopefully goes to the end is that it makes some of us heroes.

This wonderful cartoon from The New Yorker sums up my whole story: "I'm neither a good cop nor a bad cop, Jerome.

Like you, I am a complex mix of positive and negative personality traits that come and go depending on the situation. ”

(Laughter) There are studies that some of you think you know, but few of you have read about.

This is Stanley Milgram, a little Jewish kid from the Bronx who asked the question, "Could the Holocaust happen here and now?"

People say, "No, it's Nazi Germany, it's Hitler, look, it's 1939."

He said, "Well, but suppose Hitler asked you, 'Would you like to electrocute a stranger?'"

500 New Haven, Connecticut, 500 Bridgeport.

We want to improve people's memory. Because that is the key to success. ”

OK？

We don't want college students. Looking for a man between the ages of 20-50. ”

A subsequent study focused on women.

So you go down and one of you becomes the learner and one becomes the teacher.

The learner is a mild-mannered middle-aged man.

He is strapped to a shock device in another room.

The learner may be middle-aged or young in their 20s.

And one of you said to a man in white, an authority figure, "Your job as a teacher is to give him material to learn.

You're right, reward.

I accidentally pressed the shockbox button.

The first button is 15 volts. He doesn't even feel it. ”

That's the key.

And the next step is another 15 volts.

The problem is that the voltage at the end of the line is 450 volts.

And as you move on, the man yells, "Heart disease! Get out of here!"

you are a good person you complain

"Doctor, if something happens to him, who will take responsibility?"

The experimenter said, 'Don't worry, I'll take responsibility.

Please continue, sir. ”

Note that when it reaches 375, it says "DANGER. SEVERE SHOCK".

At this point, "XXX" - power porn.

So Milgram asked 40 psychiatrists, "What percentage of Americans will make it through?"

They said only 1 percent.

Because it's sadistic behavior, and psychiatry knows that only 1 percent of Americans are sadistic.

OK。

Two thirds reach 450 volts.

Milgram has done over 16 studies.

And look at this.

In Study 16, we found people like you to follow through, and 90% of people will follow through.

what about women? Study 13 -- No different than men.

So Milgram quantifies evil as the willingness of people to follow authority blindly and reach as high as 450 volts.

And it's like a dial that shows human nature.

In a way, it's a dial that can make almost everyone completely obedient, down to the majority, down to none.

What would be its validity in the real world?

In 1978, 912 Americans committed suicide or were murdered by family and friends in the jungles of Guyana. They blindly followed the Reverend Jim Jones, who was a pastor, not a priest.

So he is a modern-day Luciferian effect, a man of God who has become an angel of death.

All of Milgram's research is about the individual's power to control people.

Most of the time we are on the premises. As such, the Stanford Prison Study is a study of the power of institutions to influence individual behavior.

Interestingly, Stanley Milgram and I were in the same class at James Monroe's High School in the Bronx in 1954.

I did this research with graduate students, especially Craig Haney. And it started with advertising as well.

We ran cheap, small ads, but we wanted college students to study prison life.

75 people volunteered to take a personality test.

we interviewed.

We have selected 24 of the most common and healthiest.

Randomly assigned them to prisoners and guards.

So from day one we knew we had good apples.

I'm going to put them in a bad situation.

And secondly, we know that there is no difference between boys who become guards and boys who become prisoners.

We told the prisoners, "Wait at home. The study will begin on Sunday."

We didn't tell them that the city police were going to come and make a real arrest.

(video) (music) [Day 1] Student: A police car stops in front of me and a policeman knocks on my door and says he's looking for me.

So they were there, took me out the door and pressed my hand against the car.

It was a real police car, it was a real police officer, and we had real neighbors on the street, but they didn't know this was an experiment.

And there were cameras around, and neighbors.

They put me in their car and drove me around Palo Alto.

They took me to the basement of the police station.

Then they put me in a cell.

I was the first to be picked up and put in a cell. It was like a room with a barred door.

Turns out it's not a real prison.

They took this experiment too seriously.

There are prisoners here. They will be dehumanized and turned into numbers.

These are guards with symbols of power and anonymity.

Guards force prisoners to clean toilet bowls with their bare hands and perform other demeaning tasks.

they strip them naked. They tease them sexually.

They initiate degrading behavior, such as simulating sodomy.

You've seen Abu Ghraib soldiers imitating fellatio.

My security guard did it in 5 days.

The stress response was so extreme that within 36 hours normal children, who had been selected for their health, were emaciated.

The study was terminated after 6 days due to uncontrollability.

Five children were mentally debilitated.

Is it different whether a warrior changes his appearance and goes to battle?

How do we treat victims if they are anonymous?

Some cultures go to war without changing their appearance.

Others describe themselves as the "Lord of the Flies".

Some wear masks.

There, anthropologist John Watson found 23 cultures with 2 bits of data.

Do they change their appearance? 15.

Do they kill, torture, mutilate? 13.

Only 1 in 8 will kill, torture, or mutilate if their appearance remains the same.

The key is in the red zone.

When they change their appearance, 12 out of 13, or 90 percent, are killed, tortured, or mutilated.

And that is the power of anonymity.

So what are the seven social processes that lubricate the slippery slope of evil?

Take the first small step casually.

dehumanization of others. Deindividualization of self.

Distribution of personal responsibility.

Follow group norms uncritically.

Passive tolerance of evil through inaction or indifference.

And that happens when you are in a new or unfamiliar situation.

Habitual reaction patterns don't work.

Your personality and morality are separate.

“There is nothing easier than blaming the bad guy, but nothing more difficult than understanding him,” Dostoevsky said.

Understanding is no excuse. Psychology is not an excuse science.

So social and psychological research is revealing how ordinary good people can change without drugs.

it is not necessary. All you need is a socio-psychological process.

Parallels in the real world?

As James Schlesinger puts it--and that's all there is to it--"Psychologists have attempted to understand why and how individuals and groups that normally act humanely may sometimes behave otherwise in certain circumstances."

That's the Lucifer effect.

He went on to say, "This groundbreaking Stanford study is a cautionary tale for all military operations."

Giving people power without oversight is a prescription for abuse.

They knew it and kept it.

So another report, an investigative report by General Fay, says the system is guilty.

In the report, he said, it was the environment that created Abu Ghraib that contributed to the occurrence of these abuses through the failure of their leaders, and because they went undetected by higher authorities for a long period of time.

These abuses continued for three months.

The answer is no one, I deliberately think so.

He gave the guards permission to do so, but they knew no one would ever come down into the dungeon.

Therefore, a paradigm shift is required in all these areas.

It is a shift away from a medical model that focuses solely on the individual.

A shift to a public health model that recognizes the vectors of both situational and systemic disease.

Bullying is a disease. Prejudice is a disease.

Since the Inquisition, we have dealt with issues on an individual level.

it doesn't work.

Alexander Solzhenitsyn said, "The line between good and evil cuts through every human heart."

That is, the line does not exist.

It's a decision you have to make and it's personal.

So, I would like to end it quickly with a positive feeling.

Heroism as an antidote to evil, especially by promoting heroic imagination in children, in the educational system.

We want our children to think, ``I am a hero waiting for the right situation, and I will act heroically.''

For the rest of my life, I plan to move away from the evils I've been associated with since childhood and focus on understanding heroes.

The mediocrity of heroism.

It is the complete opposite of Hannah Arendt's The Mundaneity of Evil.

Wrong because our traditional social heroes are the exception.

They organize their lives around this. That's why we know their names.

Our children's heroes are also the wrong model for them because they have supernatural talents.

We want children to understand that most heroes are everyday people and heroic deeds are rare.

Joe Darby.

It was he who stopped the abuse you saw. Because he saw those images and handed them over to senior investigators.

He was a private, but that stopped it.

They had to put him into hiding because people tried to kill him and then his mother and wife.

For three years they were in hiding.

I was the warden of the prison when I said it got out of control.

I didn't know it was out of control. I was completely indifferent.

She saw the insanity of the situation and said, "What you are doing to those boys is disgusting.

They are not prisoners or guards, they are boys and you are responsible. ”

I finished studying the next day.

The good news is that I married her the following year.

(Laughter.) (Applause.) Clearly, I've come to my senses now.

So circumstances have the power to do [three things].

But the point is, this is the same situation that can inspire a hostile imagination in some of us and make us perpetrators of evil, and it can inspire a heroic imagination in others.

In the same situation, you are on either side.

Most people are guilty of doing nothing. Because your mother said, "Don't get involved, take care of yourself."

And I have to say, "Mommy, humanity is my job."

The psychology of heroism is -- I'm going to finish it soon -- how do I encourage kids in the new Hero course I'm working on with Matt Langdon -- he has a Hero Workshop -- how do I feed this heroic imagination, this self-label, "I'm a hero waiting," and teach skills.

To be a hero, you must learn to be a deviant. Because it always rebels against group conformity.

There are two keys to heroism.

B: We must act socially, not selfishly.

And finally, I'd like to end with a famous story about New York's subway hero, Wesley Autry.

A 50-year-old African-American construction worker on a subway.

A white man fell on the railroad tracks.

A subway train is coming. We have 75 people.

you know what? they freeze.

There's a reason he doesn't care.

He's black, he's white, and he has two kids.

Instead, he gave the children to a stranger, jumped onto the railroad tracks, placed the man between the tracks, lay on top of it, and the subway passed over him.

Wesley and the man -- 20 and a half inches tall.

Train clearance is 21 inches.

Half an inch and his neck would have fallen off.

And he said, "I did what anyone could do," jumping onto the tracks was no big deal.

And the moral obligation is "I did what everyone should do."

And one day you find yourself in a new situation.

Choosing the first path will make you a perpetrator of evil.

Evil means you become Arthur Andersen.

Either cheat or tolerate bullying.

The second method commits the evil of passive inaction.

Pass 3, you become a hero.

The point is, are you ready to go down the path of honoring ordinary heroes, waiting for the right circumstances to put your heroic imagination into action?

Because it may only happen once in your life and when you walk past it you will always notice, I could have been a hero but I missed it.

So the key is to think about it and then do it.

Confront the forces of evil systems at home and abroad and focus on the positive side.

Advocate for respect for individual dignity, justice and peace. Unfortunately, our administration has not done that.

thanks so much.

Have you ever heard that breastfeeding is free?

(Laughter) Yes, this is very interesting. Because if you don't value a woman's time and energy, it will only be free.

Any mother knows how much time and energy it takes to make her body liquid, literally melting herself (lol), while feeding this precious little cannibal.

(Laughter) Mammals suck milk because of milk.

In the comparative lactation lab at Arizona State University, I decipher the composition of human milk to understand its complexity and how it affects infant development.

The most important thing I learned is that we are not doing enough to support mothers and babies.

And when we fail mothers and babies, we fail everyone who loves them: fathers, partners, grandparents, aunts, friends, relatives who make up the human social network.

It's time for us to abandon simple solutions and simple slogans and tackle nuances.

In my first interview with a journalist, when he asked me, "How much should a mother breastfeed her baby?"

And that word "should" was why it depressed me. Because I never tell women what to do with their bodies.

Babies survive and grow because breast milk is food, medicine and signal.

For young infants, breast milk is a complete meal that provides all the building blocks of the body, forms the brain and energizes all activities.

Breast milk also feeds the microorganisms that colonize the infant's intestinal tract.

Mothers don't just feed two, they feed from two to trillions.

Cow's milk provides immune factors that help fight pathogens, and breast milk provides hormones that send signals to the infant's body.

But in recent decades, we have taken milk for granted.

We stopped seeing anything visibly.

We have come to think of milk as standardized, homogenized, pasteurized, packaged, powdered, flavored and formulated.

We abandoned the milk of human kindness and turned our priorities elsewhere.

The National Institutes of Health in Washington, DC is home to the National Library of Medicine, home to 25 million articles that are the brains of life sciences and biomedical research.

If you search the database using keywords, you'll find nearly a million articles about pregnancy, but far fewer about breastfeeding and lactation.

If you just zoom in on the number of articles researched on breast milk, you'll find that we know a lot more about coffee, wine, and tomatoes.

(Laughter) We know twice as much about erectile dysfunction.

(Laughter) I'm not saying you shouldn't know about those things. I'm a scientist, so I think I should know everything.

But it should anger us that we know so little about breast milk, the first fluid young mammals come to ingest.

Globally, 9 out of 10 women will have at least one child in their lifetime.

This means nearly 130 million babies are born each year.

These mothers and babies deserve our best science.

Recent studies have shown that milk not only grows the body, but also promotes behavior and shapes neurodevelopment.

In 2015, researchers discovered that a mixture of breast milk and baby saliva, specifically baby saliva, causes a chemical reaction to produce hydrogen peroxide, which can kill staphylococci and salmonella.

And we're starting to see that the biological recipes for milk made for sons and daughters from humans and other mammalian species can be different.

When you reach for donor milk in the neonatal intensive care unit or formula on the store shelf, it's almost one size fits all.

We don't believe that sons and daughters can grow at different rates or in different ways, and milk can be a part of that.

Mothers got the message, and while the majority intend to breastfeed, many fail to reach their breastfeeding goals.

It's not their fault. it's ours.

Increasingly common medical conditions such as obesity, endocrine disorders, caesarean section and premature birth can all disrupt the underlying biology of lactation.

And many women do not receive knowledgeable clinical support.

Twenty-five years ago, the World Health Organization and UNICEF established criteria for hospitals to be considered baby-friendly, providing the optimal level of support for mother-infant bonding and infant feeding.

Currently, only 1 in 5 babies in the United States are born in baby-friendly hospitals.

This is a problem because mothers can face many problems during the minutes, hours, days and weeks of breastfeeding.

You may have trouble swallowing, feel pain, stop producing milk, or be aware that you are producing milk.

These mothers need knowledgeable clinical staff who understand these processes.

Mothers call me trembling and crying as they fight these battles.

"Not moving.

This should come naturally to me.

Why is it not working?"

And just because it's evolutionarily old doesn't mean it's easy or you'll get good at it right away.

Do you know what else is evolutionarily old?

(laughs) Sex.

And no one expects us to be good at it the first time.

(Laughter) Clinicians are better able to provide quality and equitable care when they receive ongoing education on how to best support breastfeeding and breastfeeding.

And in order to receive a continuing education, that education must be anchored in cutting-edge research in both the life and social sciences. Because we need to recognize that too much historical trauma and implicit bias exists between new mothers and their clinicians.

The body is political.

If our breastfeeding support is not cross-cutting, it is not enough.

And for mothers who have to go back to work, countries like the US don't offer paid parental leave, so they may have to go back just days after giving birth.

How can maternal and infant health be optimized by simply messaging mothers about breastfeeding without providing institutional support to promote mother-infant bonding to support breastfeeding?

The answer is "you can't".

I'm talking to Congressmen and the voters who elected them.

I'm talking to job creators, collective bargaining groups, workers and shareholders.

We all have a stake in the public health of our communities and a role to play in achieving it.

Breast milk is part of human health promotion.

Milk or the bioactive components in milk can be very important in the NICU when infants are born prematurely or when they are sick or injured.

Breast milk is surprisingly protective in environments, ecology, and communities where the risk of infectious diseases is high.

Breast milk can keep your baby nourished and hydrated during emergencies such as storms and earthquakes, when there is a power outage, or when safe water is not available.

And in situations of humanitarian crisis, like a Syrian mother fleeing a conflict zone, even the tiniest drop of water can save a baby from some of the world's greatest challenges.

But understanding breast milk is about more than communicating messages to mothers and policy makers.

It's also important to understand what's important in breast milk so that you can provide better formula for mothers who, for one reason or another, are unable or unable to breastfeed.

We can all do a better job supporting the diversity of mothers who raise babies in different ways.

As women around the world struggle to achieve political, social and economic equality, we need to rethink motherhood not as the central, core aspect of being a woman, but as one of the many potential aspects that make women great.

It's time.

(applause)

And so it all happened in a dark bar in Madrid.

I met my colleague at McGill University, Michael Meaney.

And while we had a few beers, he told me about his work, as scientists do.

And he said he was interested in how mother rats lick their pups after they are born.

And I sat there and said, "My tax dollars are being wasted here -- (laughter) on this kind of soft science."

And he began to say that rats, like humans, lick puppies in a completely different way.

Some mothers do it a lot, some mothers do it very little, and most are somewhere in between.

But what's interesting about this story is when he follows these puppies into adulthood—many years in human life, long after their mothers have died.

they are completely different animals.

Animals that are licked and groomed frequently, animals that are licked and groomed at a high level do not experience stress.

They have different sexual behaviors.

They live differently than those who were treated less intensively by their mothers.

So I thought: Is this magic?

How does this work?

What geneticists want you to think is that the mother probably carried a "bad mother" gene that stressed the puppies and passed it on from generation to generation. It's all determined by heredity.

Or could there be something else going on here?

In rats you can ask this question and answer it.

So what we did was a cross-fostering experiment.

Basically, when they are born, they divide the offspring of this mouse into two kinds of adoptive mothers. Not real mothers, but caring mothers: high licking mothers and low licking mothers.

And vice versa for low licking puppies.

And the surprising answer was that it doesn't matter what genes you inherited from your mother.

It was not the biological mother who defined this trait in these rats.

It was the mother who took care of the puppies.

So how does this work?

I am an epigenetic theorist.

I am interested in how genes are marked with chemical marks during embryonic development while in the mother's womb to determine which tissues express which genes.

Different genes are expressed in the brain than in the liver and eyes.

And we thought: Is it possible that mothers are somehow reprogramming their children's genes through their actions?

And we spent 10 years discovering that there is a cascade of biochemical events that translate maternal licking, grooming and maternal care into biochemical signals that enter the nucleus and DNA and carry out different programs.

Now the animal can prepare for life. Will life get tough?

Will there be a lot of food?

Are there many cats and snakes around, or do you live in an upper-class neighborhood? Is it possible to be socially acceptable simply by acting politely and appropriately?

And now we can think about how important that process is to our lives.

We inherit our DNA from our ancestors.

DNA is old.

Evolved in the middle of evolution.

But that alone doesn't tell you whether you're born in Stockholm, where the days are long in the summer and short in the winter, or in Ecuador, where the hours of day and night are the same all year round.

And it has a huge impact on our physiology.

So what we're suggesting is, perhaps something that happens early in life, is that these signals coming through the mother tell the child what kind of social world you're going to live in.

It's going to be tough, it's better to be anxious and stressed, otherwise it's going to be an easy world, it needs to be a different world.

Will it be a world with more light, or will it be a world with less light?

Will it be a world of food abundance or a world of food scarcity?

If there's no food around, you're better off developing your brain to overeat every time you see food, or storing all the food you eat as fat.

So this is good.

Evolution chose this to allow our fixed old DNA to function dynamically in new environments.

But sometimes things go wrong. For example, let's say you were born into a poor family, and the signal is, "You should eat and drink and eat everything that comes your way."

But now that we humans and our brains have evolved, evolutionary change has become even faster.

Now you can buy McDonald's for $1.

Therefore, the provisions our mothers have given us have proven maladaptive.

The same provisions that are supposed to protect us from starvation and starvation lead to obesity, cardiovascular disease and metabolic disease.

This notion that genes can be characterized by our experiences, especially early in life, can therefore provide a unifying explanation for both health and disease.

But does that apply only to rats?

The problem is that this cannot be tested on humans. Because ethically, you can't give a child random adversity.

Therefore, even if a poor child acquires a particular trait, we do not know if it is caused by poverty or if poor people have bad genes.

So geneticists would try to say that poor people are poor because their genes make them poor.

An epigeneticist would say that poor people are in a bad or poor environment that produces that phenotype, that trait.

So we decided to investigate our cousin monkey.

My colleague Stephen Suomi has raised monkeys in two different ways. One was randomly separated from its mother monkey and raised under nurse and surrogacy conditions.

That is, these monkeys did not have mothers. they had a nurse.

And other monkeys were raised with normal natural mothers.

And when they grew up, they became completely different animals.

Maternal monkeys were neither alcohol-aware nor sexually aggressive.

The motherless monkey was aggressive, stressed and alcoholic.

So we looked at their DNA early after birth to see if their mothers might be doing the marking.

Is there a mother's signature in the child's DNA?

These are 14-day-old monkeys, and here we see modern methods of studying epigenetics.

We are now able to map these chemical marks, called methylation marks, onto DNA at single-nucleotide resolution.

Now you can compare monkeys with and without mothers.

And here is a visual representation of this.

You can see that the more methylated genes are in red.

Genes with decreased methylation are in green.

We know that many genes are altered because being motherless isn't just one thing, it affects the whole. It signals what your world will look like when you grow up.

And you can see that the two groups of monkeys are very well separated from each other.

How early does this start?

Since these monkeys had not yet met their mothers, they were gaining social experience.

Do we feel our social status from the moment we are born?

Therefore, in this experiment, we collected placentas from monkeys of different social status.

The interesting thing about social rank is that all living things structure themselves by hierarchy.

The number 1 monkey is the boss. Monkey number 4 is Peony.

Put 4 monkeys in a cage and there will always be a boss and always a peony.

And what's interesting is that monkey #1 is much healthier than monkey #4.

And if you put it in a cage, the number 1 monkey won't eat much.

Monkey number 4 eats [a lot].

And what we see in this methylation mapping is a dramatic separation at birth between high and low social status animals.

In other words, we are already born with social information, and that social information is neither bad nor good. Social information only prepares us for life, because our biology needs to be programmed differently depending on whether we are of high or low social status.

But how can this be studied in humans?

We can't conduct experiments, and we can't give people adversity.

However, God conducts an experiment with humans and calls it a natural disaster.

One of the most serious natural disasters in Canadian history happened in my home province of Quebec.

It's the 1998 ice storm.

When Quebec's mid-winter temperatures ranged from -20 to -30 degrees Celsius, an ice storm caused the loss of the entire power grid.

And there were pregnant women in those days.

And my colleague Suzanne King followed these mothers' children for 15 years.

And what happened was that as stress increased, we got an objective measure of stress. I mean, how long were you without electricity? Where did you spend your time?

Was it your mother-in-law's apartment or a gorgeous country house?

Adding all of these together yields a measure of social stress, allowing you to ask the question, "How are your kids doing?"

And with increased stress, children seem to develop autism, more metabolic disorders, and more autoimmune diseases.

Mapping the methylation status shows that green genes become red with increased stress, red genes become green with increased stress, and the entire genome rearranges in response to stress.

So if we can program our genes, if we are not slaves to our genetic history but can be programmed, can we unprogram our genes?

This is because epigenetic causes can lead to diseases such as cancer, metabolic disorders, and psychiatric disorders.

Let's talk cocaine addiction.

Cocaine addiction is a frightening condition that can lead to death or loss of life.

We asked the question: Can we reprogram the addiction brain so that the animal is no longer addicted?

We used a cocaine addiction model that replicates what happens in humans.

As a human, you're in high school, your friends encourage you to use cocaine, and you take cocaine, and nothing happens.

Months go by, something reminds me of what happened in the first place, pusher pushes cocaine, becomes an addiction, and life is turned upside down.

Do the same with rats.

My colleague Gul Yadid trained the animals to cocaine and then did not consume cocaine for a month.

He then reminds me of the party the first time I saw cocaine, the color of the cage when I saw cocaine.

And they go crazy.

They press levers until they die to get cocaine.

We first determined that the difference between these animals was that the epigenome rearranged while nothing was happening and no cocaine was around.

Their genes are remarked in a different way, and when the cue comes their genome is primed to develop this addictive phenotype.

We therefore treated these animals with agents that either increased DNA methylation, a remarkable epigenetic marker, or decreased epigenetic marking.

And they found that increasing methylation made these animals even crazier.

They crave more cocaine.

However, if we reduce DNA methylation, animals are no longer addicted.

We reprogrammed them.

And the fundamental difference between epigenetic drugs and other drugs is that epigenetic drugs basically remove the traces of experience, and once they disappear, they won't come back unless you go through the same experience.

This animal is currently being reprogrammed.

So when we visited the animals 30 days later, 60 days later, after years of human life, they hadn't yet been poisoned—from just one epigenetic treatment.

So what have we learned about DNA?

DNA is not just a sequence of letters. It's not just a script.

"DNA" is a dynamic film.

Our experiences are written in this interactive film.

You are like watching a movie of your life with your DNA, with your remote control.

You can remove actors or add actors.

And despite the deterministic nature of genetics, you now have control over how your genes look. This brings a very optimistic message about the ability to tackle deadly diseases such as cancer and mental health with new approaches that view them as maladaptive.

And if we can intervene epigenetically, we can reverse the film by eliminating actors and setting up new narratives.

What I have told you today is that our DNA is actually bound together from two components, two layers of information.

One layer of information is ancient and evolved from millions of years of evolution.

It is fixed and very difficult to change.

Another layer of information is the epigenetic layer, which sets up an open, dynamic and interactive narrative. This gives us some control over our own destinies, helping the destinies of our children and hopefully overcoming the diseases and serious health challenges that have plagued humanity for so long.

So even though we are genetically determined, we have a certain amount of freedom to set our lives up to be responsible ones.

thank you.

(applause)

In the late 19th century, scientists were trying to solve the mystery.

They found that if you had a tube like this and applied a high voltage to it, something strange would happen.

They called it a cathode ray.

But the question was what were they made of?

In England, 19th-century physicist J. Thompson conducted such experiments with magnets and electricity.

And he made a startling discovery.

These rays were composed of negatively charged particles about 2,000 times lighter than the smallest known hydrogen atom.

So Thompson discovered the first subatomic particle that we now call the electron.

Now, at the time, this seemed like a completely unrealistic discovery.

In other words, Thompson did not believe that electronic applications existed.

Around his lab in Cambridge, he often liked to toast to the electron.

(Laughter) He was very much in favor of doing research out of pure curiosity, to better understand the world.

And what he discovered revolutionized science.

But it also sparked an unexpected second revolution in technology.

Today I would like to make a case for curiosity-driven research. Because none of the technologies I talk about today would be possible without curiosity-driven research.

Well, what Thompson found here really changed our view of reality.

I mean, I think I'm on stage, and you think I'm sitting in my seat.

But that's just the electrons in the body pushing back the electrons in the sheet against gravity.

You are not even actually touching the seat.

You are floating just a little bit above it.

In many ways, however, our modern society was actually built on this discovery.

So these tubes were the beginning of electronics.

And for years, most of us, if you remember, actually used one of these for our living room CRT TV.

But I mean, if the only invention that came out of this was television, how poor would our lives be?

(Laughter) Thankfully, this tube is just the beginning. Because when an electron here hits a piece of metal in the tube, something else happens.

let me show off

Please revert this.

When the electron screeches to a halt inside the metal, its energy is released again in the form of high-energy light, called x-rays.

(boom-boom) (boom-boom) And within 15 years of the discovery of the electron, these X-rays were being used to create images of the inside of the human body, allowing surgeons to save soldiers' lives and allowing surgeons to find bullet fragments and shrapnel inside the body.

But asking a scientist to build a better surgical probe would not come up with the technology.

Only research done out of pure curiosity, with no application in mind, could have led to the discovery of electrons and X-rays.

Now, this tube is also the first very simple particle accelerator, thus opening the door to understanding the field of space and particle physics.

Now I'm an accelerator physicist, so I'm trying to design a particle accelerator and understand how beams work.

And my field is a bit special, at the intersection of curiosity-based research and technology and real-world applications.

But it's the combination of those two things that really gets me excited about what I do.

Well, over the past 100 years there have been too many examples to list them all.

But I would like to share just a few with you.

In 1928, a physicist named Paul Dirac discovered something strange about his equations.

And based on purely mathematical insight, he predicted that there must be a second kind of matter, antimatter, which is the opposite of ordinary matter and literally disappears on contact.

I mean, the idea seemed silly.

But within four years they found it.

And today, hospitals use this technology every day, including positron emission tomography and PET scans, which are used to detect disease.

Or take an x-ray.

If we could push these electrons to higher energies, about 1,000 times that of this tube, the X-rays they produce could actually deliver enough ionizing radiation to kill human cells.

And if these X-rays can be shaped and directed where you want them, you'll be able to do the wonderful thing of treating cancer without drugs or surgery. We call this radiation therapy.

In countries such as Australia and the United Kingdom, about half of cancer patients receive radiation therapy.

So electron accelerators are actually standard equipment in most hospitals.

Or, a little closer to home, if you have a smartphone or a computer, this is TEDx, so you have both now, right?

Inside these devices is a chip made by implanting single ions into silicon in a process called ion implantation.

And it uses a particle accelerator.

But without curiosity research, none of these things exist at all.

So over the years, we've really learned to explore the interior of the atom.

To do that, I had to learn to develop a particle accelerator.

The first one we developed was able to split atoms.

And we have reached higher and higher energies. We created a Circular Accelerator that can drill into the nucleus to create new elements.

And at that point, we were no longer just exploring the interior of the atom.

We were actually learning how to control these particles.

We were learning how to interact with the world on a scale that humans could not see, touch, or even feel there.

And because we were interested in the nature of the universe, we built bigger and bigger accelerators.

As we went deeper and deeper, new particles began to appear.

Ultimately, we got two beams of particles in opposite directions, squeezed them to a width narrower than the width of a hair, and ended up with a giant ring-like machine that pulverized them.

And with Einstein's E=mc2, we can take all that energy and transform it into new matter, new particles, ripped from the very fabric of the universe.

There are currently about 35,000 accelerators worldwide, excluding televisions.

And inside each of these incredible machines are hundreds of billions of tiny particles dancing and swirling in systems more complex than the formation of galaxies.

Folks, I can't even begin to describe how amazing it is that we can make this happen.

(Laughter) (Applause) So I encourage you to invest your time and energy in curiosity-driven research.

Jonathan Swift once said, "Vision is the art of seeing the invisible."

And more than a century ago, J.J. Thompson did just that when he unveiled the subatomic world.

And now we face so many challenges that we need to invest in curiosity-driven research.

And we need patience. We need to give scientists the time, place and means to continue their quest. Because history has taught us that our discoveries can change the world more if we remain curious and open-minded about the results of our research.

thank you.

(applause)

I was 10 years old when I learned the meaning of the word "genocide."

It was 2003 and my people were being brutally attacked because of their race. Hundreds of thousands were killed, millions were displaced, and nations were torn apart at the hands of their own governments.

My mother and father immediately began to speak out against this crisis.

Other than the fact that it was ruining my parents, I had no idea.

One day I went to my mother in tears and asked her why she buried so many people.

I don't remember the words she chose to describe the massacre to her 10-year-old daughter, but I do remember the sentiment.

We felt completely alone, as if no one was listening to us, as if we were essentially invisible.

This is when I wrote my first poem about Darfur.

I wrote poetry to convince people to listen and see us, and that's how I learned what changed me.

It's easy to see.

I mean, look at me I am a young African woman, with a scarf on her head, an American accent on her tongue, and a story that makes even the cruelest of Monday mornings seem irresistible.

But it's hard to convince people that you deserve attention.

I learned this one day when my teacher asked me to give a presentation about Darfur in a high school classroom.

When I was setting up the projector, a classmate said, "Why do we have to talk about this?"

Think about us and how it makes us feel. ”

(Laughter) At 14, I didn't know what to say to her, how to explain the pain I felt in that moment, and the pain I felt every single moment I was forced not to talk about 'this'.

Her words reminded me of the ground in Darfur day and night. So we were forced into silence. We couldn't talk over our morning tea as the overhead fighters swallowed up any noise. Let's go back to the days when we were told not only did we not have the right to be heard, we had no right to exist.

And here the magic happened. In that classroom, when all the students began to take their seats, and I began to speak, despite the renewed feeling that I did not deserve to be there, that I did not belong there, that I had no right to break the silence.

As I spoke and my classmates listened, the fear faded.

I felt calmer and more at ease.

It was the sound of our sorrow, the feel of their arms around me, the solid wall that held us together.

Nothing felt like a vacuum.

I chose poetry because it is so intuitive.

When someone stands in front of your mind, body, and soul and says, "Behold me," you can't help but feel your own humanity.

This changed everything for me.

It gave me courage.

I experience the power of my testimony every day and it makes me whole.

So now I ask: can you see me?

They handed me the mic as the weight of the stress sank into my shoulders.

"The millionth refugee has just left South Sudan.

Can you comment? ”

I could feel my feet rocking back and forth on the heels my mom had bought for me, and I wondered, "Should I stay here, or is it safer to take a plane?"

My mind echoes with figures of 1 million missing, 2 million displaced and 400,000 dead in Darfur.

And this lump occupies my throat, as if each of these corpses has found a grave right here in my esophagus.

Once upon a time our nation, neither north nor south nor east nor west, could hold us together on the Nile so restless, but you ask me to summarize.

They talk about the numbers as if this hadn't happened yet, as if half a million people hadn't died in Syria, as if 3,000 weren't making their last stand at the bottom of the Mediterranean, as if there wasn't a whole fact-sheet about our genocide. And now he's asking me to write a book.

Fact: We never talked over breakfast because the fighters swallowed our voices.

Fact: My grandfather died in a war zone because he didn't want to leave home.

Fact: A burning bush without God is just fire.

I measure the distance between what I know and what is safe to say on the mic.

Shall I talk about grief? displacement?

Did I tell you about violence, that it's not as simple as it looks on TV, and how the terror lasts for weeks until the cameras turn on?

Should I tell her about our bodies, that although they are 60 percent water, we still burn like driftwood and feed on sacrifices?

Should I tell her that the men died first and the mothers were forced to watch the massacre?

Could it be that they picked up our children and scattered them across the continent until our house sank?

Even castles can be sunk by bombs?

Are we talking about how our heroes, the elderly, are too weak to run, too expensive to shoot, arms up, rifles on their backs, marching into the fire?

How did their wands put out the flames?

A bunch of wires and it feels too harsh for the audience to swallow.

Like a valley filled with the putrid smoke of our death, too unrelenting.

Would poetry be better?

Could a stanza be a burial cloth?

Will it hurt if I say it gently?

If you don't see me crying, would you listen better?

Will a microphone make the pain go away?

Why do every word feel like it's the last word?

A soundbite takes 30 seconds and a poem takes 3 minutes.

Just as we died, my tongue dried up to ash, never to coal.

My left leg felt numb and I realized that I had braced my knee against the impact.

Never wear shoes you can't run in.

thank you.

(Applause.) So I wanted to go home with a positive mindset. Because that is the contradiction of this life. Where I learned to cry the most, I also learned how to smile afterwards.

Let's go with this.

“If you have a rich imagination, you can cry in 400,000 ways.”

for Zeinab.

I'm a sad girl, but my face isn't wasted on pain, so I'm focusing my energy on this smile and making other plans.

The first thing they robbed was my sleep. His eyes were heavy but wide open, thinking that maybe he had missed something, maybe the cavalry were still coming.

It didn't come, so I bought a bigger pillow.

(Laughter) My grandmother could cure anything by talking about her life.

And she said I could make the thieves in the silo laugh in the heat of war.

War breaks the marriage floor out of grief.

You just want to be gone, but your mind can't collect as much wreckage as it can.

But joy is the armor we carry across the borders of our broken homeland.

The hasty mix of stories and faces lingers long after the flavor wears off.

The muscle memory that gets you through even the bitterest of times is spotlighted on the days you laughed until you cried, or the days you cried until you laughed.

Both laughter and tears are unconscious human reactions, testament to our expressiveness.

So let me tell you that if I make you laugh, it's usually intentional.

And even if I make you cry, I still find you beautiful.

This is addressed to my cousin Zeinab, who was bedridden in the afternoon.

I hadn't seen her since our last trip together to Sudan, where I was at her hospital bedside in a 400-year-old building in France.

Zeinab wanted to hear poetry.

Suddenly English, Arabic and French were no longer enough.

All the words I knew became empty noise, and Zeinab said, "Well, that's fine."

(Laughter.) And I read her books as much as I could and we laughed and loved it. And it was the most important stage I have ever stood on. Surrounded by families, surrounded by the remnants of those who had been given as dowries for unrelenting wars and yet managed to continue to make the pearls of this world. By those who taught me not only to laugh, but to live in the face of death. They put their hands in the sky, measured the distance to the sun, and said, "Smile, I'll meet you there."

And for Zeinab—the Zeinab who taught me love in places like France, the Zeinab who wanted to hear poetry on his deathbed—diastolic fibromyalgia.

Her heart muscle dilated until it was unable to function.

And she held me and made me feel like gold.

And I said, "Isn't it strange, Zeinab, that your only problem is that your heart is too big?"

thank you.

(applause)

More than 6,000 light-years from Earth's surface, a fast-rotating neutron star called a Black Widow pulsar orbits a companion brown dwarf star every nine hours and emits radiation.

Standing on our earth, we might think we are mere observers of this violent ballet.

But in reality, both stars are pulling you together.

And you are going backwards, connected by gravity for trillions of kilometers.

Gravity is the force of attraction between two bodies that have mass, or two bodies that have mass.

This means that all objects in the universe attract all other objects. All stars, black holes, humans, smartphones, atoms are all constantly pulling on each other.

So why don't we feel like we're being pulled in billions of different directions?

There are two reasons: mass and distance.

The original equation describing gravity between two bodies was written by Isaac Newton in 1687.

Scientists' understanding of gravity has evolved since then, but Newton's law of universal gravitation is still a good approximation in most situations.

It looks like this: The gravitational force between two bodies is equal to the mass of one multiplied by the mass of the other by a very small number called the gravitational constant, divided by the square of the distance between them.

Doubling the mass of one of the objects also doubles the force between them.

If the distance between them is doubled, the force is quartered.

Gravity between you and the Earth pulls you towards the center of the Earth. This force is what you experience as your weight.

Let's say this force is about 800 Newtons when you are standing at sea level.

If you travel to the Dead Sea, its power increases by only a few percent.

And if you climb to the top of Mt. Everest, the force will decrease, but again by a negligible amount.

The higher you move, the greater the effect of gravity, but you can't escape it.

Gravity is produced by changes in the curvature of spacetime (the three dimensions of space and time), bending around massive objects.

Gravity from Earth reaches the International Space Station 400 kilometers above Earth at near original strength.

Even if the space station rests on a massive pillar, it experiences 90% of the gravity we feel on Earth.

Because the space station is constantly falling toward Earth, astronauts only experience weightlessness.

Luckily, it's orbiting around the Earth fast enough that it doesn't hit the ground.

By the time we reach the surface of the Moon, some 400,000 kilometers away, the Earth's gravitational pull will be less than 0.03 percent of the gravity we feel on Earth.

The only gravitational force you know of is that of the Moon, which weighs about one-sixth that of Earth.

As you travel farther, the gravitational pull of the Earth on you continues to decrease, but never reaches zero.

Even though we are safely tethered to Earth, we are subject to subtle tugs between distant celestial bodies and nearby terrestrial bodies.

The sun exerts a force of about half a Newton on you.

A few meters away from your smartphone, you will experience a mutual force of a few piconewtons.

This is about the same as the gravitational pull between you and the Andromeda galaxy. The Andromeda galaxy is 2.5 million light years away, but has a mass about 1 trillion times that of the Sun.

But there is a loophole in escaping gravity.

If all the mass around us is constantly pulling on us, how would the Earth's gravity change if we tunneled deep under the surface, assuming we could tunnel without being cooked or crushed?

If you hollowed out the center of a perfect spherical earth (which it really isn't, but let's say it was), you would experience the same gravitational pull from all sides.

Then you will be suspended and weightless, encountering only a small gravitational pull from other celestial bodies.

So thought experiments like this can escape Earth's gravity, but only by going directly to it.

In the movie "Interstellar", you can see a supermassive black hole up close.

Set against a background of bright gas, the black hole's immense gravity bends light into a ring.

However, this is not a real photograph, but a computer graphic rendering of an artistic interpretation of what a black hole might look like.

100 years ago, Albert Einstein first published general relativity.

Since then, scientists have provided plenty of evidence to support it.

However, one of the predictions of this theory, a black hole, has yet to be directly observed.

Although we have some idea of ​​what a black hole looks like, we have never actually photographed a black hole.

However, you may be surprised to learn that that may soon change.

In the next few years we may see the first pictures of black holes.

Acquiring this first photo requires an international team of scientists, an Earth-sized telescope, and an algorithm to put together the final photo.

I can't show you a real picture of a black hole today, but I'd like to give you a quick look at the effort that went into getting the first picture.

My name is Katie Bowman and I'm a PhD student at MIT.

I work in a computer science lab doing research on how computers can see through images and videos.

However, although I am not an astronomer, I would like to share with you today how I was able to contribute to this exciting project.

If you walk past the bright city lights tonight, you may be lucky enough to catch a spectacular view of the Milky Way galaxy.

And if we could zoom out 26,000 light-years and millions of stars toward the center of the swirling Milky Way, we would eventually reach the central cluster of stars.

Astronomers have been observing these stars for more than 16 years, peering through the galactic dust with infrared telescopes.

But the most amazing thing is what they don't see.

These stars appear to orbit invisible objects.

By following the orbits of these stars, astronomers have concluded that the only objects small and massive enough to cause this motion are supermassive black holes. This object is so dense that it sucks in anything that comes too close, swallowing even the lightest ones.

But what happens when you zoom in further?

Is it possible to see something that is by definition impossible to see?

Well, if you magnify the wavelength of the radio wave, you can see the ring of light caused by the gravitational lensing of the hot plasma circling the black hole.

In other words, the black hole casts a shadow on this bright matter background and carves out a sphere of darkness.

This bright ring reveals the black hole's event horizon, where gravity becomes so great that not even light can escape.

Einstein's equations predict the size and shape of this ring, so taking pictures of the ring is not only very cool, but it also helps verify that these equations hold in the extreme conditions around the black hole.

But this black hole is so far away from us that the ring appears incredibly small when viewed from Earth. To us it's as big as an orange on the moon's surface.

This makes taking pictures very difficult.

why is that?

Well, it all comes down to a simple equation.

There is a fundamental limit to the smallest object we can see due to a phenomenon called diffraction.

This governing equation tells us that we need to make our telescopes bigger and bigger to see smaller and smaller things.

But even the most powerful optical telescopes on Earth can't even come close to the resolution needed to take images of the moon's surface.

In fact, here is one of the highest resolution images of the Moon ever taken from Earth.

It contains roughly 13,000 pixels, but each pixel contains over 1.5 million oranges.

So how big of a telescope would you need to see the orange color of the moon's surface, and thus the black hole?

Well, if you do the numbers, you'll see that it's easy to calculate that you'll need a telescope the size of the entire Earth.

(Laughter) If we could build this Earth-sized telescope, we'd be able to see that characteristic ring of light that marks the event horizon of a black hole.

This photo doesn't have all the detail you see in computer graphic renderings, but it provides a safe first glimpse into the surrounding environment of a black hole.

But as you can imagine, building a single-dish telescope the size of Earth is impossible.

But as Mick Jagger famously said, "You can't always get what you want, but if you try sometimes, you might get what you need."

And by connecting telescopes around the world, an international collaboration called Event Horizon Telescope is creating an Earth-sized computational telescope that can resolve structures at the event horizon scale of black holes.

This telescope network will take the first pictures of a black hole next year.

Each telescope in the global network works together.

Linked through the precise timing of atomic clocks, teams of researchers at each site freeze light by collecting thousands of terabytes of data.

This data is then processed at our lab here in Massachusetts.

So how does this work?

Remember that if you wanted to see the black hole at the center of the galaxy, you would have to build this absurdly large Earth-sized telescope?

Let's assume for a moment that we can build an Earth-sized telescope.

It's like turning the Earth into a giant spinning disco ball.

Each mirror collects light and combines it to create an image.

However, suppose you remove most of these mirrors and only a few remain.

You can combine this information, but there are many holes.

These remaining mirrors represent where the telescope is.

This is a very small number of measurements to create an image.

But while we only collect light at some telescope locations, we can see other new measurements as the Earth rotates.

In other words, as the disco ball rotates, the mirrors change position, allowing different parts of the image to be observed.

Our imaging algorithm fills in the missing gaps in the discoball to reconstruct the underlying black hole image.

This would be easy if we had telescopes all over the planet, disco balls.

However, we can observe only a small sample, so there are countless images that could perfectly match telescopic measurements.

However, not all images are created equal.

Some of those images resemble what we perceive as images more than others.

So my role in helping take the first image of a black hole is to design an algorithm to find the most reasonable image that also fits telescopic measurements.

Just as forensic sketch artists use their knowledge of facial anatomy to piece together photographs using limited descriptions, the imaging algorithms I develop use limited telescopic data to guide us to photographs that look like things in space.

These algorithms allow us to stitch images together from this sparse and noisy data.

So here we present a sample reconstruction done using simulated data, pretending to point the telescope at a black hole at the center of the galaxy.

Although this is just a simulation, such a reconstruction gives hope that soon we will be able to reliably obtain the first images of the black hole, from which the size of the rings can be determined.

I would like to elaborate on the details of this algorithm, but luckily I do not have time.

But I would like to briefly describe how we define what our universe is like, and how we use it to reconstruct and validate our results.

There are a myriad of images that could perfectly describe the telescope's measurements, so we must somehow choose among them.

This is done by ranking the images based on how likely they are to be black hole images and selecting the most likely image.

So what exactly does this mean?

Let's say you're trying to create a model that indicates how likely an image is to appear on Facebook.

Perhaps you want to tell the model that it is very unlikely that someone will post this noise image on the left, and that it is very likely that someone will post a selfie like this on the right.

The image in the middle is blurry, so it's more likely to be seen on Facebook compared to the noise image, but probably less likely to be seen compared to the selfie.

But when it comes to images from black holes, we face a real challenge. I mean, I've never seen a black hole before.

If so, what are the possible black hole images and what should we assume about the structure of the black hole?

You can also use images from previous simulations, like the black hole images from "Interstellar", but doing so can cause serious problems.

What would happen if Einstein's theory failed?

We want to reconstruct exactly what is happening.

Incorporating too much Einstein's equations into your algorithm will only give you the expected result.

In other words, we want to keep the option of having a giant elephant at the center of the galaxy.

(Laughter) Different types of images have very distinct characteristics.

It's easy to tell the difference between simulated images of black holes and the images we take every day on Earth.

We need a way to tell the algorithm what an image looks like without over-imposing the characteristics of one type of image.

One way around this is to apply different types of image features and see how the image type you are thinking of affects the reconstruction.

If all image types produce very similar looking images, then we can be confident that the image assumptions we are making are not too biased towards this image.

It's a bit like giving the same description to three different sketch artists from all over the world.

If they all create very similar looking faces, we can begin to be sure that they are not imposing their own cultural prejudices on the painting.

One way to apply different image features is to use part of an existing image.

So I take a large collection of images and split them into smaller image patches.

Then you can treat each image patch like a puzzle piece.

It then uses commonly found puzzle pieces to piece together images that also fit telescopic measurements.

Different types of images have very distinctive sets of puzzle pieces.

But what if we take the same data and reconstruct the image using a different set of puzzle pieces?

Let's start with the black hole image simulation puzzle pieces.

I see, this is reasonable.

This is similar to what we would expect of a black hole.

But did you get it just by giving it a small snippet of a black hole simulation image?

Try another set of puzzle pieces from astronomical non-black hole objects.

OK, I got a similar image.

But what about works cut from everyday images, such as images taken with your own camera?

You see, the same image is displayed.

When you get the same image from all the different sets of puzzle pieces, you can be confident that the image assumptions you're making aren't too biased towards the final image.

Another thing we can do is take the same set of puzzle pieces, such as those derived from everyday images, and use them to reconstruct different kinds of source images.

Therefore, in our simulations we pretend that black holes look like celestial objects that are not black holes, not just everyday images like elephants in the center of galaxies.

If the bottom algorithm's results look very similar to the top simulation's true-to-life image, then you can start to have more confidence in the algorithm.

What I would like to emphasize here is that all of these photographs were created by piecing together small pieces of everyday photographs, just as you would with a personal camera.

Thus, never-before-seen images of black holes may ultimately be created by piecing together photographs of people, buildings, trees, cats and dogs that we see all the time.

Imagining ideas like this will allow us to take the first pictures of black holes, and hopefully test the famous theories that scientists rely on every day.

But of course, bringing such an imaging idea to life would never have been possible without the incredible team of researchers I had the privilege of working with.

Even though I started this project with no knowledge of astrophysics, it still amazes me that what we achieved through this unique collaboration could lead to the first images of black holes.

But large-scale projects like the Event Horizon Telescope thrive thanks to the interdisciplinary expertise brought in by different people.

We are a melting pot of astronomers, physicists, mathematicians and engineers.

This makes it possible to quickly achieve what was once thought impossible.

I encourage all of you to go out and help push the boundaries of science, even if it may seem mysterious at first like a black hole.

thank you.

(applause)

No one will pay you what you are worth.

No one will pay you what you are worth.

They only pay you what they think you are worth.

And not like this, you control their thoughts, which would be cool.

(Laughs) That would be really cool.

Instead: Clearly defining and communicating your values ​​is essential to being well rewarded for your excellence.

Who wants a good salary here?

got it. So this story is for everyone.

It has universal applicability.

That's true whether you're a business owner, an employee, or a job seeker.

It's true for both men and women.

Well, I'm going to approach this today from a female business owner's perspective. Through my work, I realized that women are underestimated more than men.

The gender pay gap is a well-known story in this country.

According to the Bureau of Labor Statistics, female employees earn just 83 cents for every dollar men earn.

Perhaps surprisingly, this trend continues in the entrepreneurial realm.

Female entrepreneurs earn just 80 cents for every dollar men earn.

In my work, I often hear women say that they are reluctant to communicate their values, especially in the early stages of management.

"I don't like making toots myself," he says.

“Rather, I want the work to speak for itself.”

"I don't like praising myself."

Working with male business owners I hear a completely different story, and I think this difference is costing women 20 cents on every dollar.

I would like to talk about a consulting firm that helps clients dramatically improve their profitability.

That company is mine.

After a year on the job, I realized that I needed to re-evaluate my pricing when my clients saw increased profits from working with me.

It was really low priced compared to the value I was offering.

I'm a pricing consultant, so it's hard for me to admit that.

(Laughter) That's my job.

I help set prices that match the company's value.

But nonetheless, because that's what I saw, I did it by assessing pricing, sitting down to assess my worth, and asking key questions about value.

What are your client's needs? How can you meet them?

What are my unique skill sets that make me more qualified to serve customers?

What do I do that other people don't?

What problems can I solve for my clients?

What value should I add?

I've answered these questions, defined the value my clients get from working with me, and calculated the return on investment. Then we realized we had to double the price.

Now, I confess, this scared me.

I'm supposed to be an expert on this issue, but I'm still not cured.

I knew there was value in it.

I knew there was value in it, but I was still insane.

What if no one paid me for it?

What if a client says "that's crazy"?

you are ridiculous ”

Was I really worth it?

It's about me, not my job.

Was I worth it?

I am a dependent mother of two beautiful girls.

i am a single mother.

What if your business fails?

What if it fails?

But I know how to take my medicine, the medicine I prescribe to my clients.

I was doing my homework.

I knew there was value in it.

So when the prospect came, I created a proposal with a new higher pricing and sent it out to communicate the value.

How will the story end?

Clients continued to hire, refer and recommend me and I am still here.

And I share this story because doubt and fear are natural and normal.

But they do not define our value and should not limit our earning potential.

I would also like to share the story of a woman who learned to communicate her worth and found her voice.

She runs a successful web development company and employs several people.

When she first started the company, and in the years that followed, she used to say, "I run a small web design company."

She actually used those words to her clients.

"I run a small web design company."

In this way, and in many other small ways, she was degrading her company and herself in the eyes of prospects and customers.

It has greatly impacted her ability to earn anything of value.

I think her language and style conveyed that she believed she didn't have much value to offer herself.

In her own words, she practically gave up her service.

And so, she began the journey of communicating value to her clients and taking responsibility for changing their message.

One thing I shared with her is how important it is to find your own voice, a voice that is real and true to you.

Don't try to match your sister-in-law just because she's a great sales person or because she's a neighbor with great jokes. if that's not you.

Throw away the idea that it is cornering itself.

Think about your opponent.

When you focus on delivering service and adding value, you stop feeling bragging.

What do you like about your job?

What excites you about the work you do?

If you connect to it, you will naturally be able to convey your own value.

So she embraced her natural style, found her voice, and changed her message.

First, she stopped calling herself a small web design company.

She really felt a lot of strength and power in getting her message across.

She now charges 3x for web design and her business is growing.

She told me about a recent meeting with a surly and sometimes grumpy customer who called the meeting asking questions about the progress of search engine optimization.

In the old days, it would have been a very frightening meeting for her, but she thought differently, she said.

She said she prepared the information, spoke with the client and this was not about me, not personal, it was about the client.

She understood them through data and numbers, explaining trends and progress in her own voice and unique way, but very bluntly. "Here's what we did for you."

The client got up, noticed, and said, "Okay."

And she said of the meeting, "I used to feel that way, but I didn't feel scared or panicked or small.

It's more like, "Okay, I get it."

I know what I'm doing I am confident ” It is very important to be properly evaluated.

In this story, we see its effects extend beyond just finances into the realm of self-esteem and self-confidence.

I have two talks today. One is about defining our values ​​and the other is about communicating our values, which are two elements of realizing our full revenue potential.

That's the equation.

And if you're sitting in the audience today and you're not getting paid for what you're worth, I'd like to welcome you into this equation.

Imagine what life would be like if we could reach our full potential, realize our full worth, how much more we could do, how much more we could give back, how much more we could plan for the future, and how much more recognized and respected we would feel.

No one will pay you what you are worth.

They will only pay you what they think you are worth, and you control their thoughts.

thank you.

(applause)

An article in the Yale University Alumni Magazine told the story of Clyde Murphy, a black man who was a member of the 1970 class.

Clyde was a success story.

After graduating from Yale University and earning a law degree from Columbia University, Clyde spent the next 30 years as one of America's top civil rights attorneys.

He was a wonderful husband and father.

However, despite his personal and professional success, Clyde's story came to a sad end.

Clyde died in 2010 at the age of 62 from a blood clot in his lungs.

Clyde's experience was nothing special.

Many of his black classmates at Yale also died young.

In fact, a magazine article showed that 41 years after graduating from Yale University, the mortality rate among black members of the 1970 class was three times higher than among members of the average class.

It is wonderful.

America recently woke up to the steady drumbeat of an unarmed black man being shot dead by police.

The bigger story is that every seven minutes a black man dies prematurely in the United States.

In other words, more than 200 black people die every day that would not have died if blacks and whites had equal health.

For the past 25 years, I have been on a mission to understand why race is so deeply important to health.

When I started my career, many believed it was simply due to racial differences in income and education.

It turns out that financial status is important to health, but not the only one.

For example, looking at life expectancy at age 25, there is a five-year gap between blacks and whites at age 25.

And the disparity in education for both whites and blacks is even greater than racial disparity.

At the same time, whites live longer than blacks at all levels of education.

As a result, white high school dropouts outlive blacks by 3.4 years, and the difference is even greater among college graduates.

The most amazing thing is that high school graduated whites live longer than college educated blacks.

So why is race so important to health?

What else is important besides education and income?

In the early 1990s, I was asked to review a new book on the health of black people in America.

I was struck by the fact that almost all of its 25 chapters said racism was a contributing factor to black people's health.

All of these researchers claimed that racism was a factor in negatively impacting blacks, but provided no evidence.

For me it wasn't enough.

A few months later, I spoke at a conference in Washington, DC, and said one of my research priorities was documenting how racism affects health.

A white gentleman in the audience said that he agreed with me that racism was important, but that racism could never be measured.

“We measure self-esteem,” I said.

"Seriously, there's no reason why racism can't be measured."

So I thought about it and developed three scales.

The first photo captures experiences of gross discrimination, such as being unfairly dismissed or unfairly stopped by the police.

But discrimination also occurs in more minor and subtle experiences. Therefore, my second scale, called the Daily Discrimination Scale, collects nine items representing experiences such as being treated less politely than others, receiving worse service than others in restaurants and stores, and behaving as if people are afraid of you.

This scale captures how society routinely scrapes away the dignity and respect of people it doesn't value.

Studies have found that high levels of discrimination are associated with increased risk of a wide range of diseases, from blood pressure to abdominal obesity, breast cancer, heart disease and even early death.

Surprisingly, some of the effects are observed at a very young age.

For example, a study of black teens found that those who reported higher levels of discrimination during their teenage years had higher levels of stress hormones, blood pressure, and weight at age 20.

But the stress of discrimination is only one side.

Discrimination and racism are also important in other serious ways for health.

For example, there is discrimination in medical care.

In 1999, the National Academy of Medicine asked me to serve on a committee that concluded, based on scientific evidence, that blacks and other minorities received poorer quality health care than whites.

This applies to all kinds of medicine, from the simplest to the most technically sophisticated.

One explanation for this pattern is a phenomenon called 'implicit bias' or 'unconscious discrimination'.

Decades of research by social psychologists have shown that people hold negative subconscious stereotypes about a group, and when they meet someone from that group, they discriminate against that person.

you will treat them differently.

It's an unconscious process. This is an automatic process.

This is a subtle process, but it is normal and occurs among even the most well-intentioned individuals.

But the deeper we delved into the health effects of racism, the more latent its effects became.

There is institutional discrimination, which refers to discrimination that exists in the course of social institutions.

Racial segregation results in blacks and whites living in very different local environments and is a classic example of institutional racism.

One of America's greatest secrets is that residential segregation is the secret cause of racial inequality in America.

In America, where you live determines your opportunities for education, employment, housing, and even access to healthcare.

A study of 171 large U.S. cities concluded that no single city has whites living in the same conditions as blacks, and that the worst urban environments inhabited by whites are substantially better than the average for black communities.

Another study found that if we could statistically eliminate racial segregation by location, we could completely erase black-white differences in income, education and unemployment, and reduce black-white differences in being single mothers by two-thirds, all driven by racial segregation.

I also learned that negative stereotypes and images of Black people in our culture literally create and sustain both institutional and individual discrimination.

A group of researchers created a database of books, magazines, and articles that the average college-educated American would read in their lifetime.

By examining this database, you can see how Americans viewed word combinations as they grew up in society.

So when the word “black” appears in American culture, what accompanies it?

"poor", "violent", "religious", "lazy", "cheerful", "dangerous".

Words that frequently co-occur when "white" appears include "wealthy," "progressive," "traditional," "stubborn," "successful," and "educated."

So when a police officer sees an unarmed black man and overreacts when he perceives him to be violent and dangerous, we're not necessarily dealing with an inherently bad cop.

We may only see ordinary Americans as a reflection of what they have been exposed to as a result of growing up in this society.

From my own experience, I believe that race need not determine destiny.

I immigrated to the United States from the Caribbean island of St. Lucia in the late 1970s in search of higher education and have had good grades over the last 40 years.

I have a supportive family, work hard and get along well.

But it took me even longer to succeed.

I received a minority fellowship from the University of Michigan.

yes. I'm an affirmative action baby.

Without Affirmative Action, I wouldn't be here.

But in the last 40 years, black people in America haven't been as successful as I am.

In 1978, black American households earned 59 cents for every dollar earned by whites.

Even as of 2015, black households earned 59 cents for every dollar white households earned, making the racial wealth gap even more staggering.

Black families have 6 pennies and Latinos 7 pennies for every dollar white people have.

In fact, racism has created a truly corrupt system that systematically penalizes some racial groups in the United States.

In the words of Plato, nothing is more unfair than treating unequal people equally.

That is why I am committed to the elimination of racism.

I am deeply grateful for the fact that I am standing on the shoulders of those who have sacrificed their lives to open the door that I have walked through.

I want to ensure that those doors remain open and that everyone can pass through them.

Robert Kennedy said that every "man" or woman who stands up for an ideal, acts to improve the masses, or attacks injustice, sends out a small ripple of hope that can build a stream that breaks down the most powerful walls of oppression and resistance.

Having seen ripples of hope across America, I am optimistic today.

Boston Medical Center has added lawyers to its medical team to help doctors improve the health of their patients, as lawyers address patients' nonmedical needs.

Loma Linda University built Gateway College in nearby San Bernardino. In addition to providing health care, this will provide vocational skills and training to mainly minority, low-income community members, equipping them with the skills they need to find decent jobs.

The Abecedarian Project of Chapel Hill, North Carolina, has found a way to reliably lower the risk of heart disease among blacks in their mid-30s by providing quality day care from birth to age five.

Wintory Phipps and US Dream Academy are breaking the cycle of incarceration by providing quality academic enrichment and mentoring to children of inmates and those who fall behind in after-school centers across the country.

Oakwood University, a historically black educational institution in Huntsville, Alabama, shows how it can improve the health of black adults by including health assessments as part of new student orientation, giving students the tools they need to make healthy choices, and providing annual health records so they can monitor their progress.

And in Atlanta, Georgia, a purpose-building community dismantled the negative effects of racism by transforming a crime-infested, drug-infested public housing project into an oasis of mixed-income housing, academic performance, excellent community health, and full employment.

And finally, there is the divine solution.

University of Wisconsin professor Patricia Devine teaches us how to tackle hidden biases head-on and effectively mitigate them.

Each of us can be a ripple of hope.

The effort is not always easy, but former Supreme Court Justice Thurgood Marshall told us:

We must oppose indifference.

We must oppose indifference.

We must stand against hatred and mistrust.

We have to disagree because America can do better, America has no choice but to do better. ”

thank you.

(applause)

Here's how I looked last week.

What I did, who I was with, the main feeling I had each waking hour...

If the memory of my recently deceased father brought that feeling to my mind, or if I could make sure that my worries and anxieties were avoided.

If you think I'm a bit obsessive, you're probably right.

But clearly you can learn a lot more about me from this visualization than from this other image. It's probably an image you're familiar with, and you probably have it on your phone right now.

It shows a bar graph of the number of steps taken, a pie chart of the quality of sleep, and the trajectory of your morning run.

My day job is working with data.

I run a data visualization design company, designing and developing ways to make information accessible through visual representations.

What my work has taught me over the years is that to truly understand data and its true potential, sometimes you have to forget about it and see it instead.

Because data is always just a tool we use to represent reality.

They are always used as placeholders for something else, but are never real.

But let's take a moment to reflect on the first time I personally understood this.

In 1994, I was 13 years old.

I was a teenager in Italy.

I was too young to be interested in politics, but I knew that businessman Silvio Berlusconi was running for president from the moderate right.

We live in a very liberal town and my father was a Democratic politician.

And I remember that no one thought Mr. Berlusconi was going to be elected, so it wasn't an option at all.

But it happened.

And I remember that feeling very vividly.

This came as a complete surprise, as my father had promised that no one in my town would know who voted for him.

This was the first time that the data I had completely distorted my image of reality.

My data sample was actually quite limited and skewed, and I thought maybe that's why I was living in a bubble and didn't get enough chance to look outside.

Well, let's fast forward to November 8, 2016 in the United States.

Internet polls, statistical models, all experts agree on the likely outcome of the presidential election.

It seemed like we had plenty of information this time around and plenty of opportunities to see outside the closed circles we lived in, but that was clearly not the case.

The feeling was very nostalgic.

I had been there before.

I think it's safe to say that the data fell short this time around, but it was spectacular.

We believed in the data, but what happened was that even the most respected newspapers became obsessed with reducing everything to two simple percentage numbers in order to create powerful headlines, leading them to focus on those two numbers and just that number.

In trying to simplify the message and paint an inevitably beautiful red and blue map, we have completely missed the mark.

We somehow forgot that there is a story behind these numbers — a human story.

My team was presented with a strange challenge by this lady in a very similar, but different situation.

She came to us with a lot of data, but ultimately wanted to tell one of the most human stories possible.

Her name is Samantha Cristoforetti.

She was the first female Italian astronaut and contacted us before she left for her six-month expedition to the International Space Station.

She told us, "I'm going to space, and I want to do something meaningful with the data in my mission to reach out to people."

Missions to the International Space Station come with terabytes of data on orbit around the Earth, the speed and position of the ISS, thousands of other live streams from sensors, and anything else you can imagine.

We, like the pre-election experts, had all the solid data we could think of, but what do all these numbers mean?

People aren't interested in data for the sake of it, because numbers never matter.

They are always a means to an end.

The story we had to tell was that a human in a little box was flying overhead in space and could actually be seen with the naked eye on a clear night.

So we decided to use data to create a connection between Samantha and all the people looking down on her.

We designed and developed what we call "Friends in Space". It's a web application that allows you to say "Hello" to Samantha from anywhere, and "Hello" to everyone online at the same time from around the world.

And when Samantha was flying, and actually waving to us on Twitter from the ISS every day, all those "hellos" left visible traces on the map.

This made people look at mission data in a completely different light.

It suddenly became less about technology and more about our humanity and curiosity.

In short, data powered the experience, but it was the human story that drove it.

The extremely positive response of thousands of users has taught me a very important lesson. In other words, working with data means designing ways to transform the abstract, the myriad, into something that can be seen, felt, and reconnected directly to our lives and actions, a process that is difficult to achieve if we let ourselves become obsessed with numbers and the technology around them.

But we can do a lot more to connect the data to the story it represents.

Technology can be completely eliminated.

A few years ago I met another woman named Stephanie Posavek. Stephanie Posabek is a London-based designer who shares my passion and obsession with data.

We didn't know each other, but decided to run a very radical experiment of starting to communicate using only data, no other language, choosing not to use any technology to share data.

In fact, our only contact is through the old-fashioned post office.

In "Dear Data" we used personal data to get to know each other every week for a year. Personal data on everyday topics shared weekly, from emotions to interactions with partners, compliments received and sounds around you.

I hand-drawn personal information on postcard-sized pieces of paper and sent them weekly from London to New York, where I live, and from New York to London, where she lives.

On the front of the postcard is a drawing of the data, and on the back of the card, of course, is the address of the other party and a legend for interpreting our drawing.

For the first week of the project, we actually chose a rather cold and impersonal topic.

How many times a week do you check the time?

This is the front of my card. You can see that all the little symbols represent all the times I checked the time, placed chronologically in days and different hours. There is nothing particularly complicated here.

But if you look at the legend you can see how I added anecdotal details about these moments.

In fact, different kinds of symbols indicate why I was checking the time: what I was doing.

was i bored? Were you hungry?

was it late?

Did you check it on purpose, or did you just casually look at your watch?

And this is the important part. It expresses my day-to-day details and my personality through data collection.

Use the data as a lens or filter to uncover and reveal, for example, the endless fear of being late, even though you will definitely be on time.

Stephanie and I spent a year collecting the data manually, trying to focus on the nuances that a computer could not, or at least not yet, capture. We used data to explore not only our activities, but also our minds and the words we use.

Like the third week, I tracked the "thank you" words we said and the words we received and realized that most of the people I thanked were people I didn't know.

Apparently I am obsessively grateful to waitresses and waiters, but I definitely don't appreciate those close to me enough.

Over the course of a year, the process of actively noticing and counting this type of behavior became a ritual.

It really changed us.

We have become more in tune with ourselves and more aware of our actions and our surroundings.

Over the course of a year, Stephanie and I connected on a very deep level through our shared data diary, and this was only possible because we put ourselves in these numbers and added context to our very personal stories.

That was the only way to make them truly meaningful and representative of ourselves.

I'm not asking you to start drawing your personal data or find a pen pal across the ocean.

But what I'm asking you to do is think of data (any kind of data) as the beginning of a conversation, not the end.

Because data alone will never give you a solution.

This is why data has failed us so much. It failed to include just the right amount of context to represent a nuanced, complex, and intricate reality.

We kept staring at these two numbers, obsessing over them, pretending our world could be reduced to a horse race of a few digits, but the real story, the really important story, was elsewhere.

Looking at these stories through models and algorithms alone, what we've been missing is what I call "data humanism."

In Renaissance humanism, European intellectuals put humanity, not God, at the center of their worldview.

I believe something similar needs to happen in the world of data.

Data is now clearly treated like a god, the keeper of the absolute truth of our present and future.

The experience I shared with you today has taught me that in order for data to truly represent our humanity and not mislead us, we need to start designing ways to include empathy, imperfections and human qualities in how we collect, process, analyze and present data.

Ultimately, I believe we will all use data to become more human rather than just using it to be more efficient.

thank you.

(applause)

So, I've been doing "futuring," which is a term I coined -- (laughter) about three seconds ago.

I've been doing futures for about 20 years, and in the beginning, I would sit down with people and say, 'Let's talk about 10, 20 years from now.

And they will say "great".

And I've seen that period getting shorter and shorter. So two months ago, I met with the CEO and I said, The first conversation has started.

He said, "I love your work. I want to talk to you about the next six months."

(Laughter) We have a lot of problems that we face.

These are civilization-scale problems.

But the problem is that we can't solve them using the mental model that we're currently trying to solve them with.

Yes, there's a lot of great technical research going on, but there are issues that need to be worked out upfront if we want to really tackle those big problems.

"Short-termism".

right? No marching. No bracelet.

There is no petition that can be signed against short-termism.

I put it up, but no one signed it.

It was strange.

(Laughter) But it prevents us from doing much.

Short-termism permeates every corner of our reality for a variety of reasons.

I want you to take a moment and think about the problems you are thinking and working on.

It can be personal, it can be professional, it can be something that moves the needles of the world. Consider how far you tend to think about the solutions set for it.

Because short-termism prevents CEOs from buying very expensive safeguards.

It will negatively affect your bottom line.

So we got the Deepwater Horizon.

Short-termism prevents teachers from spending quality one-on-one time with students.

In other words, one high school student drops out of school every 26 seconds in the United States today.

Because of short-termism, Congress - sorry if you're congressional - (laughter), or less so, (laughter) - is unable to fund an actual infrastructure bill.

So what we get is that the I-35W bridge collapse on the Mississippi River a few years ago killed 13 people.

It wasn't always like this. made the Panama Canal.

We have nearly eradicated polio globally.

We planned a transcontinental railroad, the Marshall Plan.

And it's not just about big physical infrastructure issues and problems.

Women's suffrage, the right to vote.

But in a fast-paced era where everything seems to be happening now and all we can think about is the next tweet or timeline post, we overreact.

What should I do?

We take people fleeing our war-torn country and chase them.

We catch low-level drug offenders and quarantine them for life.

And build McMansions without even thinking about how people step between their jobs.

It costs money quickly.

Well, the reality is that many of these issues have some technical fixes.

I call these technical fixes sandbag strategies.

So you know there's a storm coming, the levees are breaching, and you're putting sandbags around your house when no one puts in money.

And what do you think? can.

Storms pass, water levels drop, sandbags are removed, storm after storm.

And this is where things get insidious.

Using the punching bag strategy can get you re-elected.

A punching bag strategy will help you achieve your quarterly numbers.

Now, if we want to go to a different future than we are now, I think we have not reached it yet, so 2016 is not the peak of civilization.

(Laughter) There are still things we can do.

But my point is that it won't happen unless you change your mental model and mental map about how you think about shorts.

So what I developed is called "Long Pass", it's a practice.

And long passes are not a one-time practice.

I'm sure everyone here has gone offsite at least once with a ton of post-its and whiteboards. And you do - no offense to the consultants doing it here - and make a long-term plan, and two weeks later everyone forgets about it.

right? Or a week later. 3 months if you're lucky.

You don't have to do it, just practice.

It's a process that requires you to revisit different ways of thinking with each important decision you're making.

So let's take a look at these three ideas.

First of all, it is a concept that transcends generations.

I love philosophers: Plato, Socrates, Habermas, Heidegger.

I grew up watching them.

But they all did one thing that didn't really seem like a big deal until I started looking into this in earnest.

And they all adopted the life span of celibacy from birth to death as the unit of measure for the whole reality of what it means to be virtuous and good.

But there are problems with these issues. These problems pile up on us. Because the only way we know how to do something good in the world is to do it between birth and death.

That's what we are programmed to do.

When you go to the self-help section of a bookstore, it's all about you.

As long as you're not dealing with serious issues like this, this is great.

And cross-generational thinking, which is actually a kind of cross-generational ethics, can expand on how you think about these issues and what your role is in solving them.

Now, this doesn't just have to happen on the floor of the Security Council.

It can be done in a very personal way.

So, as luck would have it, my wife and I like to go out to dinner from time to time. We have 3 children under the age of 7.

So you can imagine a very peaceful and quiet meal.

(Laughter) So we sit down and literally all I want to do is eat and chill out, but my kids have totally different ideas of what we're going to do.

So my first idea is the punching bag strategy, right?

Put your iPhone in your pocket, pull it out, and hand it Frozen or another best-selling game.

And I need to stop and put my generational mindset cap on.

I wouldn't do it in a restaurant because it would be weird, but it has to be. I've done it once and learned that it's weird.

(Laughter.) And you have to think, 'Okay, I can do this.

But what does this teach them?

So what does it mean for me to actually bring the paper and have a conversation with them?

it's difficult. It's not easy, and I'm keeping this very personal.

It's actually more traumatic than some of the big problems I deal with in the world: entertaining my kids at dinner.

But it not only connects me with them who are here now, but it also sets them up for how they relate to their children, their children, and their children, as this is at the core of a transgenerational thought ethic.

The second is thinking about the future.

When you think about the future 10 or 15 years from now, please tell us your vision of what the future holds.

You don't have to pass it on, but think about it in your head.

And what we are likely to see is the dominant cultural lens currently governing how we think about the future: technology.

So when we think about problems, we always think through the lens of technology, tech-centric, tech-utopia. There is nothing wrong with that. But if we are going to tackle these major issues, it has to be really thought through. Because this was not always the case. right?

The ancients had a way of thinking about the future.

The church definitely has an idea of ​​what the future will look like and you can actually pay for that future. right?

And fortunately for mankind, the scientific revolution happened.

From there, we got the technology, but what happened -- this is not a criticism, by the way.

i love technology.

Everything in my house speaks to me, from my children to my speakers.

(Laughter.) But we've given up our future from being a high priest in Rome to a high priest in Silicon Valley.

So when we think about how to deal with climate, poverty and homelessness, our first reaction is to think through the lens of technology.

Look, I'm not recommending going to this person.

I love Joel, don't get me wrong, but I'm not saying go for Joel.

My point is that we need to rethink the basic assumption that we only see the future in one direction, only through the dominant lens.

Because our problems are so big and vast that we need to open ourselves up.

That is why I do my best not to talk about the future.

Talk about the future.

Conversation begins again.

So when you sit down and think about how to move forward with this big problem, it can happen at home, it can happen at work, it can happen on the world stage, but keep your hands on thinking about something beyond technology as a solution. Because we are now more worried about the evolution of technology than the evolution of morality.

And unless you fix it, you can't break out of short-termism and get where you want to go.

The last is telos thinking. It comes from Greek roots.

Ultimate purpose and ultimate purpose.

And it really begs a question. What does it serve?

When was the last time you asked yourself, "What is the purpose?"

How far have you gone when you ask yourself that question?

Because long isn't enough anymore.

You can't do that in 3 or 5 years.

30 years, 40 years, 50 years, 100 years.

In Homer's epic poem The Odyssey, Odysseus had the answer to his "end".

It was Ithaca.

It was a bold vision of getting back to what he wanted: Penelope.

I can tell you, because of the work I do, you know it intuitively - we lost Ithaca.

We've lost "how far can we go", so we'll stick with this hamster wheel.

Yes, we are trying to fix these issues, but what happens after we fix them?

And people don't move unless you define what happens after that.

Businesses, and this isn't just about businesses, businesses that break away from short-termism and consistently perform well are, by definition, family businesses.

They are generational. they are telos. they are thinking about the future.

And this is an ad for Patek Philippe. They're 175 years old and what's amazing is that they literally embody this kind of Long Patian feeling in their brand. By the way, I will never actually own a Patek Philippe, and I never will -- (laughs) unless someone wants to throw $25,000 on stage.

You just have to take care of it for the next generation.

So it's important to remember to treat the future like a noun.

it's not. it's a verb.

Action is required.

We have to push it in there.

It is not this that strikes us.

It's something we actually have full control over.

But in short-term society, we end up feeling otherwise.

We feel trapped.

we can get over it.

Now I feel more comfort in the fact that I will die at some point in the inevitable future.

But these new ways of thinking and acting have made me feel more at ease with that fact, whether it's in the outside world, in my relationships with my family at home, or in what I'm leaving behind for my children.

And it's something that many of us find really offensive, but I want to tell you, think twice.

Applying this type of thinking can inevitably get you through something very uncomfortable.

And it all starts with asking yourself these questions: "What is your long pass?"

But when you ask yourself now, tonight, behind the wheel, in the boardroom, or in the situation room, get the long road fast, oh, what will my long road be in the next three or five years?

Try to get over your life if you can. Because in doing so, you can accomplish something a little bigger than you thought possible.

Yes we have a very big problem there.

I believe that through this process and this way of thinking, we can make a difference.

You can make a difference and I believe in you.

thank you.

(applause)

I got a chance to see the new Star Wars movie last year and it was great, but there was one thing that kept bothering me.

I don't know if you have noticed this.

In this completely technologically advanced world, there were no AEDs anywhere. This was completely shocking. It was almost as shocking as not knowing what an AED you know is.

But for people at home, an AED is an automated external defibrillator.

This is a device used to shock the heart to return it to its normal rhythm when it is in cardiac arrest. Or, as one of my students used to teach a class, we called it the "Shock Heart Box Thing."

(Laughter) But I can't blame the Empire because health and safety regulations aren't really the Empire's top priority.

But even if we were there, even if there was an AED, I think it would be worse than not having an AED, but just, no one knew where it was.

These devices can greatly increase your chances of survival, much like Hoth's tauntauns.

(Laughter.) But stormtroopers are sure to toast whether they have an AED or not. Because what happens is it becomes very difficult to remove the chest plate. And just like Tauntaun, the AED has a very short window of time before it becomes very effective.

In this case, it should basically be used within the first 10 minutes.

Jedi, on the other hand, have no problem dressing.

These robes open straight up allowing the padding to be placed directly on the chest. At the upper right and lower left of the chest, wait for the unit to determine whether it is in a shockable rhythm and prepare for the shock.

But the Jedi have their problems.

They have problems with their head appendages.

So I think I'm completely clear and ready, but I'm inadvertently shocking myself by accidentally touching a tentacle.

(Laughter) Make sure you and everyone else are clear before you hit that button.

Coming back to Stormtroopers, what if I manage to remove the breastplate in time and suddenly find a Wookiee, or perhaps two Ewoks, underneath it?

(Laughter) Luckily, there is an actual razor in the kit that you can use to shave the top right and bottom left of your chest.

Wookiees also have another problem.

I have a problem with an accessory.

What we want to do is remove these. Delete anything between the two pads. This is because it can cause a phenomenon called "arcing".

For those of you who don't know what an arc is, remember when the Emperor shot electricity out of the end of his finger? (Laughter) It's like an arc.

One more thing, it's- Oh! By the way, he makes it by wearing woolen socks under his robe.

(Laughter) If the chest is extremely wet, arcing can also occur.

Electricity travels across the surface without passing through the heart.

This can be rectified by Douglas Adams' immortal saying, "Don't panic." Today most people do and always have a towel with them.

So please pass on the good words.

Metallic bikinis, unfortunately, cause panic here. Like modern bras, they should always be removed as they can cause severe arcing along with burns.

Unfortunately, though, this poses as much of a controversial issue as talking about the prequels.

(Laughter) Just hearing the word 'nipple' makes people feel a little dizzy.

By the way, those are cupcakes, not nipples.

(Laughter) Maybe if you have to use this, it's going to be used by someone you know.

And remember, everyone has nipples, except for Jabba.

(Laughter) But he loves cupcakes.

Speaking of Jabba, if you need to use an AED on him, remember the pad placement is the same, even if he doesn't have nipples.

So top right, bottom left.

If you are shocked, be shocked and be prepared. One thing you have to do after giving a shock is remember to do the compression.

The recommended method is to depress at least 2 inches (no more than 2½ inches) between the nipples in the center of the chest for 30 compressions and 2 breaths at a rate of 100 to 120 times per minute.

Unfortunately, due to the size of Jabba's mouth and what he puts in his mouth, you might not actually want to do the mouth-to-mouth part.

Therefore, compression-only CPR can be performed instead.

A way to memorize the compression-only part is to actually use the Imperial March.

I'll sing it for you -- (laughter) Unfortunately, that's what an interrogation droid would rather do.

Yoda.

A little man like a baby.

What we do is basically treat him like a baby in the sense that we put one pad in the middle of his chest and one on his back.

Putting both in front could get too close and cause severe arcing, so you want to avoid that.

I hope this helps clarify and shed some light on some of the darker issues surrounding AED use in the Star Wars universe, or indeed any universe at all.

I'll leave you with just one point.

When dealing with Wookiees, be careful not to shave the entire Wookiee.

This takes too long and just pisses them off.

(laughs) Thank you very much.

(applause)

As you know, culture was born out of imagination. Imagination, or imagination as we know it, was born when our species descended from our ancestor, Homo erectus, and was infused with consciousness to begin the journey of carrying it to every corner of the habitable world.

For a while, we shared the same stage with our distant cousins, the Neanderthals, who clearly had some brilliance of consciousness, but whether it was an increase in brain size, language development, or some other evolutionary catalyst, we soon left them gasping for survival.

By the time the last Neanderthals disappeared in Europe 27,000 years ago, our immediate ancestors had already, and for 5,000 years, burrowed underground, where, in the flickering light of tallow candles, they were producing great art of the Upper Paleolithic.

And I spent two months in a cave in southwestern France with the poet Clayton Eschleman, who wrote a beautiful book called Juniper Hughes.

And when you look at this art, of course, you see the complex social organization of the people who produced it.

But more importantly, it spoke of a much more sophisticated, deeper longing than the magic of hunting.

And Clayton said,

He said, "Obviously at one point we were all of an animal nature, but at another point we weren't."

And he saw primitive shamanism as a kind of original attempt to rekindle irretrievably lost connections through ritual.

Thus, he saw this art not as hunting magic, but as a postcard of nostalgia.

And from that point of view, it takes on an entirely different sound.

And the most amazing thing about Upper Paleolithic art is that it persisted as an aesthetic expression for almost 20,000 years.

If this is a postcard of nostalgia, then our postcard was indeed a long goodbye.

And that was also the beginning of our frustration. Because if we were to distill all our experiences since the Paleolithic, it would come down to two words: "how" and "why".

And these are the pieces of insight on which culture has been shaped.

All people now share the same raw adaptive instructions.

We all have children.

We all have to face the mystery of death, the world that awaits beyond death, and the aging of the elderly.

All of these are part of our common experience and this should not surprise us. Because what philosophers have always dreamed to be true has finally been proven true by biologists.

And it is the fact that we are all brothers and sisters.

We are all cut from the same genetic cloth.

All humans are probably descended from 1,000 people who left Africa about 70,000 years ago.

But the corollary is that if we are all brothers and sisters and share the same genetic material, then all human populations share the same raw human genius, the same intellectual sharpness.

Whether or not that genius is invested in unraveling the intricate threads of memory inherent in the mythology of which the magic of technology is the great achievement of the West, on the contrary, is therefore a matter of mere choice and cultural orientation.

There is no progress of things in human experience.

There is no trajectory of progress. There is no pyramid that conveniently places Victorian England at the top and descends its sides to the world's so-called primitives.

All people are simply cultural choices, different visions of life itself.

But what does it mean that different visions of life create entirely different possibilities for existence?

Now let's slip for a moment into the greatest cultural realm ever created by the imagination: Polynesia.

10,000 square kilometers and tens of thousands of islands float like jewels in the South Seas.

I recently sailed the South Pacific aboard the Hōkūleʻa, named after Hawaii's sacred star, to make a film about navigators.

They are the men and women who can still name the 250 stars in the night sky today.

They can feel the presence of atoll islands beyond the visible horizon simply by observing the echoes of the waves on the hull of a ship, and know full well that every island in the Pacific has its own refraction pattern that can be read with the same sharpness that a forensic scientist reads a fingerprint.

These sailors can discern as many as 32 different sea swells in the dark, in the hull, at any given time while traveling in canoes, and can distinguish between localized wave disturbances and large currents pulsating across the ocean. It can be tracked as easily as a land-based explorer follows a river to the sea.

In fact, if you take all of the genius that made it possible to land mankind on the moon and apply it to understanding the ocean, what you get is Polynesia.

And if you slide from the world of the sea into the world of imagination, there is the world of Tibetan Buddhism.

And I recently made a film called "Buddhist Science of the Mind".

Why did you use the word science?

What is science other than the empirical pursuit of truth?

What is Buddhism other than 2,500 years of empirical observations about the nature of the mind?

I traveled around Nepal for a month with my best friend Mathieu Ricard. You may remember that Matthew once famously told all of us here at TED that "Western science is a big answer to a small need."

We spend our lives trying to live to be 100 without losing our teeth.

Buddhists spend their lives trying to understand the essence of existence.

Our billboard celebrates naked children in their underwear.

Their sign is a manual, a prayer for the well-being of all sentient beings.

Then, with the blessing of Trulsik Rinpoche, we began our pilgrimage to interesting destinations with the great physician.

The destination was a room in a monastery where a woman lived a life of seclusion 55 years ago.

And on the way, we received darshan from Rinpoche. He sat down with us to teach us about the Four Noble Truths, the essence of the Buddhist path.

All life is suffering. That doesn't mean that everything in life is negative.

It means things happen.

Ignorance is the cause of suffering.

This does not mean that Buddha meant stupidity. What he meant was to cling to the illusion that life is static and predictable.

The Third Noble Truth states that ignorance can be overcome.

And fourth, and most important, of course, was the depiction of a contemplative practice with 2,500 years of empirical evidence that it not only has the potential for transformation of the human mind, but that such transformation is certain.

So when this door opened to reveal the face of a woman who hadn't left that room for fifty-five years, the mad woman was invisible.

You saw a woman who was clearer than the puddles of a mountain stream.

And, of course, this is what the Tibetan monks told us.

They said at one point you did go to the moon, even though they don't really believe you did.

It may be hard to believe that we can achieve enlightenment in one lifetime, but we will.

And as we move from the realm of the spirit to the realm of matter to the sacred terrain of Peru, I have always been interested in the relationship of the indigenous peoples who literally believe the earth is alive and responsive to all of their wishes and needs.

And, of course, humanity has mutual obligations.

I have lived among the Chinchero people for 30 years and have always heard of an event that I have always wanted to attend.

Once a year, the fastest boy in each settlement is given the honor of becoming a woman.

And then one day he dresses up in his sister's clothes and becomes a cross-dresser, or Weilaka. And that day he leads all the able-bodied men in a run, and it's no ordinary run.

Start at an altitude of 11,500 feet.

Ride to the foot of the sacred mountain, Antakirka.

Run to 15,000 feet and descend 3,000 feet.

Climb again in 24 hours.

And of course, the trajectory of the route, the spin of Weilakama, is marked by the Sacred Hill of the Earth, where cola is fed to the earth, alcohol is carried on the wind, and the female vortex is brought to the summit.

And this metaphor is clear. You enter the mountain as an individual, but through weariness and sacrifice emerge as a community that has reaffirmed their sense of their place on Earth.

And at 48, I was the only outsider to ever go through this experience and the only one to go through with it.

I was only able to achieve that by chewing more coca leaves a day than anyone else in the 4,000-year history of the coca plant.

But these local ceremonies become pan-Andean, with great festivals like the Qoyllur Rit'i, which occur when the Pleiades star cluster reappears in the winter skies.

It's like Woodstock in the Andes. 60,000 Indians make the pilgrimage to the end of a dirt road that leads to a sacred valley called Sinakarra, dominated by the three tongues of the Great Glacier.

This metaphor is very clear. In a wonderful blend of Christianity and pre-Columbian thinking, you bring the cross from your community.

You place your cross in the Ausangate, holiest of all the apses, or in the shadowy ice of the sacred mountains of the Incas.

Then perform a ritual dance that gives power to the cross.

Now, with these ideas and these events, it's even possible to deconstruct an iconic place that many of you have visited, like Machu Picchu.

Machu Picchu was never a lost city.

On the contrary, it was fully linked to the 14,000 kilometers of royal roads that the Incas built in less than a century.

But more importantly, it was tied to the concept of the sacred geography of the Andes.

The tether to the sun, Intihuatana is actually an obelisk that constantly reflects the light that falls on Machu Picchu's sacred apu, the Sugarloaf Mountain called Huayna Picchu.

There is an altar when you come south of Intihuatana.

Climb Huayna Picchu to find another altar.

If you go straight north-south, you'll be surprised to find that it bisects the Intihuatana Stone, heading towards the skyline and hitting the heart of Salkantay, the second most important mountain of the Inca Empire.

And, of course, beyond Sarkantay, the Milky Way appears overhead as the Southern Cross reaches its southernmost point in the sky at the same position.

But what is Machu Picchu enveloping from below?

The Sacred River, Urubamba or Vilcanota, is itself the Milky Way on Earth, but it is also the trajectory Viracocha walked in the early days when the universe was born.

And where will the river rise?

It is located on the slopes of Coality.

So, 500 years after Columbus, the rhythms of these ancient landscapes are played out in rituals.

Well, when I was here for my first TED, I showed this picture. Two men descended from the Elder Brothers, survivors of Eldorado.

Of course, these are descendants of the ancient Tayrona civilization.

Those of you here may remember that I said that they are still ruled by the ceremonial priesthood, but training for the priesthood is extraordinary.

Separated from his family and quarantined in a world of darkness and shadows for 18 years. These nine years are two periods deliberately chosen to recall the nine months spent in the womb of a natural mother.

All the while they have been taught the values ​​of society, so that the world exists only as an abstraction.

Their prayers, and the values ​​that sustain the proposition that their prayers alone maintain the balance of the universe.

Now, the measure of a society is not only what it does, but also the quality of its aspirations.

And, as the great anthropologist Raichel Dolmatov actually reported, I always wanted to return to these mountains to see if this was true.

So literally two weeks ago I returned from spending six weeks with my brothers on what was clearly the most extraordinary trip of my life.

They are people who live and breathe a very sacred realm, a realm of baroque religiosity, and they are just wonderful.

They consume more coca leaves than any human being, half a pound per person per day.

The gourd here symbolizes everything in their lives.

Their central metaphor is the loom.

They say, "On this loom I weave my life."

They call the movement that exploits the ecological niche of the gradient "yarn."

When they pray for the dead, they make this gesture with their hands and spin their thoughts to heaven.

You can see that calcium is accumulated in the head of the popolo gourd.

The gourd represents the feminine side. Stick is male.

Incorporate the sacred ash by placing the stick in the powder. This is not ash. Burnt limestone. Empowers the coca leaves to change the pH of the mouth to facilitate the absorption of cocaine hydrochloride.

But if you break a gourd, you can't just throw it away. Because every stroke of that stick loaded with calcium, the measure of human life, has an idea behind it.

The way the fields are planted is unusual, and women are planted in the same way on one side of the field.

The other side is planted by men that way. Metaphorically speaking, if you turn it sideways, you get a piece of cloth.

And they, descendants of the ancient Tayrona civilization, South America's greatest goldsmiths, retreated in the wake of their conquest to this isolated volcanic massif that rises 20,000 feet above the Caribbean coastal plain.

There are four societies: Kogi, Wiwa, Kankwano, and Arhuacos.

I traveled with the Arhuaco family and what's great about this story is that this man was Danilo Villafan. Let's go back a little bit here.

When I first met Danilo at the Colombian Embassy in Washington, I couldn't help but say: "You look a lot like an old friend of mine."

Well, it turns out he was a friend from 1974, Adalbert's son, who was killed by the FARC.

And I said, "Danilo, you don't remember this, but when you were a toddler, I carried you up and down mountains on my back."

So Danilo invites us to the center of the world, a place where journalists have never been allowed before.

Not just the mountainsides, but also the polar ice summits that are the destiny of pilgrims.

And this man sitting cross-legged is now a grown Eugenio, a man I've known since 1974.

And this is one of those beginners.

No, it's not true that they've been kept in the dark for 18 years, but they've been kept within the circle of ritualistic men for 18 years.

This boy never leaves the sacred fields surrounding the men's hut until he begins his journey of initiation.

All the while being taught social values, including the notion that prayer alone keeps the universe in balance, and the world exists only as an abstraction.

Before we started our journey, we needed to be cleansed at the threshold of the earth.

And being taken by a priest was an anomaly.

And it turns out that priests never wear shoes. Because the feet are holy. For Mamo, there should be nothing between his feet and the earth.

And this is, in fact, where the Great Mother raised the mountains and sent into the world the spindle that created her home called the Center of the World.

We traveled high up in Paramo, and as we climbed the hills we found that the men interpreted every unevenness of the landscape in terms of their own intense religiousness.

And of course we were met with a surprise when we reached our final destination, a place called Mamanchana. Because the FARC were waiting to kidnap us.

So we ended up being taken to a hut and hid until dark.

Then, abandoning all our gear, we were forced to leave in the car in the middle of the night, a very dramatic scene.

It's going to be like a John Ford Western.

And then at dawn we encountered a FARC patrol, so miserable.

It will be a very interesting movie. But what is interesting is that the moment they sensed danger, the mamos entered the fortune-telling circle.

And of course, this is literally a photo taken the night we were hiding while they were guessing the route to get us out of the mountain.

We had people trained in filmmaking, so we kept working and sent the Wiwa and Arwaco filmmakers to the last sacred lake to take the final shots of the film. We followed the rest of Arhuaco back to the sea, carrying the elements from the plateau to the sea.

And here you can see how their sacred landscape is covered by brothels, hotels and casinos. Yet they continue to pray.

And it's amazing to think that two hours from Miami there is an entire civilization praying for good health every day.

They call themselves the Elder Brothers.

They ignore the rest of us who ruined the world as "little brothers". They can't understand why we do the same to the Earth.

Now, if we were to travel back in time to another end of the world, I would be up in the Arctic highlands to talk about global warming, partly because of a great book by a former Vice President.

And what really surprised me was that I was again with Inuit people who weren't afraid of the cold and took advantage of it.

People who use their imaginations to find ways to carve life out of extreme freezing.

People for whom blood on ice is not a sign of death, but an affirmation of life.

But tragically, when you go to these northern communities now, you find that in places like Qaanaaq in northern Greenland, where before sea ice came in in September and stayed until July, now it literally goes into November and stays until March.

So their whole year was cut in half.

Now, I would like to emphasize that none of these peoples, which I have spoken of here in a moment, are in a world that will disappear.

They are not dying people.

Conversely, if you have a heart to feel and an eye to see, you will see that the world is not flat.

The world remains a rich tapestry.

There remains a rich spiritual landscape.

These myriad voices of humanity are not failed attempts to be new or modern.

They are unique aspects of the human imagination.

They are unique answers to the fundamental question of what it means to be human and to be alive.

Ask that question and they'll answer in 6,000 different voices.

And collectively, those voices make up humanity's repertoire for meeting the challenges we will face for millennia to come.

Our industrial society is less than 300 years old.

That shallow history should not suggest to anyone that we have all the answers to all the questions we face over the next few thousand years.

The myriad voices of humanity are not a failed attempt to become what we are.

They are unique answers to the fundamental question of what it means to be human and to be alive.

And indeed on earth the fire burns, bringing back not only the plants and animals, but also the luminous legacy of humanity.

As we sit in this room, of the 6,000 languages ​​spoken the day you were born, half have not been taught to children.

In short, you are living in a time when virtually half of humanity's intellectual, social and spiritual heritage is being lost.

this doesn't have to happen.

These people have not failed in their attempts to become modern. Quaint, colorful and destined to disappear like the laws of nature.

In either case, these are dynamic, living people whose existence is being driven out of existence by an identifiable force.

This is actually an optimistic observation. Because it suggests that if humans are the agents of cultural destruction, we can and should also be promoters of cultural survival.

thank you very much.

Twenty years ago, when I was working full-time in London as a solicitor and human rights lawyer, and what some might say is a coincidence of history, the Supreme Court of the country was still convening, and here in this building I met a young man who had just quit his job at the British Foreign Office.

When I asked him, "Why did you quit?" he said,

One morning, he went to his boss and said, "Let's do something about human rights violations in China."

His boss replied, "We have a trade relationship with China, so we can't do anything about human rights violations in China."

So my friend walked away with his tail between his legs, and six months later he came back to his boss again, this time saying, "Let's do something about human rights in Burma," as it was called then.

His boss stopped again and said, "Oh, but we don't have a trade relationship with Burma, so we can't do anything about human rights in Burma."

(Laughter.) That was the moment he realized he had to leave.

It wasn't just hypocrisy that struck him.

That's because his government didn't want to face other governments in tense debates while innocent people were being harmed.

We are always told that conflict is bad and compromise is good. Conflict is bad, but agreement is good. Conflict is bad, cooperation is good.

But in my opinion, that's a far too simplistic view of the world.

If you don't know who's fighting, why they're fighting, and how they're fighting, you can't tell if conflict is bad.

And compromise can be utterly corrupt if it hurts those who are not at that table, those who are vulnerable, those who are disenfranchised, those we are obligated to protect.

Now, while I may be somewhat skeptical of lawyers debating the merits of disputes and pushing the issue toward compromise, I am also a qualified mediator and have recently spent time giving talks on ethics for free.

As my bank manager often reminds me, I am a downward mover.

But if you accept my point, it will not only change the way we live our personal lives, it will change the way we think about major issues such as public health and the environment.

Let me explain.

Every middle school student in the United States, including my 12-year-old daughter, learns that there are three branches of government: the legislative, executive, and judicial branches.

James Madison wrote, "If there is one principle more sacred than any other in our constitution, and indeed in our liberal constitution, it is that which separates the legislative, executive, and judicial powers."

Now, the planners weren't just concerned with the concentration and exercise of power.

They also understood the danger of influence.

Judges, when participating in the making of laws, cannot determine the constitutionality of those laws. Nor can other departments of the government be held accountable for their cooperation with, or close ties with, the government.

As one famous scholar puts it, the constitution is an “invitation to struggle.”

And when those branches actually go to war with each other, we the people are helpful.

Now we recognize the importance of struggle not only in the public sector between government departments.

We see this in the private sector and in the relationships between companies.

Suppose two American airlines get together and agree not to reduce the price of economy class tickets below $250 per ticket.

Some would say it is cooperation, not competition but collusion. And we, the public, are suffering because we pay so much for tickets.

Similarly, imagine two airlines saying, "Airline A, we take the route from Los Angeles to Chicago," and Airlines B saying, "We take the route from Chicago to Washington, DC. We don't compete."

Again, it is cooperation or collusion, not competition, and we the people are harmed.

Therefore, we understand the importance of struggle in relations between government agencies and the public sector.

We also understand the importance of conflict in relationships between businesses and the private sector.

But what we forget is the relationship between the public and the private.

And governments around the world are working with industry to solve public health and environmental problems, often with the very companies that create or exacerbate the problems they are trying to solve.

These relationships are said to be win-win.

But what if someone is at a loss?

Here are some examples.

A United Nations agency has decided to tackle the serious problem of poor sanitary conditions in rural India's schools.

They did this not only with national and local governments, but also with television companies and large multinational soda companies.

The company benefited from a months-long promotional campaign that included a 12-hour video call with all the company's logos and color schemes in exchange for less than $1 million in rewards.

This was a very understandable arrangement from a corporate perspective.

It enhances a company's reputation and creates brand loyalty to its products.

However, in my view, this is very problematic for an intergovernmental agency with a mission to promote sustainable livelihoods.

In a country already plagued with obesity, increasing consumption of bottled sugary drinks made from scarce local water sources is not sustainable from a public health or environmental standpoint.

And in order to solve one public health problem, government agencies are sowing the seeds of another.

This is just one of the dozens I found while researching books on government-industry relations.

I could have also told you about the same company's involvement in promoting movement in parks in London and across the UK, and how the UK government actually works with the industry to develop voluntary pledges instead of regulating it.

These collaborations and partnerships have become paradigms in the public health sector and make sense from an industry perspective.

This allows public health problems and their solutions to be framed in ways that are least threatening and most compatible with commercial interests.

Obesity therefore becomes a matter of personal decision-making, personal behavior, personal responsibility, and lack of physical activity.

Framed in this way, it is not a matter of a multinational food system involving large corporations.

Again, I don't blame the industry.

The industry naturally engages in influence strategies to promote commercial interests.

But governments have a responsibility to develop counter-strategies to protect our common interests.

The mistake governments make in working with industry in this way is to confuse the common good with the common ground.

When working with industry, matters that may promote the common good with which industry disagrees are necessarily excluded from consideration.

The industry will not agree to more regulation unless it believes it will either prevent further regulation or force some competitors out of the market.

Also, as we have established, companies cannot agree to do certain things, such as increase the price of unhealthy products. Because it would violate competition laws.

Our governments should therefore not confuse the common good with common ground, especially when common ground means reaching agreement with industry.

I would like to give another example. From high-profile collaborations to something underground, both literally and figuratively: hydraulic fracturing of natural gas.

Imagine buying land without knowing that the mineral rights were sold.

This was before the hydraulic fracturing boom.

You build your dream house on the land, but shortly after discover that the gas company is building a well on your land.

Such was the plight of the Hallowitch family.

Within a very short period of time, they began complaining of headaches, sore throats, and itchy eyes, along with noise, vibration, and bright light interference from burning natural gas.

They criticized very loudly and then fell silent.

And thanks to the Pittsburgh Post-Gazette, which published this image, and another, I understand why they were silent.

The newspapers went to court and said, "What happened to the Hallowitches?"

It turns out that the Hallowitches had made a secret settlement with the gas utility, and it was a "take it or leave it" settlement.

The gas company said it could offer a six-figure sum to move elsewhere and start life over, but in exchange it would have to promise not to talk about its experience, its fracking experience, or the health effects it might have revealed during a medical examination.

Now, I don't blame the Hallowitches for accepting one or the other's settlement and starting life elsewhere.

And I can see why the company would want to quiet the squeaky wheels.

What I would like to point out is the system of laws and regulations. It's a system where networks of pacts like this help silence people and block data points from public health experts and epidemiologists. If landlords and gas companies agree to a settlement, the regulator will refrain from issuing notices of violation even if pollution occurs.

This is a system that is not only bad from a public health point of view. It puts a local family in the dark at risk.

Now, I don't give two examples because they are separate examples.

These are examples of systemic problems.

I would like to introduce some counterexamples. Take, for example, the case of a public official who sued a pharmaceutical company for covering up the fact that antidepressants increase suicidal thoughts in adolescents.

We're talking about regulators who went after food companies for overstating yogurt's health benefits.

And I can tell you about the legislators who pushed for environmental protection despite the intense lobbying on both sides of the aisle.

These are individual examples, but they are beacons of light in the dark and show us the way.

I started by suggesting that sometimes we need to be confrontational.

Governments need to wrestle, fight, and sometimes directly clash with corporations.

This is not because governments are inherently good and corporations are inherently evil.

Each can be better or worse.

However, it is natural for companies to act in the furtherance of their own commercial interests, which sometimes undermine or promote the public interest.

But it is the responsibility of government to protect and promote the common good.

And we should insist that they fight to do so.

This is because governments are guardians of public health. Governments are guardians of the environment. And it is the government that protects these vital parts of our common good.

thank you.

(applause)

In the next six minutes when you listen to me, the world will lose three mothers in childbirth. Second, because she's still a teen and her body isn't ready for childbirth. But the third is simply because basic clean tools are not available during childbirth.

she is not alone.

More than one million mothers and children die each year in developing countries because they failed to maintain basic hygiene during childbirth.

My journey began on a hot Indian summer afternoon in 2008. After spending the day meeting the women and listening to their needs, I arrived at the thatched hut with a midwife.

As a mother, I was very interested in how she delivered her baby at home.

After a deeply engaging conversation about how she considers doing what she does to be a deep mission, I asked her a parting question. "Do you have the tools you need to deliver a baby?"

I was shown her tools.

"This is what I use to separate mothers and babies," she said.

I didn't know how to react and was shocked when I held this farm tool in my hand.

I took a picture of this, hugged her and walked away.

My mind was flooded with memories of my own infection, which I had to fight for a year after giving birth despite receiving the best medical care, and of conversations with my father who had lost his mother in childbirth. He said that if his mother had grown up next to him, his life would have been very different.

As a product developer, I started the research process.

I was so excited to find out that there is a product called the Clean Birth Kit.

But I couldn't buy it for months.

They were collected only based on the availability of funds.

When I finally got my hands on it, I was shocked again.

I thought I would never use these tools to deliver my baby.

But to test my gut, I spoke to women who have used the product.

Surprisingly, they responded in the same way or even more.

Women said they would rather give birth on the floor than on a bloody plastic sheet.

They were absolutely right - it would cause more infections.

The thread provided was a route to bacterial infection via the baby's umbilical cord, and the blade used was the kind men use to shave, and the man didn't want it near him.

The product was based on charity, so no one had an incentive to redesign it.

The women were never consulted during this process.

And surprisingly, the need was not only at home, but also in institutional environments with mass births.

The situation in remote areas was even more difficult.

I needed to change this.

I have made this my focus area.

I started the design process by gathering feedback, developing prototypes, and engaging with various stakeholders to study the global protocol.

Every time we made a prototype, we met with women to make sure we had a product for them.

Through this process, I learned that despite their extreme poverty, they value their health and well-being very much.

They were never poor in heart.

Like all of us, they will appreciate a well-designed product that has been developed to suit their needs.

After many iterations in collaboration with specialists, health care professionals and the women themselves, it must be said that the process was by no means an easy one, but the design is simple and beautiful.

For $3, $1 more than existing offerings, I was able to deliver a clean birthing kit, "Jamma," in a handbag.

Jamma, meaning "childbirth," included blood-absorbing sheets for women to give birth, surgical scalpels, umbilical cord clamps, bar soap, gloves, and the first cloths to wipe the baby clean.

All of this was packed in a beautiful purse and given as a gift to her hard-working mother, who took it home with pride as a symbol of prosperity.

A woman reacted to this gift.

She said, "Is this really mine? Can I keep it?"

Another said, "When the next child is born, will you give me a different color?"

(Laughter) Even better, one woman said it was the first purse she ever owned.

Aside from its symbolism and simplicity, the kit is designed to follow globally recommended medical protocols and acts as a behavior modification tool to follow one procedure after another.

It can be used not only at home but also in facilities.

To date, our kits have impacted over 600,000 mothers and babies worldwide.

It's been an uplifting experience to watch this number grow and we can't wait until we reach 100 million.

But women's health issues don't end there.

There are thousands of simple problems that require low-cost intervention.

The evidence is proof that when we invest in women and girls and provide them with better health and well-being, they create healthier, richer and more prosperous communities.

We must start by bringing simplicity and dignity to women's health issues, from reducing maternal mortality to breaking taboos to giving women control over their lives.

This is my dream.

But it cannot be achieved without the participation of men and women all over the world alike, yes all of you.

I recently heard this lyric by Leonard Cohen: "Ring any bell that could still ring.

Forget impeccable service.

All have cracks.

That's how light comes in. ”

Here is my little light.

But we need more light.

In fact, if we want a better tomorrow, the world of women's health needs a big spotlight.

We must never forget that women are central to a sustainable world and without them we cannot exist.

thank you.

(applause)

So I would like to tell you about one of my great friends, Okoloma Madhuwesi.

Okoloma lived on my street and took care of me like an older brother.

If there was a boy I liked, I would listen to Okoroma's opinion.

Okoloma died in the infamous Sosoriso plane crash in Nigeria in December 2005.

Almost exactly 7 years ago.

Okoloma was someone I could argue with, laugh with, and have a serious talk with.

He was also the first person to call me a feminist.

When I was about 14, we were arguing at his house.

We were both flooded with half-baked knowledge from the books we read.

I don't remember what this particular discussion was about, but I do remember Okoloma looking at me and saying, "You're a feminist," as I continued to argue over the discussion.

It wasn't a compliment.

(Laughter.) I could tell from his tone that it was the same tone as saying something like, "You are a supporter of terrorism."

(Laughter.) I didn't know exactly what this word "feminist" meant, and I didn't want Okoloma to know what I didn't know.

So I ignored it and continued the discussion.

And the first thing I thought I would do when I got home was to look up the word "feminist" in the dictionary.

Now, years later, I wrote a novel about a man who beat his wife and so on, and the story didn't end very well.

When I was promoting this novel in Nigeria, a kind and well-meaning journalist wanted to give me some advice.

And I think for the Nigerians here, we all know how quick to give advice that the public doesn't even ask for.

He told me that people said my novel was feminist, and his advice to me—and he shook his head sadly as he spoke—was that you should never call yourself a feminist because a feminist is a woman who is unhappy because she has not found a husband.

(Laughter) So I decided to call myself a “happy feminist.”

Then a Nigerian scholar woman said that feminism is not our culture, feminism is not African culture, and that I call myself a feminist because I have been corrupted by "Western books."

It amused me because much of my early reading was decidedly non-feminist.

I'm sure you must have read all the Mills &amp; papers. A Boone Romance published before I turned 16.

And every time I tried to read a book called "a feminist classic," I got bored and had a really hard time finishing it.

But anyway, feminism was so un-African that I decided to call myself a “happy African feminist” from now on.

At one point, I had become a happy African feminist who didn't hate men, liked lip gloss, and wore high heels for herself, not for men.

(Laughter) Of course, a lot of this was a joke, but the word feminist carries a very heavy, negative burden.

I hate men, I hate bras, I hate African culture, things like that.

Now let me tell you about my childhood.

When I was in elementary school, my teacher would give the class a test at the beginning of the semester and the person with the highest score would be the class monitor.

Well, the class monitor was a big deal.

If you were a class supervisor, you had to write down the name of the person who made the noise -- (laughter) and it had enough power on its own.

But my teacher also gave you a cane to hold as you walk around and patrol the class looking for people making noise.

Now, of course, we weren't allowed to actually use the cane.

But for a nine-year-old me it was an exciting prospect.

I wanted to be a class monitor.

And I got the highest score on the test.

To my surprise, the teacher said that the monitor must be a boy.

She forgot to clarify it earlier because she took it for granted.

(Laughter) A boy got the second highest score on a test and was put under surveillance.

Now, what's even more interesting about this is that the boy was kind and gentle and had no interest in going around the class with a cane, whereas I was full of ambition to do so.

But since I was female and he was male, he became the class monitor.

And I never forgot the incident.

I often make the mistake of thinking that what is obvious to me is equally obvious to others.

Now, let's take my dear friend Louis as an example.

Louie was a bright and progressive man, and in conversation he often said, "I don't know what you mean when you say things are different or difficult for women.

It may have been in the past, but not now. ”

And I couldn't understand why Louis couldn't understand what seemed obvious.

Then one night in Lagos, Louis and I went out with friends.

And for those here who are unfamiliar with Lagos, there are a few energetic guys who hang out outside the Lagos facilities, facilities and "help" you park your car very dramatically.

I was impressed by the special performance of the man who found the parking lot that night.

So when leaving, I decided to leave him a tip.

I opened my bag, reached inside, took out the money I had earned from my work, and handed it to the man.

And he, a very grateful, very happy person, took the money from me, looked at Louis and said, "Thank you!"

(Laughter) Louis looked at me in amazement and asked, "Why is he thanking me? I didn't give him the money."

Then I saw recognition appear on Louis' face.

The man believed that the money I had ultimately came from Louis.

Because Louis is a man.

Men and women are different.

We have different hormones, we have different reproductive organs, and we have different biological capacities.

Women can have children, but men cannot.

At least not yet.

(Laughter) Men have testosterone and are generally physically stronger than women.

There are slightly more women than men in the world, and about 52 percent of the world's population are women.

However, most of the positions of power and prestige are occupied by men.

The late Kenyan Nobel Peace Prize laureate Wangari Maathai put it succinctly and nicely: “The higher the status, the fewer women there are.”

In the recent U.S. elections, we heard a lot about the Lilly Ledbetter Act, but beyond the alliteration of the law's glorious name, it was really a law that said men and women would do the same work, be equally entitled, and men would get paid more for being men.

So literally, men will rule the world. This made sense, since millennia ago, humanity lived in a world where physical fitness was the most important attribute for survival.

A physically stronger person is more likely to be a leader, and men are generally stronger physically.

Of course there are many exceptions.

(Laughter.) But today we live in a completely different world.

People who tend to be leaders are not physically strong people. It's the more creative, the more intelligent, the more innovative, and there are no hormones that represent those attributes.

Men tend to be just as intelligent, creative, and innovative as women.

we have evolved. But it seems that our ideas about gender have not evolved.

A few weeks ago I walked into the lobby of one of Nigeria's finest hotels.

I even considered naming the hotel, but decided against it.

Then a security guard stopped me at the entrance and asked me an annoying question. They automatically assume that any Nigerian woman who walks into a hotel alone is a sex worker.

By the way, why are these hotels focusing on the ostensible supply of sex workers rather than demand?

In Lagos you can't go to many 'reputable' bars and clubs alone.

Women cannot enter alone and must be accompanied by a man.

When I enter a Nigerian restaurant with a man, the waiter greets the man and ignores me.

Waiters are a commodity -- (Laughter) Some of the women were like, "Yeah, I thought so!"

Waiters are a product of a society that has taught men to be more important than women.

And I also know the waiter doesn't intend to do any harm.

But knowing it intellectually and feeling it emotionally are two different things.

Every time they ignore me, I feel invisible.

I am dismayed.

I want to tell him that I am just as human as the man and deserves to be recognized just as much.

These are small things, but sometimes the little things sting the most.

And just recently, I wrote an article in Lagos about what it means to be young and female, and the printer said, "I was so angry."

Of course I was angry!

(laughter) I'm mad.

Gender today is a grave injustice.

we should all be angry.

Anger has a long history of bringing about positive change. But I'm not only angry, I'm also hopeful.

Because I am a deep believer in the ability of humans to remake themselves for the better.

Gender matters everywhere in the world, but I want to focus on Nigeria and Africa in general. Because that's where I know and where my heart rests.

And today we ask you to start dreaming and planning for a different world, a fairer world, a world of happier men and happier women who are more true to themselves.

And this is how to start. We have to raise our daughters differently.

We must also change the way we raise our sons.

We do a lot of harm to boys by the way we raise them. We suppress the humanity of boys.

We define masculinity in a very narrow way, and masculinity becomes this hard little cage, and we keep boys in that cage.

We teach boys to fear fear.

We teach boys to fear weakness and vulnerability.

We teach them to hide their true selves. Because they have to be 'tough guys' in Nigerian.

In junior high school, teenage boys and girls with similar pocket money went out, and boys were required to pay to prove their masculinity.

Nevertheless, we wonder why boys are more likely to steal money from their parents.

What if boys and girls were raised not to associate masculinity with money?

What if the attitude wasn't "boys have to pay" but "he who has more has to pay"?

Of course, it's mostly men who have more today because of their historical dominance, but if we start raising our children differently, 50, 100 years from now, boys won't have this pressure to prove their masculinity.

But the worst thing we do to men is to make them feel like they have to be tough, leaving them with a very fragile ego.

The more a man feels like he has to be the "hard guy," the weaker his ego.

And because we raise them to cater to men's fragile egos, we do them an even greater disadvantage.

We teach girls to shrink themselves, to make themselves small, and we say, 'You can have ambition, but don't have too much.'

(Laughter) "You should aim to be successful, but not too successful, or you'll intimidate men."

If you are the breadwinner in a relationship with a man, you have to pretend otherwise, especially in public. If you don't, you're going to bone him.

But what if that premise itself is questioned?

Why is women's success a threat to men?

What if we decided to simply get rid of that word? I don't think there is an English word I hate more than "castration".

A Nigerian acquaintance once asked me if I was worried men would be intimidated by me.

I wasn't worried at all.

In fact, I didn't even think to worry about men who threatened me because they were the type of men I wasn't interested in at all.

(Laughter.) (Applause.) Still, this really struck me.

Since I am a woman, it is expected that I want to get married. I am being asked to make life choices while always keeping in mind that marriage is the most important thing.

Marriage can be good. It can be a source of joy, love and mutual support.

But why do we teach girls to aim for marriage and not boys to do the same?

A woman I know decided to sell her house because she didn't want to scare the man she might marry.

I know a Nigerian single woman who wears her wedding ring when she attends a conference. She wants other attendees at the conference to "respect her."

I know young women who are faced with terrible choices under pressure from family, friends and even their jobs to get married.

If a woman of a certain age is unmarried, our society teaches her to see it as a serious personal failure.

And unmarried men of a certain age are not yet at the stage of making their own choices.

(Laughter.) It's easy to say, "Oh, but women can say no to all these things."

But the reality is even more difficult and complicated.

We are all social beings.

We internalize ideas from socialization.

Even the words we use when talking about marriage and relationships show it.

The language of marriage is often the language of ownership rather than the language of partnership.

We use the word "respect" to mean what women show to men, but often not what men show to women.

Both Nigerian men and women would say – which I find very amusing to say – “I did it for peace in my marriage.”

Well, when men say it, it's usually about what not to do anyway.

(Laughter) Sometimes they say it to their friends, it's a word they say to their friends in a kind of loving and resentful way that ultimately proves how manly they are, how needed and how loved they are.

"Yeah, my wife says I can't go to the club every night, so I try to go clubbing only on weekends to keep my marriage happy."

(Laughter) Now, when a woman says, ``I did it to have peace in my marriage,'' she's usually talking about giving up a job, a dream, a career.

We teach women that compromise is what women do when it comes to relationships.

We raise girls to see each other as competitors, not for work or achievements, but for the attention of men.

We teach girls that they cannot be sexualized like boys.

If we have a son, I don't mind knowing about his girlfriend.

But what about the girls' boyfriends? God forbid.

(Laughter) But of course, when the time comes, we expect them to bring back the perfect man as a husband.

We police girls praise the virginity of girls, but not the virginity of boys. I've always wondered how this all turned out. because...

(Laughter) (Applause) So the process of losing virginity usually goes something like this...

A young woman was recently gang-raped at a Nigerian university. I'm sure some of you know that.

And the reaction of many young Nigerian men and women was something like: "Yes, rape is wrong.

But what is a girl doing in a room with four boys?"

Now, if we can forget the horrifying inhumanity of that response, these Nigerians have been raised to think women are inherently sinful, and have been raised to expect less from men, so the idea that men are uncontrollable savage beings is somehow accepted.

We teach girls shame.

"Close your legs." "Cover yourself."

It makes us feel like we've already committed something by being born female.

In this way, the girls grow into women who cannot see their own desires.

They grow up to be women who silence themselves.

They grow up and grow up to be women who can't say what they really think and this is the worst thing we've done to girls. They grow up to be women who have turned showiness into an art form.

(Applause.) I know women who hate domestic work. She simply hates housework, but she pretends that she likes it. Because she has been taught that in order to be a "good wife" - to use a Nigerian term - she must be very "homely".

And she got married, but after a while her husband's family started complaining that she had changed.

(Laughter) Actually, she hasn't changed, she's just tired of pretending.

The problem with gender is that it dictates how we should be, rather than recognizing who we are.

Imagine how happy we would be and how free we would be as true individuals if gender expectations were not weighed down.

Boys and girls are clearly biologically different, but socialization exaggerates the differences, making it a process of self-actualization.

Let's take cooking as an example.

Today, women generally tend to do more housework, cooking and cleaning than men.

But why?

Is it because women are born with the gene to cook?

(Laughter) Or is it because over the years I've been socialized to see cooking as my role?

In fact, I was going to say that women might be born with the culinary gene, until I remembered that the majority of the world's famous chefs, to whom we give the fancy title of 'chef', are men.

I looked up to my grandmother, who was a bright, intelligent woman, and wondered what would have happened if she had had the same opportunities as men when she was a child.

Everything is so important now, changing policies, changing laws, that there are so many more opportunities for women than there were in my grandmother's time.

But more importantly, what we believe and value about our attitudes, mindsets and gender.

What if parenting focused on ability instead of gender?

What if parenting focused on interests instead of gender?

I know a family with a son and a daughter who both excel in school and are wonderful and lovely children.

When the boy is hungry, the parents say to the girl, "Go and make indomie noodles for your brother."

(laughs) Well, my daughter doesn't particularly like making Indomie noodles, but she's a girl, so I have to.

Now, what if parents taught both boys and girls to cook Indomie from the beginning?

By the way, cooking is a very useful skill for boys.

I never thought it would make sense to leave something so important, the ability to feed myself, in someone else's hands (laughs).

(Applause.) I know a woman who has the same degree and the same job as her husband.

When she comes back from work, she does most of the household chores. I think this is true in many marriages.

But what struck me about them was that she would say "thank you" to him every time he changed the baby's diaper.

Now, what if she actually thinks it's perfectly normal and natural for him to take care of his child?

(Laughter.) I'm trying to throw away a lot of the lessons about gender that I internalized as a kid.

But I still sometimes feel very vulnerable in the face of gender expectations.

When I taught my first writing class in graduate school, I was apprehensive.

I wasn't worried about what I was going to teach because I was well prepared and I was going to teach what I would enjoy teaching.

Rather, I was worried about what to wear.

I wanted you to take me seriously.

As a woman, I knew that I automatically had to prove my worth.

And I was worried that if I looked too feminine, I wouldn't be taken seriously.

I really wanted to wear glossy lip gloss and a girly skirt, but decided against it.

Instead, I wore a very serious, very manly, very ugly suit.

(Laughter) Sadly, because when it comes to appearance, we think of men first and foremost as standards.

If a man is preparing for a business meeting, don't worry about looking too manly to be taken for granted.

When a woman has to prepare for a business meeting, she has to worry about looking too feminine, the content, and whether it will be taken seriously.

I wish I hadn't worn that ugly suit that day.

By the way, I actually kicked it out of the closet.

If I had the confidence that I am who I am today, my students would have benefited even more from my teaching. Because I could have been more comfortable, more complete, more true to myself.

I decided not to feel sorry for my femininity and femininity anymore.

(Applause.) And I deserve to be respected in all respects as a woman.

Talking about gender is not easy.

Whether you're a man or a woman, bringing up gender can be met with immediate resistance.

I can imagine some people here actually thinking, "Women have sex too."

Some of the men here may be thinking, "Okay, this is all interesting, but I don't think so."

And that's part of the problem.

Many men do not actively think about gender or realize that gender is part of the gender issue.

Many men, like my friend Louis, say that everything is fine now.

And many men do nothing to change that.

If you are a man and you enter a restaurant with a woman and the waiter only greets you, do you think of asking the waiter, "Why didn't you say hello to her?"

Because gender can be -- (Laughter) Actually, I might repost part of the longer version of this talk.

Talking about gender can be a very uncomfortable conversation, so there are some very easy ways to break it off and end the conversation.

So some people bring up evolutionary biology and apes, but they bring up things like female apes succumbing to male apes.

But the point is, we are not monkeys.

(Laughter) (Applause) Apes also live in trees and eat worms for breakfast, but we don't.

Some people will say, "Well, it's hard for the poor, too."

And this is true.

But that's not -- (Laughter) But that's not what this conversation is about.

Gender and class are different forms of oppression.

In fact, I've learned quite a bit about how oppression works and how oppression can blind each other by talking to black men.

I was once talking to a black man about gender and he said to me, 'Why do I have to say 'my experience as a woman'?

Why isn't it 'your experience as a human being'? ”

Now, this man used to talk about his experiences as a black man.

Gender is important.

Men and women experience the world differently.

Gender colors the way we experience the world.

But you can change that.

Some people will say, "Oh, but women have real power, real power."

And I think for non-Nigerian people, bottom power is an expression that means something like a woman who uses her sexuality to gain favor with men.

But bottom power is never power.

Bottom power means that women simply have a good root that they can tap into from time to time: power in others.

And, of course, we have to think about what happens when that person is in a bad mood, sick, or incapacitated.

(Laughter.) Some would say it's our culture that women are subordinate to men.

But culture is always changing.

I have beautiful twin nieces who are 15 years old and live in Lagos.

If they had been born a hundred years ago, they would have been taken away and killed.

Because it was our culture and it was our culture to kill twins.

So what is the point of culture?

That is, some are decorative and some are dance...

But culture is also really about the preservation and continuation of a people.

In my family, I am the child most interested in knowing who we are, in tradition, about our ancestral lands.

My brothers are not as interested as I am.

But I can't participate, I can't go to the Ummunna meetings, I can't speak.

Because I'm a woman

Culture does not make people, people make culture.

So if it's actually true -- (Applause) So if it's actually true that female full humanity isn't our culture, we have to make it our culture.

I often remember my dear friend Okoloma Madhuwesi.

May he and all the others who died in the Sosoliso accident continue to rest in peace.

For those of us who loved him, he will always be remembered.

And he was right to call me a feminist that day many years ago.

i am a feminist.

That day, when I looked up the word in the dictionary, it read, "Feminist: someone who believes in the social, political and economic equality of men and women."

From what I've heard, my great-grandmother was a feminist.

She ran away from the house of the man she didn't want to marry, and ended up marrying the man of her choice.

She refused, protested, and spoke up whenever she felt that access, land, etc. were being taken away.

My great-grandmother didn't know the word "feminist," but that doesn't mean she wasn't a feminist.

More people should take that word back.

My own definition of a feminist is: "A feminist is a man or woman who says, (Laughter) (Applause) A feminist is a man or woman who says, 'Yes, there is a gender problem in the current situation, and we need to fix it.'"

The best feminist I know is my brother Ken.

He is also kind, good-looking, nice guy, and very masculine.

thank you.

(applause)

Two months ago, my kids and I were huddled around our phones to watch the live stream of one of the video game industry's biggest nights, the Game Awards.

They announced the nominations for Game for Impact, an award given to thought-provoking video games with profound prosocial messages and meaning.

They opened the envelope and read the title of the video game.

Award...

for impact.

In fact, it was almost ludicrous because I always thought that winning such an award would have such a big impact on my life, but it turned out to be the opposite.

All the important nights and achievements are gone.

But the most difficult nights of my life have stuck in my mind and influenced who I am and what I do.

In 2010, my third son, Joel, was diagnosed with a rare and progressive brain tumor.

And before the year was over, the doctors sat me and my husband down and told us that despite giving him the most intense chemotherapy and radiation treatments possible, his tumor had returned.

That dreadful night, after learning that Joel probably had four months left to live, I snuggled up in bed with my two older sons (then aged five and three) and started telling bedtime stories because I had no idea how much they understood.

I told you about a very brave knight named Joel and his adventures fighting a terrible dragon called Gunn.

Each night I told them more stories, but never finished them.

I only hoped that we would construct a context they could understand, that our prayers would be heard, and that we wouldn't have to tell them that the knight who fought so bravely could rest forever after the battle was over.

Luckily, I didn't have to finish that bedtime story.

My kids have outgrown it.

Joel responded better to palliative treatment than anyone expected, so we spent years, not months, learning how to truly love our dying child.

Learning to recognize the embarrassing feeling of withholding love for just a little bit in an attempt to avoid a little bit of pain somewhere in the future.

We survived that self-preservation because Joel is worth loving, even if that love might crush us.

And that intense weakness lesson changed me...

It has won more awards than any of its predecessors.

We started living like Joel and started developing a video game called "That Dragon Cancer".

That was Joel's story.

It was a story of hope in the shadow of death.

It was a story of faith and doubt, and the realization that wrestling with doubt is also part of faith, perhaps the greatest part of faith.

It was a story that began as a miracle and ended as a memorial.

(music) (chuckles) (clapping) (music) (video) Dad: Do you like to jump?

(giggle) I love your giggle.

(Music) (Chuckling) [Journey of Hope in the Shadow of Death] [That Dragon, Cancer] (Music) Playing "That Dragon, Cancer" transforms you into a witness to Joel's life, exploring emotional landscapes and clicking to discover more of what we felt and experienced as a family.

This feels like analyzing interactive poetry. All game mechanics are metaphors, and the more you ask yourself as a designer what you were trying to represent and why, the richer the experience.

We took the vulnerability that Joel gave us and used it to encode the game.

Players expect video games to offer branching narratives, so that every decision they make feels important and can change the outcome of the game.

We subverted the principles of game design, forcing the player to make choices and let them discover for themselves that there was nothing they could do to change Joel's outcome.

And they feel the discovery as deeply and acutely as we felt the night we held Joel in our arms and prayed for hours, stubbornly hoping for grace that we could not create for ourselves.

Everyone wants to win, but what do you focus on instead when you know you can't?

I didn't set out to write a video game, but the moments that change our lives are often the result of hardship rather than glory.

When Joel thought he could live, I let my husband design the game.

I put up a scene or two here and there and some suggestions.

But after the night Joel died, the passion and possibility of sharing Joel's life through our video games, it was something I couldn't resist.

I started writing more, attending team design meetings, adding more ideas, and helping direct scenes.

And I realized that making a video game meant telling a story using a whole new vocabulary.

All the same elements of imagination and symbolism are there, only aligned with player agency and system responsiveness.

It's a rewarding job.

I have to come up with a whole new way to do it, but I love it.

And if it wasn't for Joel, I wouldn't have known it.

Perhaps you were a little surprised by our choice to share the story of terminal cancer through a video game.

Perhaps you, like many people in the past, believe that cancer is not a game.

Well, tell this to any parent with childhood cancer who's used an exam glove to blow it up into a balloon, turned a syringe into a rocket ship, or sent their child through a hospital corridor like a race car on an IV stick.

Because with kids, everything becomes a game.

And when a young child goes through something traumatic, you work even harder to make their life feel like a game because they naturally explore their world through play.

Cancer can take a lot out of a family, but it shouldn't take away play.

If you're listening to me and trying to imagine this family revolving around a dying child, and you can't imagine joy as part of that picture, then we were right to share this story with you. Because that season of our lives was hard.

It was hard to put into words, but it was also pure hope, deep love and joy that I haven't experienced since.

Our video game was an attempt to share that world with people who had never experienced it before. Because we could never have imagined that world until it was ours.

We made a video game that's hard to play.

It will never be a blockbuster.

People have to be prepared to be emotionally invested in stories that they know will break their hearts.

But when our hearts are broken, we heal a little differently.

My broken heart is being healed by a new and deeper compassion. A desire to be there for people in pain, to listen to their stories, and to help them tell their stories in a way that they know they are being watched.

On the night that "That Dragon Cancer" won the Game for Impact Awards, we cheered and smiled and talked with Joel about the impact he had on our lives—all that hard and hopeful night we shared with him when he changed our minds and taught us more about life and love and faith and purpose.

That award doesn't mean as much to me as a single picture of my son, but it represents all the people who have made an impact on my son's life, people I will never meet.

They write me emails from time to time.

They say they miss Joel even though they have never met him.

Thinking that they describe the tears they shed for their son, shared with a 10-year-old watching a YouTube replay, or a doctor playing with a smartphone on an airplane, or a professor introducing Joel to a first-year philosophy student, makes my grief a little less burdensome.

We made a video game that's hard to play.

But for me it feels right. Because life's most difficult moments change us more than any goal we can achieve.

The tragedy touched me more than any dream ever came true.

thank you.

(applause)

The architecture school I attended about 30 years ago happened to be across from an amazing art gallery designed by the great architect Louis Kahn.

I love this building and used to visit it often.

One day I saw a security guard running his hand against a concrete wall.

And it was the way he was, the look on his face, something touched me.

The security guards were impressed by the building, and the architecture proved to have the power to move people.

When I saw that, I remember thinking, "Wow, how does architecture do that?"

I studied design in school, but here I had a heart reaction.

And it touched me to the core.

You want beauty, sensuality, atmosphere, and emotional response.

It is an unfathomable realm that cannot be described in words.

And that is why you are alive. It's an opportunity to challenge yourself.

So, in 2003, we called for designs for a Baha'i temple in South America.

This was the first temple in all of South America.

This is a continental temple and a very important milestone for the Baha'i community. This is because this will be the last continental temple and paves the way for the construction of national and local temples around the world.

And its outline, deceptively simple, was unique in the history of religion. It has a circular room, 9 sides, 9 entrances and 9 paths, allowing you to come to the temple from all directions, 9 symbolizing perfection, completeness.

Baha'i Faith has no clergy, so there is no pulpit or preaching.

And in a world where walls stand in the way, design needed to express the exact opposite.

It had to be open and welcoming to people of all faiths, professions, backgrounds, or no faith at all. A new form of sacred space without patterns or models.

It was like designing the first church in Christianity or the first mosque in Islam.

Therefore, we live in a secular world.

How do you design sacred spaces today?

And how do we define what is sacred today?

I stumbled across this beautiful quote from the Bahá'í writings. It speaks of prayer.

It says that if you offer your prayers and your prayers are answered - which is already very interesting - the pillars of your heart will be reduced to ashes.

And I loved this idea of ​​inner and outer, like when you look at someone and say, 'That person is shining.

And I was thinking, 'Oh my God, how can you make an architectural thing out of it, a building that comes to life with light?

Like alabaster, it comes to life when kissed by light.

And then I drew this sketch. It consists of two layers, with a translucent, light-trapping structure between them.

Perhaps the pure form, the single form of radiance, could be imagined to be all domed, and everything we continued to make looked too much like an egg.

(laughs) It's a lump.

We all know this crazy search. Surrender yourself to the process and live in search of surprises.

And, quite by accident, I remember seeing this little video of plants moving in the light. And that got me thinking about this idea of ​​the temple being able to reach, like the movement, the reach, the reach to God.

We can also imagine that movement in a circle could mean movement and stillness, much like the universe we see in different places.

(Laughter) But just spinning wasn't enough. I needed a form.

The Baha’i writings say the temple is as perfect as a human being can possibly be, but we kept wondering what perfection is.

And I remember stumbled upon this image of a Japanese basket and thought we needed to challenge our Western notions of perfection. I remembered this wonderful silhouette of this cage, this weirdness, and having dimples like you would imagine shoulders and cheekbones, and such an organic shape.

So we drew and created the model. These lines that merge at the top, the soft lines that have become like curtains and translucent veils, and the idea of ​​not just folding but torquing. You will remember the plants and how to reach them.

And this started to take on an interesting shape, I carved the base and made the entrance.

And that's it.

This is this temple with two layers, nine luminous veils, embodied light, and soft flowing lines like luminous curtains.

There were 180 applications from 80 countries and this one was selected.

So we moved on to the next step of how to build it.

I submitted alabaster.

However, alabaster was too soft, so I tried many materials, trying to figure out how to achieve such a shine, and finally settled on borosilicate.

As you know, borosilicate glass is very strong, and breaking a borosilicate rod and melting it at the right temperature resulted in this new material, a new cast glass that took about two years to produce.

And it had this quality that we loved, the idea of ​​embodied light, but on the inside, we wanted something with a softer light, like the lining of a jacket.

Protected on the outside, but protected on the inside.

So we found this little vein with this beautiful stone in a huge quarry in Portugal. If you can believe it, the owners have kept it in their family for 7 generations, waiting for the right project.

Look at this material, it's beautiful.

and the way it glows. There is that transparency.

You can see the structure here.

It lets light through.

And looking down, the nine wings are joined together, structurally and symbolically strong, a great symbol of unity. Pure geometry, a perfect circle with a cross section and plane of 30 meters, perfectly symmetrical, like the concept of sacredness and geometry.

And here you can see the building going up. 2,000 steel nodes, 9,000 steel shards, 7,800 stone shards, 10,000 cast glass shards, every individual shape, the entire superstructure all described, designed, manufactured with aerospace technology, prefabricated from machine to machine, robotic, as you can imagine, a huge team effort, literally hundreds, and 3% of the $30 million budget set in 2006. fits within.

(Applause.) Nine wings are bound together to form a nine-pointed star, and the shape of that star follows the sun through space.

So here it is.

Audience: Wow!

(Applause.) Hopefully, the answer to that beautiful word, "Prayers Answered," will open up in all directions, capturing the light in all sorts of mystical ways, the blue light of dawn, the tent-like white light of the day, the golden light of the afternoon, and of course the reversed, sensual, mystical way of the night.

And this site is interesting. When we applied 14 years ago, we were shown a temple with the Andes in the background.

Our grounds weren't in the Andes, but after nine years, that's exactly where we ended up. The boundaries of the temple are set against a backdrop of pure nature, and when you turn around, there is only a view of the city and interior below, with gardens radiating from each alcove and pathways radiating in all directions.

Last October's opening ceremony was attended by 5,000 people from 80 countries, including indigenous peoples from all over South America, including those who had never left their villages.

And, of course, the temple is of different cultures, professions, people of different faiths, a collective body, and most importantly for me, how it feels inside. The atmosphere is intimate and sacred, and everyone feels welcome.

And if even a few of those who came had the same reaction as the guard, it would indeed be their shrine.

And that makes me happy.

thank you.

(applause)

In my many years working as a palliative care physician, I would like to talk about the most embarrassing incident that has ever happened.

This happened several years ago.

As a consultant, I was asked to see a woman in her seventies, a former British professor, with pancreatic cancer.

I went to see a doctor because of pain, nausea, and vomiting...

When I went to see her, we talked about those symptoms and during the course of the consultation she asked me if I thought medical cannabis might help her.

I remembered everything I had learned in medical school about medical cannabis, but it didn't take long because I hadn't learned anything at all.

So I told her that to my knowledge there was no benefit to medical cannabis.

Then she smiled and nodded, reached into her bedside handbag, and pulled out a stack of about a dozen randomized controlled trials showing that medical marijuana works for symptoms like nausea, pain, and anxiety.

She handed me those articles and said, "Maybe you should read these before giving your opinion..."

doctor. "

(Laughter) So I did.

That night I read all those articles and found many more.

When I came to see her the next morning, I had to admit that there seemed to be some evidence that marijuana could have medical benefits, and suggested that if I was really interested, I should try it.

do you know what she said?

This 73-year-old retired English professor?

“I tried it about six months ago,” she said.

It was amazing.

I have used it every day since then.

It's the best drug I've found.

I don't know why it took me 73 years to discover this. very. "

(Laughter) That's when I realized I needed to learn something about medical cannabis, because what I had been preparing for in medical school had nothing to do with reality.

So I started reading more papers, talking to researchers, doctors, and most importantly, listening to patients.

I ended up writing a book based on these conversations. The book actually revolved around three surprises. Anyway, it was a surprise for me.

One, which I have already alluded to, is that medical cannabis does indeed have some benefits.

These benefits may not be as huge or as amazing as medical cannabis' most ardent proponents would have us believe, but they are real.

Surprise #2: Medical cannabis certainly has its risks.

These risks may not be as gigantic or frightening as some medical marijuana opponents have us believe, but they are nonetheless real.

But it was the third surprise that surprised me the most.

That's because many of the patients I spoke to who turned to cannabis for help didn't turn to it because they thought it was a good, risk-benefit or wonder drug, but because it controlled their disease.

Now you can manage your health in a productive, efficient, effective and comfortable way.

To show what I mean, let me tell you the story of another patient.

Robin was in her early 40s when I met her.

She looked like she was in her late 60's.

She has had rheumatoid arthritis for the last 20 years, her hands are arthritic and gnarled, her spine is crooked and she has had to rely on a wheelchair for mobility.

She looked weak and frail, and I think she probably was physically, but emotionally, cognitively, psychologically, she was one of the toughest people I've ever met.

And when I sat next to her at a medical cannabis dispensary in Northern California and asked her why she turned to medical cannabis, what it had done for her, and how it had helped her, she began by telling me what I've heard from so many patients.

It helped ease her anxiety. It eased her pain. As the pain subsided, I slept better.

And I'd heard it all before.

But then she said something I had never heard before that it gave her control over her life and health.

She was able to use it when and how she wanted, at the dose and frequency that suited her.

And if it didn't work out for her, changes can be made.

Everything was up to her.

The most important thing she said was that she didn't need anyone else's permission. No clinic appointment, doctor's prescription, or pharmacist's instructions were required.

Everything was up to her.

she was in control.

And while that may seem trivial for someone with a chronic illness, it's not, not at all.

When faced with chronic and serious illnesses such as rheumatoid arthritis, lupus, cancer, diabetes and cirrhosis, we lose control.

And notice what I said. It's not "if", it's "when".

At some point in our lives, we will all face chronic serious illnesses that we lose control of.

We will become less functional and some will become less cognitive and unable to take care of ourselves or do the things we want to do.

Our bodies betray us, and we lose control in the process.

And it's terrifying.

It's not just scary, it's scary, scary.

When I talk to my patients, those in palliative care, many of whom are facing life-threatening illnesses, they have many fears of pain, nausea, vomiting, constipation, fatigue, impending death.

But what they fear most is that tomorrow, or at some point in the next month, they will lose control of their health, their lives, their healthcare, and become dependent on others.

So it's no surprise that patients I met at the clinic, like Robin I mentioned earlier, turn to medical cannabis to try and regain control.

But how do they do it?

How do medical cannabis dispensaries like the one where I met Robin regain the control they need for patients like Robin?

And how do mainstream hospitals and clinics do it in a way that at least for Robin couldn't?

what is their secret?

So I decided to find out.

I went to a shady clinic in Venice Beach, California and got a recommendation that allowed me to become a medical cannabis patient.

I got a letter of recommendation that I can buy medical cannabis.

I illegally accepted the recommendation because I am not a California resident. This should be noted.

Also, for the record, I never used the letter of recommendation for a purchase. DEA staff -- (laughter) I love what you do, keep up the good work.

(Laughter) Even though it didn't get me shopping, the letter was invaluable because it allowed me to be a patient.

It let me experience what patients like Robin go through when they go to a medical cannabis dispensary.

And what I went through, what hundreds of thousands of people like Robin go through every day, was truly amazing.

From the moment I walked into a clinic and walked into many of these clinics and clinics, I felt like that clinic, that clinic, was there for me.

First, there were questions about who I am, what kind of work I do, what my goals are in finding medical cannabis prescriptions and products, what my goals are, what my preferences are, what my hopes are, how I think, how I hope this helps me, and what I fear.

Patients like Robin get these questions all the time.

Asking these questions helps me be sure that the other person really cares about me and wants to get to know me.

The second thing I learned in those clinics is that education is available.

Not only are we educated by the people behind the counter, but we are also educated by the people in the waiting room.

People like Robin, who I sat next to, were very happy to tell us who they were, why we use medical cannabis, what it does, how it helps, and gave us advice and suggestions.

These waiting rooms are a veritable treasure trove of interaction, advice and support.

And the third is the people behind the counter.

I was amazed that these people would talk to me, sometimes for an hour or more, about the nuances of this strain and that strain, smoking and vaporizing, edibles and tinctures. All remember, without me buying anything.

Think about the last time you went to a hospital or clinic, and the last time someone spent an hour explaining something like that to you.

The fact that patients like Robin go to these clinics and pharmacies and receive such personalized attention, education and service should truly be a wake-up call for the healthcare system.

People like Robin are turning a blind eye to mainstream medicine and turning to medical cannabis dispensaries. Because medical cannabis dispensaries provide what they need.

If that's a wake-up call for medical institutions, it's a wake-up call that many of my colleagues haven't heard or don't want to hear.

When I talk to my colleagues, especially doctors, about medical cannabis, they say, "Oh, we need more evidence.

More research is needed on benefits, and more evidence is needed on risks. ”

And what do you know? they are right

they are totally right.

More evidence is needed about the benefits of medical cannabis.

We also need to ask the federal government to change the marijuana schedule to Schedule II or change the schedule entirely to allow for that research.

Further research is also needed on the risks of medical cannabis.

Medical Marijuana Risks -- We know a lot about the risks of recreational use, but we know very little about the risks of medical cannabis.

So research is absolutely necessary, but to say that research is needed and changes don't need to be made right now is completely off the mark.

People like Robin want medical marijuana not because they think it's a silver bullet or that it's completely risk-free.

They want it because the context in which it is delivered, managed, and used gives them the control they need over their lives.

And that's an alarm bell that we really need to pay attention to.

But the good news is that there are lessons we can learn from medical cannabis dispensaries today.

And those are the lessons we really need to learn.

These are often small, family-run surgeries run by people without medical training.

And while it's embarrassing to think that many of these clinics and dispensaries provide services, support, and meet the needs of their patients differently than our multi-billion dollar healthcare system, we should be ashamed of it, but we can also learn from it.

And there are probably at least three lessons we can learn from these little pharmacies.

The first is that we need to find ways to give patients more control in small but important ways.

How to interact with your healthcare provider, when to interact with your healthcare provider, and how to use your medication in a way that is effective for your healthcare provider.

My own practice has become more creative and flexible in helping patients safely use medications to manage their symptoms, with a strong focus on safety.

Many of the drugs I prescribe are opioids, benzodiazepines, and other drugs that can be dangerous if overused.

But here's the point.

Overuse can be dangerous, but it can also be ineffective if it is not used in a way that meets the patient's wants and needs.

Therefore, the flexibility of having a safe birth is invaluable to patients and their families.

That's the best.

The second is education.

It's a huge opportunity to learn from some of the tricks of medical cannabis pharmacy and provide further education that doesn't necessarily require a lot of doctor time, or even doctor time, but the drugs we use and why, the prognosis, the course of the disease, and most importantly, the opportunity for patients to learn from each other.

How can you recreate what happens in those clinics and pharmacy waiting rooms?

How patients learn from each other and how people share information.

And last but not least, like a medical cannabis dispensary, putting patients first and making them feel right about what they want and need is why we are here as healthcare providers.

Ask about the patient's wishes, concerns, goals, and preferences.

As a palliative care provider, I ask every patient what they want and what they fear.

But here comes the problem.

Patients do not have to wait until they are chronically seriously ill, often nearing the end of their lives. You don't have to wait to see a doctor like me before someone asks, "What do you want?"

"What are you afraid of?"

It should be built into the way health care is delivered.

We can do this – we really can.

Medical marijuana dispensaries and clinics across the country are solving this problem.

They are trying to solve this problem in a way that the large, mainstream healthcare system has fallen behind for years.

But we can and should learn from them.

All we have to do is swallow our pride. Put aside for a moment the idea that because we have so many letters after our name, because we are experts, because we are chief medical officers in a large healthcare system, we know everything there is to know about how to meet the needs of our patients.

We have to let go of our pride.

You should visit some medical cannabis dispensaries.

We need to figure out what they are doing.

We need to figure out why so many patients like Robin leave mainstream clinics and go to medical cannabis dispensaries instead.

We need to understand what their tricks are, what their tools are, and we need to learn from them.

That way, I think I can, and I definitely should, I can guarantee that every patient will have a better experience.

thank you.

(applause)

Space, the final frontier.

I was only 6 years old when I first heard this word and it totally inspired me.

I wanted to explore strange new worlds.

I wanted to find a new life.

I wanted to see everything the universe has to offer.

And those dreams, those words, took me on a journey, a voyage of discovery, through school, through college, through PhD, and eventually into a professional astronomer.

Well, I learned two surprising things during my PhD, and one was a little disappointing.

In reality, I learned that I wouldn't be piloting a spaceship anytime soon.

But I also learned that the universe is strange, wonderfully vast, and actually too vast to be explored in a spaceship.

So I turned my attention to astronomy, the use of telescopes.

Now I will show you an image of the night sky.

You may see them anywhere in the world.

And all of these stars are part of our local galaxy, the Milky Way.

Now, if you go to a darker part of the sky, a great dark place, perhaps a desert, you might see the center of our Milky Way galaxy spread out before your eyes with hundreds of billions of stars.

And it's such a beautiful picture.

Colorful, isn't it?

Again, this is just one corner of our universe.

You can see a strange black dusty thing all over it.

Now, it's the local dust obscuring the starlight.

But we can do a pretty good job.

We can explore tiny corners of the universe just by looking with our own eyes.

It is possible to do better.

We can use great telescopes like the Hubble Space Telescope.

Well, astronomers put together this image.

It's called the Hubble Deep Field, and they've spent hundreds of hours observing tiny patches of the sky the size of an arm-stretched thumbnail.

We can see thousands of galaxies in this image, but we know that there are hundreds of millions and billions of galaxies throughout the universe, some of which are similar to ours, and others that are completely different.

So you think, "Okay, maybe I can continue this journey."

It's easy. Just looking at the sky with a very powerful telescope is no problem.

If you just do that, you're actually really losing money.

That's because everything I've talked about so far has only used the visible spectrum, what we see, and it's just a fraction, a tiny slice of what the universe has to offer us.

Now, there are also two very important issues with using visible light.

Besides missing all other processes emitting other kinds of light, there are two problems.

Well, the first is the dust that I mentioned earlier.

Dust blocks visible light from reaching us.

Therefore, the deeper you look into space, the less light you see.

Prevent dust from reaching us.

But using visible light to explore space presents a very strange problem.

Please take a break here.

Suppose you are standing on a street corner with heavy traffic.

A car is passing by.

An ambulance approaches.

A high-pitched siren sounds.

(mimicking sirens passing by) The sirens seemed to change pitch as they moved closer and further away.

Ambulance drivers didn't change their sirens to annoy you.

It was a product of your perception.

As the ambulance approached, the sound waves were compressed and shifted higher in pitch.

As the ambulance moved away, the sound waves were stretched and the pitch of the sound dropped.

The same thing happens with light.

Objects moving toward us appear bluer because their light waves are compressed.

As an object moves away from us, its light waves are stretched and appear redder.

Therefore, we refer to these effects as blueshift and redshift.

Now our universe is expanding so everything is moving away from everything else and everything will appear red.

And strangely enough, the deeper you look into space, the more distant objects are moving away faster and farther away, so they appear redder.

So if you go back to the Hubble Deep Field and keep looking deep into space using only Hubble, everything turns red when you get close to a certain distance, and that causes some trouble.

Eventually, when we go very far, everything shifts to infrared and we see nothing at all.

So there must be a way around this.

Otherwise, your trip will be restricted.

We wanted to explore the entire universe, not just the visible, before the redshift began.

I have a technique.

It is called radio astronomy.

Astronomers have used this for decades.

That's great technology.

Introducing the Parkes Radio Telescope, affectionately known as "The Dish."

You may have seen the movie.

And the radio is really nice.

It allows us to look deeper.

Unobstructed by dust, we can see all of the universe, and we can build receivers that receive over a wide band, so redshift is less of an issue.

So what does Parkes see when he looks to the center of the Milky Way?

You should see something amazing, right?

Well, I see something interesting.

All that dust is gone.

As I said earlier, the radio goes straight through the dust, so that's fine.

However, the view is very different.

You can see the center of the Milky Way shining, but this is not starlight.

This light, called synchrotron radiation, is formed from electrons swirling around the cosmic magnetic field.

So the plane shines with this light.

And we can also see strange tufts growing out of it, and objects that don't seem to match what we can see with our own eyes.

But as you can see, the resolution is so low that it's difficult to really interpret this image.

Since radio waves have long wavelengths, their resolution is poor.

This image is also in black and white, so I can't really see all the colors here.

Well, let's fast forward to today.

We can make telescopes that can overcome these problems.

Here is an image of the Murchison Radio Observatory, a great place to build a radio telescope.

Flat, dry, and most importantly, quiet. No cell phones, no Wi-Fi, nothing. But the radio waves are very, very quiet, so it's a great place to build a radio telescope.

Well, the telescope I've been working on for a few years is called the Murchison Widefield Array, and I'm going to show you a little time-lapse of its construction.

This is a group of undergraduate and graduate students based in Perth.

We call them the Student Army, but they volunteered their time to build radio telescopes.

There are no course credits for this.

And they're assembling these radio dipoles.

Just like FM radio and TV, it only receives low frequencies.

And here we are deploying them all over the desert.

The final telescope will cover 10 square kilometers of the Western Australian desert.

And what's interesting is that it has no moving parts.

You basically just put these little antennas on top of the chicken net.

It's pretty cheap, isn't it?

The cable receives the signal from the antenna and sends it to the central processing unit.

And the size of this telescope, and the fact that it was built over the entire desert, gives it better resolution than Parkes.

Well, in the end all these cables go to a unit that sends the signal to a supercomputer here in Perth. And that's where I come in.

(sigh) Radio data.

I've spent the last five years working with very difficult and very interesting data that no one has ever really looked at.

I've spent a lot of time tuning it, running millions of CPU hours on supercomputers, and really trying to make sense of that data.

And with this telescope and this data, we have performed a survey of the entire southern sky, the Galactic and Extragalactic All-Sky MWA Survey (I call it GLEAM).

And I am very excited.

This survey is about to be published, but it is not yet open to the public, so you will literally be the first to see this all-sky southern survey.

So I am happy to share with you some images from this research.

Now imagine you went to Murchison, camped under the stars, and looked south.

I saw the south pole of the sky, the galaxy rising.

Fade in the radio light and this is what we observed in our study.

You can see that the galactic plane is darkened by dust.

Thousands of dots are floating in the sky, hit by synchrotron radiation.

Our closest galaxy, the Large Magellanic Cloud, is orange instead of the familiar blue-white.

There is a lot going on in this. Let's take a closer look.

Looking back toward the center of the galaxy, we first see the low-resolution black-and-white Parkes image I showed you earlier, then fade into the GLEAM view to see a 100x increase in resolution.

Now you have an empty color view, the technicolor view.

Now, this is not a false color view.

These are the actual radio colors.

What I did was color code the lowest frequencies red, the highest frequencies blue, and the middle frequencies green.

And that gives us this rainbow view.

And this is not just false color.

The colors in this image tell us about physical processes taking place in the universe.

For example, when viewed along the plane of the galaxy, the synchrotron, which is mostly reddish-orange, glows, but if you look closely you can see a small blue dot.

Now, if you zoom in, these blue dots are ionized plasma around very bright stars, and what's happening is that they block out red light, so they look blue.

And these can tell us about these star-forming regions within our galaxy.

And we can see them right away.

When we look at galaxies, their colors tell us that they are there.

You can see small bubbles and small circular images around the galactic plane, which are supernova remnants.

When a star explodes, its outer shell sloughs off, collecting matter and moving outward into space, creating a small shell.

The location of supernova remnants has long been a mystery to astronomers.

We know there must be a lot of high-energy electrons in the plane to produce the synchrotron radiation we see, and they're thought to be produced by supernova remnants, but that doesn't seem to be enough.

Fortunately, GLEAM is so good at detecting supernova remnants that we hope to see new papers on it soon.

Okay, so be it.

We've been exploring our little local universe, but we wanted to go deeper and farther.

I wanted to go beyond the Milky Way.

Now, by chance, we see a very interesting object in the upper right corner. This is a local radio galaxy, Centaurus A.

If you zoom in, you can see two giant plumes coming out into space.

And if you look right in the center between these two plumes, you'll see a galaxy just like ours.

it's a spiral. It has a dust lane.

A normal galaxy.

But these jets are only shown on radio.

If we peered into the visible, we wouldn't even notice they were there, and they were thousands of times larger than the main galaxy.

what happened? What creates these jets?

At the center of every known galaxy is a supermassive black hole.

Black holes are currently invisible. That's why they are called so.

All we see is the deflection of ambient light, and occasionally when a star or gas cloud enters its orbit, it is torn apart by tidal forces, forming what is called an accretion disk.

The accretion disk glows brightly in X-rays, and the enormous magnetic field can propel matter into space at nearly the speed of light.

So these jets can be seen on the radio and this is what our research covered.

Well, now we have a radio galaxy in sight. that's nice.

But if you look at the top of the image, you'll see another radio galaxy.

A bit small, but that's just because it's far.

OK. Two radio galaxies.

I see this. This is fine.

But what about the rest?

Perhaps they are just stars.

it's not.

They are all radio galaxies.

Each dot in this image is a distant galaxy millions to billions of light years away with a supermassive black hole at its center pushing matter into space at nearly the speed of light.

It's amazing.

And this survey is even larger than the one presented here.

If you zoom out as far as possible, you'll find 300,000 of these radio galaxies.

So it really is an epic journey.

We have found all these galaxies all traced back to the very first supermassive black holes.

I am very proud of this and it will be published next week.

That's not all.

I explored the farthest reaches of the galaxy in this survey, but there is something more to this image.

Now take you to the age of dawn.

When the universe was formed, it was the Big Bang, leaving the universe as an ocean of neutral hydrogen.

And when the first stars and galaxies switched on, they ionized hydrogen.

Thus, the universe went from neutral to ionized.

It carved a signal around us.

Everywhere it permeates us like the Force.

Now, that happened a long time ago, so the signal has been redshifted and is now at a very low frequency.

Same frequency as my survey, but very dark.

This is a billion times smaller than any object I have studied.

Therefore, our telescopes may not be sensitive enough to receive this signal.

But there are new radio telescopes.

So you can't have a spacecraft, but you can have one of the world's largest radio telescopes.

We are building a new radio telescope called the Square Kilometer Array, which is 1,000 times larger than MWA, 1,000 times more sensitive, and has even better resolution.

So we need to find tens of millions of galaxies.

And perhaps, deep within that signal, we will see the first star or galaxy that switches on, the beginning of time itself.

thank you.

(applause)

I would like to tell the story of a certain girl.

But I can't tell her real name.

So let's call her Hadiza.

Hadiza is 20 years old.

She is shy, but her bright smile is very nice.

But she is in constant pain.

And she will probably be on drugs for the rest of her life.

Want to know why?

Hadiza, a Chibok girl, was kidnapped by Boko Haram terrorists on April 14, 2014.

However, she manages to escape by jumping out of the truck carrying the girls.

However, when he landed, he broke both of his legs and had to lie on his back and hide in the bushes.

She said she feared Boko Haram would come back to pick her up.

She was one of 57 girls who escaped by jumping out of the truck that day.

This story, of course, caused ripples all over the world.

People like Michelle Obama and Malala voiced their protests, and around the same time, I was sent from London, living in London at the time, to Abuja to cover the first ever Nigerian-hosted World Economic Forum.

But when we arrived, it was clear that the town only has one floor.

We put pressure on the government.

We asked tough questions about what they were doing to bring the girls back.

Naturally, they weren't very happy with our set of questions, but let's just say we received our fair share of "alternative facts."

(Laughter.) Influential Nigerians said at the time that we were naive, that we didn't understand the political situation in Nigeria.

But they also said that the Chibok girls story was a hoax.

Sadly, this hoax persists and even today there are people in Nigeria who believe that the Chibok girls were not kidnapped.

But I was talking to people like this, devastated parents who told me that they had followed the truck carrying their daughter into the forest of Sambisa the day her daughter was abducted by Boko Haram.

They were armed with machetes, but were forced to turn back because Boko Haram had guns.

For two years, news stories inevitably moved on, and for two years, not much was heard about Chibok girls.

Everyone thought they were dead.

However, in April of last year, I was able to obtain this footage.

This is a still from a video taken by Boko Haram as a living testimony, and I obtained this video through a source.

But before I could publish it, I had to go to the northeastern part of Nigeria and talk to my parents to see it.

I didn't have to wait too long for confirmation.

One of the mothers told me that if she could have watched the video, reached for the laptop, and pulled her child out of it, she would have done so.

For those of you who are parents like me, you can only imagine the pain the mother must have felt.

This video will start negotiations with Boko Haram.

And a Nigerian senator told me that they joined the negotiations because they long believed that the Chibok girls had died because of this video.

Last October, 21 girls were released.

Unfortunately, about 200 of them are still missing.

I must honestly confess that I am not a cool observer of this story.

The thought of wasted opportunity to rescue these girls infuriates me.

It infuriates me to think of parents saying that if these girls were the daughters of a rich or powerful person they would have been found sooner.

And I'm furious, although I'm sure the hoax story caused the delay. That was part of the reason for their late return.

This shows me the deadly danger of fake news.

So what can we do about it?

Google and Facebook have very smart people, smart engineers who are using technology to stop the spread of fake news.

But more than that, I think everyone here, you and I, have a part to play in it.

We share content.

We are the ones who share stories online.

In this day and age, we are all publishers and we are all responsible.

In my work as a journalist, I check and verify.

I trust my intuition, but I ask the tough questions.

Why is this person telling me this story?

What do they get from sharing this information?

Do they have hidden intentions?

We all strongly believe that we should start asking tougher questions about the information we find online.

Studies show that some of us don't read beyond the headline before sharing an article.

Who in here did that?

I know.

But what if we stop taking the information we find at face value?

What if we paused and considered the impact of the information we convey, and the potential for that information to incite violence and hatred?

What if we paused and thought about how the information we share affects reality?

Thank you for your attention.

(applause)

Right out of college, I got a job at a consulting firm.

At the orientation, the leaders gave me some advice.

There was one piece of advice I will never forget.

He told us to 'make it manageable'.

Given how naive I was at the time, I took his advice to heart.

I said to myself, "Yes, I will be the ultimate team player."

I will do everything I am told.

It will be easier for you to manage. ”

It wasn't until I entered graduate school and witnessed first-hand the criminal conduct of scientists and engineers in the Flint, Michigan water crisis that I realized how dangerous and surprisingly common this mindset is.

Don't get me wrong. The Flint Water Crisis is one of the most egregious environmental injustices of our time.

Over 18 months, 100,000 residents, including thousands of young children, were exposed to contaminated drinking water containing high levels of lead.

Lead is a potent neurotoxin that causes cognitive and developmental impairment, and is especially harmful to growing fetuses and young children.

We have known about the dangers since the days of the Roman Empire.

Among numerous health problems, 12 people died from Legionnaires' disease.

Flint's water infrastructure, an intricate network of underground pipes, has been severely damaged.

And although the water quality is gradually improving and the pipes are being replaced now, more than two years later, the water is still not safe to drink.

So people are still in shock.

They ask themselves, "How did this happen?"

Simply put, the crisis began when emergency managers appointed by the Michigan governor decided to switch water sources to local rivers to save money.

However, this situation has persisted for so long because Michigan government agencies and federal scientists and engineers did not follow federal regulations regarding the handling of water rights.

Moreover, they actively broke the law and orchestrated a cover-up.

They publicly claimed that the brown, stinky water that came out of the taps was safe to drink, while ridiculing residents for help.

Local, state and federal systems have failed utterly to protect the most vulnerable, leaving entire populations to fend for themselves.

Now, in the midst of this injustice, the people of Flint were uniting.

Among them were the wonderful women of Flint, concerned mothers for their children, who came together to form many grassroots coalitions, and these groups began to protest and demand change.

The group also sought help from outside scientists, and several responded.

Among them is Miguel del Toral, a water expert with the US EPA (Environmental Protection Agency), who actually wrote this science memo and sent it to Michigan and the federal government to draw attention to the issue.

He was characterized as a "rogue employee" and silenced.

A team of students and scientists here at the University of Tech, led by Professor Mark Edwards, worked with Flint residents to conduct a citywide test to prove that Flint's water is indeed polluted and, in some households, toxic.

We demonstrated what Flint has been screaming for months and put it on the internet for the world to see.

Now, when I was participating, when I said yes to this, I had no idea what I was getting into.

But every moment of this trip was worth it.

This was science that served the public.

This is what I came to graduate school for, or rather, how I spend my life.

So this coalition, this unlikely coalition of citizens, pastors, journalists, scientists, has come together to use science, advocacy, and action to uncover the truth.

A local pediatrician found that the number of childhood lead poisonings actually doubled in Flint during the crisis.

And Michigan was forced to recognize the problem and take corrective action.

This group and many others protected Flint's children.

A few months later, President Obama stepped in and declared a federal emergency, and now the city of Flint has more than $600 million in funding for a complete overhaul of its health care, nutrition, education and water infrastructure.

But the arrogance and callous disregard for public health exhibited by these government scientists and engineers is incredible.

The unhealthy culture that prevails within these groups, where the emphasis is on complying with regulations and ticking boxes rather than adhering to public health, is truly astonishing.

Consider this email written by an EPA employee. "I don't know if Flint is a community that we want to risk and act on."

The dehumanization of entire nations is even more evident.

Now, contrast this with the first precept of engineering, which I believe should be the first law of mankind: to put public health, safety, and welfare above all else.

This is the Hippocratic Oath that we hardly ever acknowledge, let alone accept.

So when scientists and engineers fail as doctors do, people can get hurt and even die.

Society will pay a heavy price if professionals and even students fail to achieve it.

Deep in history, there is a man whom I deeply admire, an engineer named Peter Palczynski.

He lived during the Soviet Union.

And Palczynski repeatedly got into trouble for his radical honesty, which was willing to point out the grave flaws in the Soviet rash pursuit of rapid industrialization.

Everyone was expected to follow orders from above.

Anyone asking questions or providing feedback was not welcome.

The Soviet Union created the largest army of engineers the world had ever seen, but most of them were mere cogs in a gigantic machine headed for destruction.

Palczynski, meanwhile, pleaded with engineers to look at the economic, political and social implications of their actions. In other words, it emphasizes public nature more.

His fearless voice of reason was seen as a threat to the political system, and Joseph Stalin executed him in 1929.

Palczynski's view of technocrats is still very popular and is very different from the still very common view of the cool-headed researcher working in an ivory tower lab or the geeky engineer working in a cubicle.

Undoubtedly brilliant, but somehow detached from the world and showing little emotion – like Spock from Star Trek, right?

this man.

(Laughter) Let's do the Spock salute.

I don't think it will work...

See, I can't be Spock.

Thankfully, I can't be Spock.

(Laughter) I was reminded of this difference by a recent article in a very respected scientific journal. The article characterized our Flint work as driven by "youthful idealism" and "Hollywood dramatic sensibility."

It calls on scientists to protect research funding and institutions at all costs, no matter how legitimate the cause.

And if you feel you have to get involved in something, even if it's an emergency, seek out activist groups and NGOs and get the full support of academia - whatever that means - before you get involved.

Not a word is said about our moral and professional obligations to prevent harm to the public. Also, not a word is said about the fact that we have the expertise, resources, and for some, even tenure, to accomplish this task.

I am not saying that all scientists should be activists.

Speaking up can have real and sometimes very painful consequences.

But to completely deny this idea, this possibility, in order to protect research funding, is just the cry of a selfish coward, and these are not the ideals we want to convey to our students.

So you might think “All this sounds great, but it can never completely change organizational culture or instill in students and professionals the mindset of seeing their work as a public good, a science that serves the public.”

Maybe so.

But maybe the big reason is that we don't train our students?

Because, if you look closely, our education system today is focused on producing what former Yale professor Bill Dereschewitz calls "the bright sheep": young people who are smart, ambitious, yet somehow risk-averse, timid, directionless, and sometimes self-indulgent.

Now, kids… you know, we were all into science when we were kids, but somehow we spend most of our time in high school and college just going through hoops and doing things to polish our resumes instead of just sitting around and figuring out what we want to do and who we want to be.

As such, the empathy index among college graduates has dropped dramatically over the past two decades, while the narcissism index has increased.

There is also a growing alienation culture between engineering students and the general public.

We are trained to build bridges and solve complex problems, but we are not trained to think and live in this world, or how to be citizens.

My undergraduate years were clearly a period of job preparation, and I cannot express in words how suffocating and painful it was at times.

So some believe that the solution for great engineers and scientists is more technical training.

Maybe so.

But where is the discussion about ethical decision-making, character building, discerning right from wrong, and so on?

Think about this project that I deeply love and admire.

Its name is "Heroic Imagination Project".

The brainchild of Dr. Phil Zimbardo of Stanford Prison Experiment fame, the program aims to train schoolchildren around the world to see themselves as heroes in waiting or heroes in training.

So these young minds develop skills and virtues over time so that they can stand up and do the right thing when the opportunity presents itself, whatever the occasion may be.

In other words, anyone can be a hero.

Let's think about that idea for a second.

Why shouldn't science and engineering be taught that way? Heroism and public service are seen as important values, in fact, because heroism is often the antidote not only to public indifference, but often to systemic evil as we saw in Flint.

So come dream with me what a 21st century scientist-slash-engineer might look like. Individuals who are motivated to master science so that they can serve society and who recognize the tremendous power of their knowledge and decisions. People who have always cultivated moral courage and who understand that conflicts and controversies are not necessarily a bad thing if they are of the ultimate loyalty to their people and to the planet.

They are the people who will rise up like we did in Flint — not to be saviors or media heroes, but to be altruistic, fundamentally good actors, and you and I can trust.

Imagine cultivating that public mindset in your classes, service trips, and even college and high school activities. Then these young minds will carry on with their ideals when they enter the real world, whether in consulting, academia, policy-making, or even the president of a country.

Some of humanity's greatest challenges lie ahead of us. Contaminated drinking water is just one example.

We definitely need more leverage – nay, we desperately need more – compassionate good people and public-focused scientists and engineers who strive to do the right thing but are not easy to manage.

thank you.

(applause)

last year ...

It was hell.

(Laughs) I ate Nigerian 'Jolof' for the first time.

(Laughter.) To tell you the truth, I was personally going through quite a mess.

I had an anxiety attack in the face of extreme stress.

There were days when I couldn't work.

There were days when I wanted to lie in bed and cry.

My doctor asked if I wanted to talk to a mental health professional about my stress and anxiety.

mental health?

I stood up and shook my head violently in protest.

I felt a deep sense of shame.

I felt the weight of prejudice.

I have a loving and supportive family and incredibly loyal friends, but I couldn't bring myself to think of telling anyone about my pain.

I felt suffocated by the rigid structure of African masculinity.

"People are in serious trouble, Sang.

Get over yourself! "

The first time I heard the word “mental health” was when I was a boarding school student at Pedis School in New Jersey, fresh off the boat from Ghana.

I had just gone through the brutal experience of losing 7 loved ones in the same month.

The school nurse, worried about what I was going through, asked about my mental state, may God bless her soul.

“Is she mentally unstable?” I thought.

Doesn't she know I'm an African man?

(laughter) Like Okonkwo in Things Fall Apart, we African men don't process or express our emotions.

we deal with our own problems.

(Applause.) We're working on the problem.

I called my brother and laughed about "oibo" people (white people) and their weird ailments, depression, ADD and their "weird stuff."

Growing up in West Africa, when people used the word 'psychic' all I could think of was madmen with dirty dreadlocks walking half-naked in the streets.

We all know this guy.

Our parents warned us about him.

"Mama, Mama, why is he so angry?"

"Drugs!

Just turn to drugs and you'll be like him. ”

(laughter) If I get pneumonia, my mother will immediately take me to a nearby hospital for treatment.

But if you dare declare depression, the local pastor will cast out demons in your village and blame witches.

According to the World Health Organization, mental health is the ability to cope with normal stressors in life. Do productive and fruitful work. And you will be able to contribute to your community.

Mental health includes emotional, psychological and social health.

Globally, 75% of people with mental illness are found in low-income countries.

However, most governments in Africa invest less than 1% of their healthcare budgets in mental health.

To make matters worse, there is a serious shortage of psychiatrists in Africa.

Nigeria, for example, is estimated to have 200 people in a country of about 200 million people.

Across Africa, 90 percent of people lack access to treatment.

As a result, we are silenced by prejudice and suffer in solitude.

We Africans often respond to mental health with distance, ignorance, guilt, fear and anger.

A study conducted by Arboleda-Flores asked directly, "What causes mental illness?"

Substance abuse was cited by 34% of Nigerian respondents. Nineteen percent said it was God's wrath and God's will -- (laughter) 12 percent was witchcraft and spiritual possession.

However, few cited other known causes of mental illness, including genetics, socioeconomic status, war, conflict, and loss of loved ones.

Stigma about mental illness often leads to ostracism and demonization of patients.

Photojournalist Robin Hammond documents some of these abuses...

In Uganda, in Somalia, and here in Nigeria.

For me, stigma is personal.

In 2009, I got a panicked phone call in the middle of the night.

My best friend in the world, a bright, philosophical, charming, fashionable young man, was diagnosed with schizophrenia.

We have witnessed some of our friends growing up feeling the backlash.

I heard Snickers.

I heard a whisper.

"Did you hear he went mad?"

(Crew English) "He's gone crazy!"

Derogatory and demeaning comments about his medical condition. Words you would never say to a cancer or malaria patient.

Somehow, when it comes to mental illness, our ignorance undermines all empathy.

I stood by his side while his community isolated him, but our love never wavered.

Implicitly, I became passionate about mental health.

Inspired by his plight, I helped found a group of alumni with a special interest in mental health at college.

And during my tenure as a graduate school resident tutor, I supported many undergraduates with mental health issues.

I saw African students suffering because they couldn't talk to anyone.

Even with this knowledge and their stories, I too suffered and was unable to tell anyone when I was faced with such deep fears that I was going insane.

All of us, especially Africans, need to understand that mental conflict does not undermine our masculinity, nor does trauma stain our strength.

We need to consider mental health as important as physical health.

We must stop suffering in silence.

We must stop stigmatizing illness and traumatizing those who suffer.

talk to friends

Talk to your loved ones.

Please consult a medical professional.

Please be vulnerable.

Do so with confidence that you are not alone.

Talk to me if you're in trouble.

Being honest about how we feel does not make us weaker. it makes us human.

It's time to end the stigma associated with mental illness.

So next time you hear the word 'psychic', don't just think of the madman.

think of me

(Applause.) Thank you.

(applause)

How does a group get anything done? Right?

How do you organize a group of individuals so that the group's deliverables are of coherent and enduring value, rather than mere chaos?

And the economic framework for that problem is called adjustment costs.

And coordination costs are basically all of the financial or institutional difficulties in coordinating the group's deliverables.

And for coordination costs there is a classic answer. In other words, if you want to coordinate the work of a group of people, you have to set up an institution. You procure some resources.

You found something. It can be private or public.

It can be commercial or non-commercial. It doesn't matter if it's big or small.

However, these resources are available collectively.

You find an agency and use it to coordinate group activities.

Recently, as the cost for groups to communicate with each other has dropped significantly, a second answer has emerged: building cooperation into the infrastructure to design systems that coordinate the output of groups as a by-product of system operation, regardless of organizational model, since communication costs are one of the major inputs to coordination.

I would like to talk about it today.

I'll use some fairly specific examples, but always refer to the broader subject.

So, first, I'll try to answer the question you've probably asked yourself at least once, and the question the Internet was designed to answer. Where can I get a picture of a roller skating mermaid?

That's why New York City hosts a Mermaid Parade on the first Saturday of every summer at Coney Island, a charming local run-down amusement park. It's an amateur parade. People gather from all over town. People are all dressed up.

Some people don't dress very well.

Men and women of all ages are dancing in the streets.

Let's have a good time together with colorful characters.

And I would like to draw your attention to these pictures rather than the Mermaid Parade itself, albeit fascinating.

i didn't take them. how did you get it?

The answer is "I got it from Flickr".

Flickr is a photo sharing service that allows you to take, upload and share photos on the web.

Flickr recently added a feature called tagging.

Tagging was pioneered by Delicious and Joshua Schachter.

Delicious is a social bookmarking service.

Tagging is the collaborative infrastructure answer to classification.

right? If I had given this talk last year, I wouldn't be able to do what I am doing now. Because I couldn't find these pictures.

But instead of saying you'd have to hire a class of librarians to organize your uploaded photos, Flickr simply gave users the ability to characterize their photos.

So I was able to draw in a photo tagged "Mermaid Parade". All 3,100 photos taken by 118 photographers have been aggregated and listed in reverse chronological order under this nice and neat name.

And then I could go get them and show them a little slideshow.

So what hard problem is being solved here?

It's a matter of coordination, most broadly, isn't it?

There are so many people on the internet, but only a few have pictures of the Mermaid Parade.

How do you get people to contribute to that work?

The classic answer is to form an organization, right?

Engaging them in prearranged structures with clear goals.

And I would like to draw your attention to some side effects of choosing the institutional route.

First of all, when you create an organization, you have management problems, right?

You can't just hire an employee, you must also hire other employees to manage that employee and enforce organizational goals.

Then we need to introduce the structure in the right place.

right? We need an economic structure.

Must have a legal structure.

A physical structure is required.

And that incurs additional costs.

Third, the establishment of institutions is inherently exclusive.

I noticed that not everyone with a photo was aligned.

You can't hire everyone in your company, can you?

Not everyone can be recruited into a government organization.

Some people should be left out.

And fourth, that elimination results in the professional class in the end. See the change here.

We went from being people with pictures to being photographers.

right? We have created a professional photographer class whose goal is to capture the Mermaid Parade and whatever else you are sent to shoot.

Incorporating collaboration into the infrastructure that is Flickr's answer keeps people in place, leaving problems to individuals rather than shifting them to individuals.

By coordinating the coordination within the group, the same results can be achieved without organizational problems.

Forfeit institutional obligations.

With volunteerism, you lose the right to shape people's work, but you also reduce organizational costs, which gives you more flexibility.

What Flickr does is replace planning with coordination.

And this is a general aspect of these cooperative systems.

right. You've probably experienced this in your life when you bought your first cell phone and stopped making plans.

You just said, "I'll call you when I get there."

"Call me when you're done." Right?

It is a point-to-point replacement of coordination with planning.

right. That's what groups can do now.

Instead, just say you need to plan ahead, make a five-year prediction of what Wikipedia will be, or whatever, let's coordinate the group's efforts to deal with it as we go along. Because we are already well adjusted, we don't have to deal with the problem of deciding what to do in advance.

Here's another example. This one feels a little more modest.

These are photos on Flickr tagged "Iraq".

And everything that was hard about the adjustment costs in Mermaid Parade is even harder here.

I have more pictures. There are also photographers.

It spans a wider geographical area.

Photos are distributed over a long period of time.

And worst of all, the number at the bottom, about 10 per photographer, is a lie.

While this is mathematically correct, it doesn't say anything important in practice. Because averages don't really matter in these systems.

This is the point.

Here is a chart of photos tagged with Iraq taken by 529 photographers who submitted 5,445 photos.

And it is ranked in order of the number of shots taken by each photographer.

Here and at the end, you'll find our most prolific photographer taking about 350 photos. Also, you can see that there are several people who have taken hundreds of photos.

Then there are dozens of people who have taken dozens of photos.

And then I took less than 10 photos by the time I got here, and then this long, flat tail showed up.

And by the time you reach the middle stage, you'll have hundreds of people posting just one photo each.

This is called a power law distribution.

This is common in open-ended social systems where people can contribute as much or as little as they want. This is what you get in most cases. right?

The math behind the power law distribution is that a person in the nth position is doing about n times less of what is being measured than a person in the first position.

Therefore, we would expect the 10th most prolific photographer to contribute about 1/10th of the photos, and the 100th most prolific photographer to contribute only about 100, the same as the most prolific photographer.

Therefore, the ends of curves can be sharper or flatter.

But this basic calculation takes into account both steep slopes and long, flat tails.

And strangely, in these systems, as the system grows, the system does not converge. They branch further.

Larger systems have larger heads and longer tails, resulting in greater imbalance.

You can see that the curve is clearly skewed to the left. Take the top 10 percent of photographers contributing to this system, and they account for three-quarters of the photos taken. Only the top 10 percent most prolific photographers.

Even if it goes down to 5%, it still takes up 60% of the photo.

Even going down to 1% and excluding 99% of the group work still takes up almost a quarter of the photo.

And because of this left weighting, the mean is actually far to the left here.

It sounds strange to our ears, but what ends up happening is that 80% of donors donate below average amounts.

It sounds strange because we expect the average and median to be about the same, but they're not.

This is the calculation underlying the 80/20 rule. right?

This is what really happens every time I hear someone talk about the 80/20 rule. right?

Twenty percent of your products account for 80 percent of your revenue, and 20 percent of your users use 80 percent of your resources. This is the form people are talking about when it happens.

Educational institutions have only two tools: the carrot and the stick.

And the 80% zone is a no-carrot-and-stick zone.

The cost of running a facility means that the work of such people cannot be easily undertaken within the organizational framework.

The institutional model always goes left and treats these people as employees.

The organization's response is, I can get 75 percent of my value for 10 percent of my employer, great, that's what I do.

Why should you give up a quarter of the value in a collaborative infrastructure model?

If your system is designed so that you have to give up a quarter of your value, redesign your system.

Don't incur the costs of preventing these people from contributing.

Build a system that allows anyone to donate.

Therefore, the coordination response does not ask how these people are as employees, but rather what their contributions are. right?

Here is a Flickr user called Psycho Milt. He posted only one photo titled "Iraq".

And here is the photo. right. It says "Bad Day at Work".

right? So the question is, do you want that picture? Yes or no.

The question is not whether Psycho Milt is a good employee.

And the tension here is between institutions as enablers and institutions as obstacles.

When you're dealing with the far left of these distros, the people who spend a lot of their time mass-producing the material they need, it's the world of organizations as enablers.

You can hire those people as employees, coordinate their work, and get some results.

But when you're here and psychomilts all over the world are adding photos one at a time, it's a hindrance system.

Educational institutions hate to be called a disability.

One of the first things that happens when you institutionalize a problem is that the first goal of the institution immediately shifts from a nominal goal to self-preservation.

And the actual goal of this agency goes from 2 to n.

right? So when an organization is told that those are obstacles and there is another way to adjust the values, it experiences a reaction a bit like the Kubler-Ross phase (laughter). They are told they have a fatal disease, and their reactions are denial, anger, bargaining, and acceptance.

Most of the cooperative systems we've seen so far haven't existed long enough to reach the acceptance stage.

So many institutions are still in denial, but there's been a lot of both anger and bargaining these days.

A nice, small example is currently in progress.

In France, bus companies are suing people for carpooling. That's because the fact that bus companies have aligned themselves to create collaborative value is robbing them of revenue.

You can read about this in The Guardian.

It's actually very funny.

The bigger question is what to do with the values ​​here.

right? How do you catch it?

And like I said, agencies are prevented from capturing it.

Steve Ballmer, now Microsoft's CEO, criticized Linux several years ago and said, "Oh, this business of thousands of programmers contributing to Linux, this is a myth.

We looked at who contributed to Linux, and most patches are written by programmers who have only done one thing. ”

This delivery can be heard under that complaint.

From Ballmer's perspective, you can see why that's a bad idea, right?

We hired this programmer, hired him, drank Coke, and played foosball for three years. And then he had an idea.

(laughs) Right? Bad recruitment. right?

(Laughter) Psycho Milt's question is, was it a good idea?

What if it's a security patch?

What if it was a security patch for a buffer overflow exploit? Windows has some patches, although they are not part of it.

You want that patch, right?

Without moving into a professional relationship with an organization, the fact that a programmer can improve Linux once and never see it again should frighten Mr. Ballmer.

Because this kind of value cannot be reached in the classical institutional framework, but is part of the cooperative systems of open source software, file sharing and Wikipedia. I used a lot of examples from Flickr, but there are actually stories all over the place about this.

Meetup is a service founded to help users find locals who share their interests and affinities, and hold real-world meetings offline in cafes, pubs, and more.

When Scott Heiferman founded Meetup, he envisioned it being used for railroad observers and cat lovers—classic affinity groups.

The inventor doesn't know what the invention is.

Are you currently the #1 group on Meetup, most chapters in most cities, most members, and most active?

mothers who are housewives. right?

In an increasingly suburbanized dual-income United States, stay-at-home moms really lack the social infrastructure that comes from large families and small local neighborhoods.

So they're reinventing it with these tools.

Meetup is a platform, but the value here is in social infrastructure.

If you want to know how technology will change the world, don't pay attention to 13-year-old boys, pay attention to young mothers. Because they have no support for technology that does not materially improve their lives.

It's a lot more important than the Xbox, but a lot less flashy.

I think this is a revolution.

I think this is a really big shift in how relationships work.

And I use the word admonishingly.

It is a revolution in that it is a change of equilibrium.

This is a completely new way of doing things, but it comes with new drawbacks.

In the United States right now, a woman named Judith Miller is in prison for failing to provide sources to a federal grand jury -- she's a reporter for the New York Times -- in a very abstract and difficult-to-trace case, for failing to provide her sources.

And journalists are rallies in the streets to improve shielding.

The Shield Act, our law to prevent journalists from having to betray their sources, is more like a patchwork of state laws.

But this is happening with the rise of web logging.

Web logging is a prime example of mass amateurization.

Publishing is de-professional.

Would you like to tell the world what you are thinking today?

It is a free operation that can be done at the touch of a button.

Because of that, the professional class of publishing has fallen into the ranks of mass amateurization.

So the shield law, which we want a truth-telling professional class as much as we want it, is becoming more and more incoherent because the system is becoming incoherent.

There are people in America right now who are trying to tie themselves down to find out if bloggers are journalists.

And the answer to that question doesn't matter because it's not the right question.

Journalism was the answer to the even more important question of how to keep society informed.

How do they share ideas and opinions?

And if there is an answer to what is happening outside the professional framework of journalism, it makes no sense to take a professional trope and apply it to this dispersed class.

Therefore, while we want Shield Law, its background, the system to which Shield Law was attached, is becoming incoherent.

Here's another example.

Pro-ana, pro-ana group.

These are groups of teenage girls who have taken advantage of weblogs, message boards, and other types of collaborative infrastructure and have used them to create support groups of their own choosing to stay anorexic.

They post pictures of skinny models that they call "Inspiration".

They have little slogans like "Save from Hunger".

They also have a Lance Armstrong-inspired bracelet, and this red bracelet shows me trying to maintain my eating disorder in a small group.

They exchange advice, such as cleaning the toilet or toilet if you feel like eating something. Feelings pass.

We are used to supporting helpful groups.

We take the stance that support groups are inherently beneficial.

However, the support group's logic turned out to be value-neutral.

A support group is a small group that wants to maintain a lifestyle within the larger group.

Now, if a large group is a bunch of drunks and a small group wants to keep sober, we think it's a great support group.

But when that small group is teenage girls who want to remain anorexic of their own accord, we're appalled.

What happened was that the support group prescriptive goals we were accustomed to came not from the infrastructure, but from the institutions that made up the support group.

Once the infrastructure was made generally available, it became clear that the support group's logic was accessible to everyone, including those pursuing these kinds of goals.

Therefore, these changes have not only advantages, but also significant disadvantages. And, of course, in the current environment it suffices to mention briefly the activities of non-state actors who seek to influence and exploit world affairs.

This is a social map of the hijackers and their associates who carried out the 9/11 attacks.

It was created by analyzing communication patterns using many of these tools. And make no mistake, intelligence agencies around the world are doing the same today in response to last week's attacks.

Now comes the part where I tell you what happens as a result of all this, but I'm running out of time. That's good. I do not know.

(laughs) Yes. As with the printing press, if it's really revolutionary, it doesn't take us from point A to point B.

It takes us from point A into chaos.

The printing press caused 200 years of turmoil, moving from a world where the Catholic Church organized political power to the Treaty of Westphalia, when we finally knew what the new unit was, the nation-state.

Now, I don't expect 200 years of chaos as a result of this. 50.

In a fifty-year period in which loosely aligned groups are increasingly influential, the more those groups shirk traditional institutional obligations (such as predetermining what will happen and profit motives), the more will be their influence.

And institutions will come under more and more pressure, and the more they will be controlled and the more they will rely on information monopolies, the greater the pressure will be.

And it will happen one arena at a time, one institution at a time. The power is general, but the results are tangible.

So the point here is not 'this is great' or 'we will see a shift from just institutions to just collaborative frameworks'.

It gets much more complicated than that.

But the point is, it's going to be a massive recalibration.

And we can see it in advance and we know it's coming, so my argument is essentially, "We might be able to do it well."

thank you very much.

(applause)

"look at me!"

These words made me an eye contact coach.

I am Ivan's mother. he is 15 years old

Ivan is autistic and cannot speak. Communicate through your iPad. On iPad, his entire world of words exists in images.

He was diagnosed when he was two and a half years old.

I still remember that day painfully.

My husband and I were really at a loss. I didn't know where to start.

With no internet and no ability to search for information on Google, we took the first step out of sheer intuition.

Ivan didn't try to maintain eye contact, lost the words he knew, and didn't respond to names or when we asked him, as if the words were noise.

The only way to know what was happening to him or what he was feeling was to look into his eyes.

However, the bridge is broken.

How can I teach him about life?

When I was doing what he liked, he would look at me and we connected.

So I committed myself to working on those things with him, trying to have more moments of eye contact.

We spent hours playing tag with his sister Alexia.

He was looking around for us and in that moment I felt he was alive.

It also keeps a record of the time spent in the swimming pool.

Ivan has always had a passion for water.

When he was two and a half years old, I took him to the indoor pool on a rainy winter day. Because I go swimming even on rainy days.

We were on the highway and we took the wrong exit.

He suddenly burst into tears and continued crying inconsolably until I turned around.

Only then did he calm down.

How could a two and a half year old not respond to his name and know the exact route in the middle of rain and fog and blind?

That's when I realized that Ivan had an exceptional visual memory and that would be my way.

So I started taking pictures of everything and showing them what life was like by showing them pictures.

Even now, it's Ivan's way of communicating what he wants, what he needs, and how he feels.

But it wasn't just Ivan's eye contact that mattered.

So did everyone else.

How can we get people to see not just his autism, but his humanity and all he has to offer? all he can do. What do he likes and dislikes, just like us?

But I had to sacrifice myself for that.

It took strength to let him go, and it was very difficult.

Ivan is 11 years old and went to get treatment in a neighborhood near our house.

One afternoon, while I was waiting for him, I entered the greengrocer. It was a typical neighborhood store with a little bit of everything.

While shopping, I started talking to the owner, Jose.

I told him about Ivan, that he has autism, and that I wanted him to be able to walk the streets alone without anyone holding his hand.

So I decided to ask Jose if Ivan would come by around 2pm on Thursday and help me arrange the water bottles on the shelf. Because he loved to be organized.

And as a reward, I was able to buy him his favorite chocolate cookie.

He immediately said yes.

It was like this for a year. Ivan went to Jose's greengrocer, helped line the shelves with the water bottle labels neatly aligned on the same side, and left satisfied with a chocolate cookie.

Jose is not an autism expert.

You don't have to be an expert or do anything heroic to get someone to participate.

We just need to be there -- (applause) (end of applause) Really, no heroism needed -- we just need to be near.

And if something scares you or you don't understand something, you need to ask.

Be curious, but never indifferent.

Have the courage to look into each other's eyes. Because gazing can open up a whole world for others.

(Applause) (Cheers)

When I was 14, I robbed an arcade game in a bowling alley, and when I exited the building, a security guard grabbed my arm and I ran away.

I ran down the street and jumped over the fence.

And when I got to the top, the weight of the 3,000 quarters in my bookbag pulled me back to the ground.

So when I awoke, a guard was standing over me and said, "Next time these thugs steal anything they can carry."

(Laughter.) When I was sent to juvenile detention and released into my mother's custody, my uncle's first words were, "How did you get caught?"

I said, "Hey, the bookcase was too heavy."

He said, "Hey, you weren't supposed to occupy the whole lot."

"Well, it was small. What should I do?" I said.

And 10 minutes later he took me to another arcade game robbery.

I needed gas to get home.

that was my life.

I grew up in Oakland, CA where my mother and close family members were crack cocaine addicts.

My environment consisted of living with family, friends, and homeless shelters.

Dinner was often served at the bakery or soup kitchen.

A great homebody told me: Money rules the world and everything in it.

And money is king in this city.

And when you follow money, you will find both bad guys and good guys.

Shortly after, I committed my first crime, and for the first time I was told I had potential and felt that someone believed in me.

No one told me I could be a lawyer, a doctor, an engineer.

I mean, how could I have done that? I could neither read nor write.

I was illiterate.

So I always thought crime was my way forward.

And then one day I was talking to someone and he told me about this robbery we could do.

And we did it.

The reality is, I grew up in the world's most powerful financial nation, the United States, watching mothers line up at blood banks and sell their own blood for $40 just to feed their children.

To show that, she still has the needle marks on her arm.

So I never cared about my community.

They didn't care about my life.

Drug dealers, robbers, blood banks, whatever everyone there was doing to get what they wanted.

Everyone was receiving blood money.

So I used all means to get mine.

Financial literacy really ruled the world and I was a child slave following the bad guys.

At 17, I was arrested for robbery and murder, but soon learned that money ruled more than the streets in prison, and I wanted to go to prison.

One day, while rushing to pick up the sports section of the newspaper for reading on my cell phone, I accidentally picked up the business section.

Then this old man said, "Hey young man, are you going to pick a stock?"

And I said, "What is it?"

He said, "That's where the white man keeps all his property."

(Laughter.) And that was the first time I had a glimpse of hope, the future.

He gave me a brief explanation of what stocks are, but it was just an overview.

I mean, what should I have done?

I could neither read nor write.

The skills I had developed to hide my illiteracy no longer worked in this environment.

I was trapped in a cage, prey to predators, fighting for the freedom I never had.

I was lost, tired and out of options.

So at 20, I did the hardest thing I've ever done in my life.

I picked up a book and it was the hardest time of my life, trying to learn to read, being ostracized by my family, being chased by homely people.

It was hard, dude.

It was a struggle.

Little did I know, however, that I was receiving the greatest gifts I could ever dream of: self-esteem, knowledge, and discipline.

I was so excited to read the book, I read candy wrappers, clothing logos, street signs, anything I could get my hands on.

I was just reading something!

(Applause.) Just reading.

It was so much fun to learn how to read and spell.

A domestic person came and said, "Hey, what are you eating?"

I said, "C-A-N-D-Y, candy."

(Laughter) He said, "Buy me some." I said "no, no".

(laughs) It was great.

So, for the first time in my life, I can now read a book.

The feeling I got from it was amazing.

And at 22, feeling myself and feeling confident, I remembered what the OG told me.

So I picked up the business section of the newspaper.

I wanted to find these rich white people.

(Laughter) So I looked for a glimpse of it.

As I pursued a career in teaching others how to manage and invest money, I quickly learned that I had to take responsibility for my actions.

Granted, I grew up in a very complicated environment, but I chose to commit crimes and had to admit it.

I had to take that responsibility and I did.

I was building a curriculum to teach inmates how to manage their money through prison employment.

If you manage your lifestyle properly, you will have the same transferable tools that you can use to manage your money when you reenter society, just like the majority of people who did not commit crimes.

Then I learned that more than 60% of the American population has less than $1,000 in savings, according to MarketWatch.

More than 60% of NBA and NFL players are bankrupt, according to Sports Illustrated.

40% of marital problems stem from financial problems.

what the hell?

(Laughter) Are you saying that people have worked their whole lives buying cars, clothes, houses, material things, but the cost of living was a check?

If they can't control their own belongings, how will members of society help incarcerated people get back into society?

I failed.

(laughter) I needed a better plan.

This doesn't work very well.

So...

I thought.

I had an obligation to meet people on the street and help them, but it was really hard because I cared about my community.

Wow, imagine. I valued my community.

Financial literacy is a disease that has crippled minorities and underclasses in our society for generations, and we should be outraged about it.

Ask yourself. In a country driven by economic prosperity, how come 50 percent of the American population is economically illiterate?

Our access to justice, social status, living conditions, transportation, and food all depend on money, which most people cannot control.

It's crazy!

It is an epidemic and a greater public safety hazard than any other problem.

According to the California Department of Corrections, more than 70% of inmates have either committed or been charged with money-related crimes, including robbery, burglary, fraud, theft and extortion, and the list goes on.

Look at this. A typical inmate enters a California prison with no economic education, earns 30 cents an hour, over $800 a year, costs nothing, and has no savings.

Upon his parole, he would be given $200 in gate money and told, "Good luck, stay out of trouble. Don't go back to jail."

What will he do without meaningful preparation and long-term financial planning...?

At 60?

Will he get a good job, or will he go back to the original crime that got him in jail?

Taxpayers, you choose.

Well, his education would have already chosen him.

So how can we cure this disease?

I co-founded a program called Financial Empowerment Emotional Literacy.

We call it FEEL, and it teaches you how to separate your emotional decisions from your financial ones, and teaches you four timeless rules of personal finance: how to save appropriately, how to control your cost of living, how to borrow money effectively, and how to diversify your finances by letting your money work for you instead of working for you.

Those incarcerated need these life skills before being reintegrated into society.

Without these life skills, full rehabilitation is not possible.

The idea that only professionals can invest and manage money is utterly absurd, and anyone who says such a thing is lying.

(Applause.) A professional is someone who knows his craft better than anyone else, and no one knows more than you how much money you need, have, or want. It means you are a professional.

Guys, financial literacy is not a skill.

it's a lifestyle.

Financial security is a by-product of a proper lifestyle.

Financially sound inmates can become taxpayers, and economically sound taxpayers can remain citizens.

This allows us to build bridges between the people we influence: family, friends and young people who still believe there is a link between crime and money.

So, put an end to your fears and anxieties about all the important financial terms and other nonsense you've ever heard.

And let's get to the heart of what's paralyzing our society from fulfilling our responsibility to be stewards of a better life.

And provide a simple, easy-to-use curriculum that gets to the heart of what financial empowerment and emotional literacy are.

Now, if you're sitting in the bleachers here and you say, "Oh yeah, that's not me, I'm not buying it," come take my class -- (Laughter) and I can tell you how much it costs you every time you get emotional.

(Thank you for applause. thank you.

(applause)

As patients, we usually remember the doctor's name, but we often forget the nurse's name.

I remember one.

I had breast cancer several years ago and managed to get through the surgery and start of treatment.

I was able to hide what was going on.

No one really needed to know.

I could walk my daughter to school, and I could go out to dinner with my husband. I could trick people.

But then I was going to start chemotherapy, and I knew that the chemotherapy was going to make me lose every single hair on my body, so I was really scared.

I could no longer act as if everything was normal.

i was scared

I knew what it was like for everyone to treat me with kid gloves, and I just wanted to feel normal.

I installed a port on my chest.

When I got to my first day of chemo, I was devastated.

Every bone in my body was urging me to get up from my chair and head for the hills as nurse Joan walked in through the door.

But Joan looked at me and talked to me as if we were old friends.

And she asked me, "Where did you do your highlights?"

(Laughter) And I thought, "Are you kidding me?"

Are you going to talk about my hair when I'm losing it?

I got a little annoyed and said, "Really? Hair?"

And she shrugged her shoulders and said, "It will grow again."

And at that moment she said the only thing I had overlooked. It was that one day my life would return to normal.

She really believed so.

So I believed it too.

It may seem silly to worry about losing your hair when you're battling cancer, but it's not just about how you look.

It means that you are afraid that everyone will treat you very politely.

Joanne made me feel normal for the first time in six months.

We talked about her boyfriend, we talked about looking for an apartment in New York City, and I talked about my reaction to chemotherapy. All mixed up and talked.

And I always wondered, how did she know so instinctively how to talk to me?

Joan Staha and my admiration for her marked the beginning of my journey into the world of nursing.

A few years later, I was asked to do a project celebrating the work of nurses.

I started with Joanne and have met over 100 nurses across the country.

For five years I interviewed nurses, photographed them, filmed them and made a book and a documentary film.

My team and I have planned a trip across the United States to visit places that address some of the biggest public health problems facing this country, including aging, war, poverty, and prisons.

And then I went to the places where there was the highest concentration of patients dealing with those problems.

We then asked hospitals and institutions to name the best nurses to represent them.

One of the first nurses I met was Brigitte Kumbera.

Brigitte was born in Cameroon, the eldest of four children.

Her father fell from the fourth floor at work and hurt his back badly.

And he talked a lot about what it's like to lie on your back and not get the care you need.

And that's what drove Bridget to work in nursing.

Today, as a nurse in the Bronx, she cares for a very diverse group of patients from all walks of life and all religions.

And she has dedicated her career to understanding the impact of cultural differences on our health.

She told of a patient who tried to bring a bundle of feathers into the ICU, a Native American patient she had.

That's how he found his spiritual solace.

And she speaks of his defense, saying that patients follow all religions and use all sorts of things for comfort. Whether it's a holy rosary or a symbolic feather, it all needs to be supported.

I'm Jason Short.

Jason is a home health nurse in the Appalachian Mountains, and his father ran a gas station and repair shop when he was a child.

There he worked in the community to develop automobiles and now works as a nurse.

When he was in college, he avoided being a nurse for years because it wasn't macho at all.

He drove a truck for a little while, but his life path always drew him back to nursing.

As a nurse in the Appalachians, Jason goes where even an ambulance can't go.

In this photo he stands on what used to be a road.

At the top of the mountain, the mine flooded the road, and now the only way to get to the black lung disease Jason lives in the house is by driving an SUV against the river current.

The day I was with him, we ripped off the front fender of the car.

The next morning he got up, put the car on the lift, fixed the fenders and went to see the next patient.

I witnessed Jason care for this gentleman with so much compassion and was reminded again of how intimate the work of nursing really is.

When I met Brian McMillion, he was raw.

He had just returned from dispatch and was not yet fully accustomed to life in San Diego.

He spoke of his experience as a nurse in Germany taking care of soldiers returning from the battlefield.

Very often he was the first thing I saw when I opened my eyes in the hospital.

And when they saw him lying there maimed, the first thing they said was, "When will you come back? I left my brothers there."

And Brian had to say, 'I'm not going anywhere.

Enough, brother. ”

Brian is a nurse as well as a combat veteran.

This puts him in a unique position to empathize with and heal veterans in their care.

This is Sister Stephen. I run a retirement home called Villa Loretto in Wisconsin.

And the whole circle of life is under her roof.

Having grown up wanting to live on a farm, she enthusiastically took the opportunity to adopt the local livestock.

And in the spring those animals give birth to babies.

And Sister Stephen uses these baby ducks, goats and lambs as animal therapy for the inhabitants of Villa Loretto, who sometimes can't remember their names, and who delight in cuddling them.

The day I was with Sister Stephen, I had to take her out of Villa Loretto to film part of her story.

And before we left, she entered the dying patient's room.

And she bowed down and said, "I have to go that day, but if Jesus calls you, go."

Go straight home to Jesus. ”

I stood there and thought it was the first time in my life that I could show someone that I love them completely by letting go.

You don't have to hold on so tightly.

At Villa Loretto, I have seen more people's lives swirl than anywhere else in my life.

We live in complicated times when it comes to healthcare.

It's easy to lose sight of the need for quality of life, not just quantity.

As new life-saving technologies are developed, we face some very complex decisions.

While these technologies often save lives, they can also prolong the pain and dying process.

How should we navigate this area?

I need all the help I can get.

Nurses have a truly unique relationship with us because they spend time at their bedside.

During that time, some kind of emotional intimacy develops.

On August 9th of this summer, my father died of a heart attack.

My mother was shocked and could not imagine a world without him.

Four days later, she fell and broke her hip, needed surgery, and found herself fighting for her life.

Once again, I found myself on the receiving end of nurses' care - this time my mother.

My brother, sister, and I stayed with her in the ICU for the next three days.

And as we tried to make the right decisions and follow my mother's wishes, we found ourselves dependent on the guidance of our nurses.

And again, they did not disappoint us.

They had amazing insight into how to care for my mother during the last four days of her life.

They brought her comfort and pain relief.

They knew they would encourage my sister and I to wear cute nightgowns long after it had become a big deal to my mother, but it certainly meant a lot to us.

And they knew that my mother would come and wake me up just before she died.

And they knew how long I should be left in the room with my mom after she died.

I don't know how they know these things, but I can assure you that I am eternally grateful to them for guiding me again.

I'm really thankful to you.

(applause)

There is something called the law of unintended consequences.

I thought it was a proverb, but it actually exists.

There is also an academic paper about it.

And I'm a designer.

I don't like unintended consequences.

People hire me because there's a result they really mean and what they mean is to help them achieve that result.

So I live in fear of unforeseen consequences.

So this is a story about intended and unintended consequences.

I was commissioned by an organization called Robin Hood.

Robinhood is a New York-based charity that lives up to its name.

They rob the rich and give it to the poor.

In this case, what they were trying to profit on was the New York City school system, a giant corporation educating over a million students at a time, buildings like this, old buildings, big buildings, drafty buildings, sometimes dilapidated buildings, certainly in need of renovation.

Robin Hood had ambitions to improve these buildings in some way, but it proved too expensive and impractical to restore them.

So they tried to work out, in as many buildings as possible, which one room in each building they could enter, and fix that one room so that it could improve the lives of the children studying inside.

So what they came up with was a school library, and they came up with this idea called the Library Initiative.

All students must go through the library.

There is a book there.

That is the heart and soul of the school.

Now let's fix these libraries.

So they did the wonderful thing of getting together first 10, then 20, then more architects, each assigned a library, and rethinking what a library is.

They trained special librarians.

So they started this mighty undertaking of reforming public schools by improving these libraries.

Then they called me up and said, "Can you donate a little?"

I said, "Of course, what do you want me to do?"

And they said, "Well then, I want you to be the graphic designer in charge of the whole thing."

So I thought I knew what it meant. In other words, you will be designing a logo.

I know how to design it. I am designing a logo.

That's why people come to me.

Now let's design a logo for this thing.

In fact, it's easier than architecture or librarianship.

Just create a logo, contribute, and you'll feel better.

And I'm a great guy and like to feel good about myself when I do these favors.

So I thought of overdelivering.

Here are three logos based on this one idea.

There are 3 options, please choose one.

"They're all great," I said.

The basic idea was that these would be new school libraries for New York schools. So the idea is that this is something new, a new idea that needs a new name.

What I wanted to do was dispel the notion that these were not grandparents' libraries, but musty old libraries that everyone was bored with.

don't worry about that at all.

This goes for something new and exciting instead of a boring library.

Option 1: Don't think of it as a library, think of it as a place to talk and make loud noises.

right? In other words, never shut up. It's like a zone that shouldn't be shut up.

Let's call this the "reading room".

That was option number one. OK, option 2.

Option 2 is "Wait a minute, OWL".

See you at OWL.

Receive the book from OWL. See you at OWL after school.

You like that, right? So what does OWL stand for?

Well, it could be One World Library, it could be Open. wonder. learning.

Alternatively, it could be. And since librarians know about words, I wonder if they can understand other things.

So what else?

then see this. It looks like an owl's eye.

This is irresistible in my opinion.

But there is also another idea.

Option number three.

Option 3 is really language based.

The idea is that "read" is the past tense of "read" and that they are both spelled the same.

So why not call this place the Red Zone?

See you in the red zone.

are you red get red.

I'm fine, Red.

(Laughter) I really liked this idea, but the librarians as a class seemed to be interested in spelling, I don't know, but somehow they weren't focused on that idea.

(Laughter) But sometimes cleverness is more important than spelling, and I thought this was one of those examples.

So when I give presentations like this, I always ask just one question, and that question is, "Mike, how do I thank you?"

But in this case, the question was more like, "Uh, are you kidding me?"

Because the premise of all this work, they said, was that children were bored with old, musty old libraries.

they were fed up.

Instead, they said, the kids had never actually seen a library.

The school libraries in these schools, if they were there at all, are really so dilapidated that they are not boring anyone.

They weren't there to bore anyone.

The idea was to forget about giving it a new name.

One last time, call it a library.

right? OK.

So I thought, "OK, why don't we liven things up a bit?"

Exclamation mark?

Secondly, this is because I am smart. Move it to the 'i' and make it red to complete the Library Initiative.

So I thought, mission accomplished, here's your logo.

The interesting thing about this logo, though an unintended consequence, was that it actually turned out that even my design wasn't needed. Because you can type in any font and even handwrite. And when you start sending emails, they just use Shift and 1 and from there they instantly get their own logo.

And I thought, well, that's fine.

Feel free to use that logo.

And then I started rolling this thing out, working with all the architects to put this logo on the front door of our library. right?

This is where large-scale deployment begins.

Basically you will be working with different architects.

The first Robin Hood was my customer. Well, these architects were my clients.

"Here's your logo. Put it on your door," I said.

"Here's your logo. Put it on both doors."

"Here's your logo, put it aside."

"Here's your logo repeated all the way to the top."

So everything went smoothly.

Then one of the architects, a man named Richard Lewis, called me and said,

You are in charge of graphics. can you solve it? ”

And I said, "Okay, sure." ”

Then he said, "The problem is that there is a gap between the shelf and the ceiling."

So, it sounds like an architecture problem to me, not a graphic design problem, so I say, "Let's go on."

And Richard said, ``Well, the top shelf has to be low enough for a child to reach.But I live in a big old building and the ceilings are so high, so I actually need this much space and something like a mural.''

And I was like, 'Oh, I'm a logo designer.

I'm not Diego Rivera or anything.

I'm not a muralist. ”

So he said, "But can't you think of anything?"

So I said, "Okay, why don't you take a picture of the kids at school and put it around the top, and it might work."

And my wife is a photographer, so I said, 'Dorothy, we don't have the budget, so can you come to this school in eastern New York and take pictures for us?'

And she did, and when you go to Richard's Library, one of the first to open, there's an oversized awesome frieze like a school hero overlooking the real library's little dollhouse, right?

And they were wonderful children handpicked by the principal and the librarian.

That's what created this heroic atmosphere in this library. A very dignified environment below and the joy of children above.

So, naturally, all the other librarians from other schools saw this and said, "We want a mural too."

And I'm like, "OK."

So I thought I couldn't do the same mural every time, so Dorothy did another mural and she did another. But I needed more help, so I called an illustrator I know named Lynn Polley, who drew some beautiful pictures of the children.

Then I called a guy named Charles Wilkin at a place called Automatic Design.

He made these amazing collages.

These amazing silhouettes were drawn by Raphael Esker.

Working with the children, he asked for words and, based on their promptings, came up with little fantastical pieces combining silhouettes of the things in the book.

Peter Arkle interviewed children, asked them to talk about their favorite books, and pasted their testimonies as friezes.

Stefan Sagmeister collaborated with Yuko Shimizu to make a wonderful manga-esque statement across the board: "Honest people are all funny."

The brilliant illustrator Christoph Niemann went through a process of embedding the faces, letters, images and places in the book.

And even Mayra Kalman did this amazing cryptic object and word installation. This is kind of ubiquitous and will fascinate students as long as it is there.

It was really satisfying. Basically, my role here is to read out a set of dimensions to the artists and say, '3 feet by 15 feet, whatever you want.

Please let me know if you have any issues. ”

And they went to install these. It was just the best.

But really, the nicest thing is that sometimes invitations made of construction paper arrive in the mail. It said, "You are invited to the opening of the new library."

So go to the library, say PS10 and go inside.

Balloons flew, student ambassadors appeared, speeches were read, poems written especially for the opening were read, dignitaries handed out diplomas to the people, and it was all just a crazy and fun party.

So I loved going to these things.

As I stood there dressed like this, someone, clearly not belonging, said, "What are you doing here, Mr.?"

And I said, "Well, I'm part of the team that designed this place."

And they said, "Are you making this shelf?"

And I said "no". "You took the picture above."

"no."

"So what did you do?"

"Do you know when you got in? What's the sign above the door?"

"Where is the sign for the library?"

(laughs) “Yes, I did!”

And they say, "Okay, if you can do that, good luck."

So it was very satisfying to go to these little openings despite being mostly ignored or humiliated. But it was actually fun to go to the opening, so I said, let's get the people in the office working on these projects, the illustrators and the photographers, why don't we rent a van and drive them through the five boroughs of New York and see how many we can accomplish in one go?

We were going to end up with 60 of these libraries, so in one long day you'll probably see 6 or so.

And best of all, I got to meet the librarians who run these libraries, who occupy these spaces like private stages invited to engage students and bring books to life. Seeing these things in action was a really exciting experience for all of us.

So we spent a long day on this and we were at the last library.

It was still winter and it was getting dark early, said the librarian. "It's closing soon. I'm really happy to be here."

Hey, wait a minute, would you like to see how to turn off the lights?"

I'm like, "Okay."

And she said, "I have a special way of doing things."

And she showed me

What she did was turn off all the lights one by one, and the last one she turned on was the one that illuminated the children's faces. "That's the last light I turn off every night because I want to tell myself why I come to work," she said.

So when I started this thing, remember, it was just to design a logo and get smart and come up with a new name.

I'd like to take credit for the unintended consequences here, and I'd like to think I could think this experience through so much, but I can't.

Instead, there was a librarian far away, trying to find the chain of consequences that we caused, and in this case she was the source of inspiration for doing the job really well.

40,000 children are affected by these libraries each year.

This sort of thing has been going on for over a decade, so it was a thrill to find out that librarians are in a way recommending books to a generation of children, and sometimes the unintended consequences are the best.

thank you very much.

(applause)

[Pope Francis filmed in Vatican City, premiered at TED2017] Good evening, or good morning, but I don't know what time it is.

I am happy to attend the conference regardless of time.

I really like this title "You in the future". Because the title invites us to start a dialogue today and see the future through 'you' as we look to tomorrow.

"Future You": The future is made of you, made of encounters. Because life flows in relationships with others.

After quite a few years of my life, my conviction has grown stronger that every person's existence is deeply connected to the existence of others. Life is not just about passing time, life is about interactions.

As I meet and listen to sick people, immigrants facing terrible hardships in search of a brighter future, prisoners with hellish torments in their hearts, and many young people unable to find work, I often wonder, “Why are they here and not me?”

I myself was born into an immigrant family. My father, my grandparents, like many other Italians, went to Argentina and met the fate of those left with nothing.

I could very well have been among the "abandoned" people of today.

That is why I always ask myself this question in the depths of my heart. "Why them and not me?"

First and foremost, I hope this conference serves as a reminder that we all need each other, that none of us are islands, but autonomous and independent 'I's,' separate from each other, and that we can only build our future by inclusive and united.

We don't really think about it, but everything is connected and we need to restore that connection to a healthy state.

The harsh judgments I hold in my heart for my brothers and sisters, the open wounds that were never healed, the sins that were never forgiven, the resentments that hurt me, are all examples of the battles I carry within me that need to be extinguished before the fire within me flares up and leaves only ash.

Today, many of us seem to believe that a happy future is an unattainable one.

Such concerns should be taken very seriously, but they are not invulnerable.

They can be overcome if the door to the outside world is not locked.

Happiness is found only as the gift of harmony between the whole and the individual elements.

Even science, you know better than I do, suggests understanding reality as a place where every element connects and interacts with every other element.

Here you will see the second message.

How wonderful it would be if the growth of science, technology and innovation could be accompanied by greater equality and social inclusion.

How wonderful it would be if, as we discovered distant planets, we could rediscover the needs of our brothers and sisters orbiting us.

How wonderful it would be if this beautiful and sometimes inconvenient term of solidarity was not simply reduced to social enterprise, but became the default attitude in political, economic and scientific choices, and in relations between individuals, peoples and nations.

Only by educating people in true solidarity can we overcome the “waste culture”. This concerns not only food and goods, but first and foremost those who have been abandoned by our techno-economic system, imperceptibly centered around products rather than people.

Solidarity is a word that many would like to erase from the dictionary.

But solidarity is not an automatic mechanism.

It cannot be programmed or controlled.

It is a free response that comes from each person's heart.

Yes, free answer!

How can one resist the urge to do good to other living beings when one realizes that even in the midst of so many contradictions life is a gift and that love is the source and meaning of life?

Doing good requires memory, courage, and creativity.

And I know there are a lot of creative people at TED.

Yes, love requires a creative, specific, and original attitude.

Good intentions and conventional formulas often used to appease our consciences are not enough.

Let's all work together to remember that each other is not statistics or numbers.

Another has a face.

“You” are always real and a person to be cherished.

There is a parable Jesus told to help us understand the difference between people who don't want to be bothered and people who care about others.

I'm sure you've heard of it. It is the parable of the good Samaritan.

When Jesus was asked, "Who is my neighbor?"--that is, "Who shall I look after?"--he told this story, the story of a man who was beaten, robbed, beaten, and left on a dirt road.

Upon spotting him, two very influential figures of that time, a priest and a Levite, passed in front of him without stopping.

After a while, the Samaritans, a people so despised at the time, passed by.

Seeing a man lying on the ground wounded, he didn't ignore him as if he wasn't even there.

Rather, he developed sympathy for this man, which compelled him to take very concrete actions.

He poured oil and wine on the helpless man's wounds, took him to a hostel, and paid out of his pocket for assistance.

The story of the Good Samaritan is the story of humanity today.

The path of man is full of suffering because money and material things, not people, are the center of everything.

And those who call themselves "respectable" have a habit of not taking care of others, often resulting in thousands of humans, or entire populations, being left by the roadside.

Fortunately, some people are creating new worlds by taking care of others at their own expense.

In fact, Mother Teresa said, "You cannot love without sacrificing yourself."

We have a lot of work to do and we have to do it together.

But how can we do that with all the evil we breathe in every day?

Thank God, there is no system that overrides our desire to open our hearts to goodness, to compassion, to our ability to respond to evil. These all come from deep within our hearts.

Well, you might tell me "Sure, these are beautiful words, but I am neither a Good Samaritan nor Mother Teresa of Calcutta."

On the contrary, each of us is precious.

Each of us is unique in the sight of God.

A reminder that through the darkness of today's conflict, each of us can be a bright candle, light overcomes darkness and never vice versa.

For Christians, the future has a name, and that name is hope.

Feeling hopeful does not mean being optimistically naive and ignoring the tragedies facing humanity.

Hope is the virtue of the mind that is not trapped in the dark, not trapped in the past, and able to see tomorrow, not just let the present pass.

Hope is the door to the future.

Hope is a humble, hidden seed of life that over time grows into a great tree.

It's like the invisible yeast that grows the entire dough and brings flavor to every aspect of life.

It can do a lot, because just a tiny flicker of hope-fed light is enough to shatter the shield of darkness.

One individual is enough for hope to exist, and that individual could be you.

And there is "you" again, and there is "you" again, which becomes "we".

So does hope start with having "we"?

no.

Hope started with one "you".

When there is "we", the revolution begins.

The third message I want to share today is about a revolution, a revolution of kindness.

And what is kindness?

It is a love that approaches and becomes reality.

It is a movement that begins in our hearts and reaches our eyes, ears and hands.

Kindness means using your eyes to see, your ears to hear, children, the poor, and those who fear the future.

Also listen to the silent cry of our common home, the sick and polluted earth.

Kindness means using your hand and heart to comfort others and care for those in need.

Kindness is the language of young children, those who need others.

A child's love for mom and dad grows through their touch, their gaze, their voice and their kindness.

I love hearing parents talk to their babies, adjust to their little ones, and share the same level of communication.

This is kindness, being on the same level as the other person.

God Himself came down in Jesus to be on our level.

This is the path followed by the Good Samaritan.

This is the path Jesus himself walked.

He humbled himself and lived his entire human life practicing the true and concrete language of love.

Yes, kindness is the path chosen by the strongest and bravest men and women.

Kindness is not weakness. It is an indomitable spirit.

It is a way of unity, a way of humility.

Let me be clear. The more power you have, the more impact your actions have on people, the more responsibility you have to act with humility.

Otherwise, your power will destroy you, and you will destroy other powers.

There is a saying in Argentina that "power is like drinking gin on an empty stomach".

If you don't combine your power with humility and kindness, you'll end up feeling dizzy, drunk, or out of balance, hurting yourself and others.

On the other hand, through humility and tangible love, power, the highest and most powerful force, becomes service, a force for good.

The future of mankind is not only in the hands of politicians, great leaders and big corporations.

Yes, they have a big responsibility.

But the future is, above all, in the hands of those who see others as 'you' and themselves as part of 'us'.

we all need each other.

So please be kind to me too. Then I can fulfill my mission for others, for each one, for all of you, and for all of us.

thank you.

What do Harry Potter, Katniss Everdeen, and Frodo have in common with ancient mythological heroes?

(roar) What if I told you they were all variations of the same hero?

do you believe that?

Joseph Campbell did.

He studied myths from all over the world, published the book The Hero with a Thousand Faces, and told dozens of stories, explaining how each one represented a single myth—a hero's journey.

So what is "A Hero's Journey"?

Think of it as a cycle.

Journeys begin and end in the hero's everyday world, while quests take you through unknown and extraordinary worlds.

Along the way, there are some important events.

Think about your favorite book or movie.

Are you following this pattern?

For now, that's where it starts.

1:00: Call to adventure.

The main character receives a mysterious message.

Invitation or Challenge?

2:00: Help The protagonist needs help, perhaps from an older, wiser person.

3:00: Departure The hero crosses a threshold from his normal safe house and enters a special world and adventure.

We are no longer in Kansas.

4:00: Trials Being a hero is hard work. Heroes solve mysteries, defeat monsters, and escape traps.

5:00: Approach It's time to face your greatest challenge, your hero's greatest fear.

(roar) 6:00: Crisis This is the darkest hour for our hero.

He faces death and in some cases even dies, but is then reborn.

7:00: Treasure (roar) As a result, the protagonist claims some kind of treasure, special reputation, or power.

8:00: Results This may vary depending on the story.

Will the monsters prostrate themselves in front of the protagonist, or will they chase after the protagonist fleeing from a special world?

9:00: Return After completing all adventures, the protagonist returns to the normal world.

10:00: New Life This quest changed the main character. He has grown beyond his previous life.

11:00: Solved All the tangled plotlines are straightened out.

12:00: Status quo, but upgrade to new level.

When it comes to being a hero, no two are exactly alike.

Many popular books and movies follow this ancient formula fairly closely.

But let's see how well The Hunger Games fits the hero's journey template.

When will Katniss Everdeen hear the call to adventure that drives the story?

When my sister's name was called in the lottery.

what about the aid?

Is there anyone who can help her on her adventures?

Haymitch.

What about departure?

Will she leave the everyday world?

She takes a train to the capital.

I see.

What do Harry Potter, Katniss Everdeen, and Frodo have in common?

Well, you are human just like them.

Heroic journey myths exist in all human cultures and are constantly being updated. Because we humans reflect our world through the iconic stories of our own lives.

When you step out of your comfort zone and have an experience that transforms you, you recover and do it all over again.

You won't literally slay dragons or fight Voldemort, but you'll face equally terrifying problems.

Joseph Campbell said, "In the cave you fear to enter, lies the treasure you seek."

What iconic cave are you afraid to enter?

A school audition?

baseball tryouts?

like?

Keep an eye out for this formula in books, movies, and TV shows.

Will definitely see it again.

But be sensitive to it in your own life as well.

Heed the call to adventure.

Please accept the challenge.

Overcome your fear and get the treasure you've been seeking.

And then do it again.

My palms are sweaty, my heart is pounding, my stomach is hunched.

You can't cry and ask for help.

Not only is it so stuffy that you can't breathe, it's also very embarrassing.

No, you're not being haunted by a monster, you're speaking in public, but some people think that fate is worse than death.

See, when you die, you won't feel anything. Standing on the podium gives me stage fright.

But we've all had to communicate in public at some point, so we should try to get through it.

First, understand what stage fright is.

As social animals, humans are built to care about reputation.

Public speaking can intimidate it.

Before you give a speech, you might be worried, "What if people think I'm terrible or stupid?"

The fear of being thought stupid is a threat response from a primitive part of the brain that is very difficult to control.

This is the fight-or-flight response, a self-defense process found in a variety of animals, most of which do not speak.

But we have smart partners in freakout research.

Charles Darwin tried fight or flight at the London Zoo's snake exhibit.

In his diary, he wrote, "My will and reason were powerless against the imagining of dangers I had never experienced before."

He concluded that his reaction was an ancient reaction untouched by the nuances of modern civilization.

So for the conscious modern mind, it is speech.

For the rest of your brain, which was built to write meat-for-the-meat code, when you realize the possible consequences of ranting your speech, it's time to run for your life or fight to the death.

The hypothalamus, which is common to all vertebrates, stimulates the secretion of the hormone ACTH from the pituitary gland, which releases adrenaline into the blood from the adrenal glands.

Your neck and back will tense and you will slouch.

Legs and hands tremble as muscles prepare to attack.

I sweat.

Blood pressure soars.

Your mouth feels dry and thirsty because digestion shuts down to maximize the supply of nutrients and oxygen to your muscles and vital organs.

The pupils dilate, making it difficult to read near objects such as notes, but long distances are easy.

That's how stage fright works.

How will we fight?

First, perspective.

All this is not in your head.

This is a natural hormonal systemic response by the autonomic nervous system on autopilot.

And genetics play a big role in social anxiety.

John Lennon has performed live thousands of times.

Each time he vomited beforehand.

Some people find performing in front of them more intimidating.

Stage fright is natural and inevitable, so focus on what you can control.

Practice a long time in an environment close to the actual performance.

Practicing any task increases familiarity and reduces anxiety, so you can feel more confident about yourself and the task at hand when speaking in public.

Steve Jobs spent hundreds of hours rehearsing his epic speech over the past few weeks.

If you know what you're saying, you can feed off the energy of the crowd instead of having your hypothalamus know that your body is about to be lunching for a pack of predators.

But the vertebrate hypothalamus has been trained more than you by millions of years.

It's time to fight dirty and trick your brain right before you hit the stage.

This triggers a relaxation response in the hypothalamus.

Stage fright is usually strongest just before a presentation. So stretch and breathe at the last moment.

As you get closer to the mic, your voice becomes clearer and your body relaxes.

Your well-prepared speech will convince the crowd that you are a charismatic genius.

how?

You didn't overcome your stage fright, you adapted to it.

And to the fact that no matter how civilized they may appear, in part of their brain they are still wild animals, deep and well-spoken wild animals.

Think warm, sticky cookies, crunchy candies, velvety cakes, and waffle cones piled high with ice cream.

Are you drooling?

Would you like some dessert?

why?

What's going on in your brain that makes it hard to resist sweet foods?

Sugar is a general term used to describe a class of molecules called carbohydrates, found in a wide variety of foods and drinks.

Check the label of any sweet product you buy.

Glucose, fructose, sucrose, maltose, lactose, dextrose and starch are all types of sugar.

So are high fructose corn syrup, fruit juices, raw sugar, and honey.

And sugar is added not only to candies and desserts, but also tomato sauces, yogurts, dried fruits, flavored waters and granola bars.

Sugar is everywhere, so it's important to understand how it affects the brain.

What happens when sugar touches your tongue?

And does eating a little sugar make you want more sugar?

You take a bite of your cereal.

The sugar it contains activates the sweet taste receptors that are part of the taste buds on the tongue.

These receptors send signals to the brainstem, where they branch out to many areas of the forebrain, one of which is the cerebral cortex.

Different sections of the cerebral cortex process different tastes: bitter, salty, umami, and in our case, sweet.

From here, the signal activates the brain's reward system.

This reward system is a series of electrical and chemical pathways across several different regions of the brain.

It's a complex network, but it helps answer one subconscious question: Should I do it again?

That warm, fluffy feeling you get when you taste your grandma's chocolate cake?

It's a reward system that makes you say, "Hmm, that's right!"

And it's not just activated by food.

Socializing, sexual behavior, and drugs are just a few of the things and experiences that activate the reward system.

However, when this reward system becomes overactive, it sets in motion a series of unfortunate events, including loss of control, cravings, and increased sugar tolerance.

Back to the cereal bites.

It travels to the stomach and eventually reaches the intestines.

And what do you think?

There is also a sugar receptor here.

They're not taste buds, but they send signals to your brain that you're full, or that your body needs to produce more insulin to deal with the extra sugar you're eating.

The primary currency of our reward system is dopamine, an important chemical or neurotransmitter.

The forebrain has many dopamine receptors, but they are not evenly distributed.

Certain regions contain dense clusters of receptors and these dopamine hotspots are part of our reward system.

Drugs such as alcohol, nicotine, and heroin produce an excess of dopamine, which makes some people crave that high all the time, or become addicted.

Sugar also triggers the release of dopamine, but less intensely than drugs.

And sugar is rare among dopamine-inducing foods.

Broccoli, for example, has no effect. This probably explains why it is so difficult to get children to eat vegetables.

Speaking of healthy food, let's say you're hungry and decide to eat a balanced diet.

Dopamine levels then spike at reward hotspots.

But if you eat the same food many days in a row, the surge in dopamine levels will taper off and eventually plateau.

That's because our brains have evolved to pay special attention to new and different tastes when it comes to food.

why?

There are two reasons. One is to detect spoiled food.

And second, the more diverse your diet, the more likely you are to get all the nutrients you need.

To maintain that diversity, we need to be able to recognize new foods and, more importantly, want to keep eating new foods.

This is why dopamine levels off when you get tired of food.

Now, let's get back to talking about food.

What would happen if you ate sugar-rich foods instead of healthy, balanced meals?

If you eat very little sugar, or not much at a time, the effect is similar to that of a balanced diet.

But eating too much doesn't level the dopamine response.

In other words, eating lots of sugar keeps you feeling rewarded.

In this way sugar acts a bit like a drug.

That's one of the reasons why people go crazy for sweet foods.

Now recall the different types of sugar.

Each one is unique, but every time sugar is consumed, it kicks off a domino effect in your brain that makes you feel rewarded.

Too much, too often, and things can go crazy.

Yes, too much sugar can have addictive effects on your brain, but an occasional bite of cake won't hurt.

Trying to pay for something with paper can cause some trouble.

Unless, of course, that piece of paper was a $100 bill.

But what makes that bill so much more interesting and valuable than other scraps of paper?

Ultimately, there's not much you can do.

I can not eat.

You can't build anything with it.

And burning it is actually illegal.

So what's the big deal?

Of course you probably know the answer.

The $100 bill is printed by the government and designated as the official currency, but other papers are not.

But that's just what makes them legal.

On the other hand, what determines the value of a $100 bill is how much or how little of it there is.

Throughout history, most currencies, including the US dollar, were tied to precious commodities and their circulation depended on government reserves of gold and silver.

However, after the United States abolished this system in 1971, the dollar became so-called legal tender. This means that it is not linked to any external resource and instead relies solely on government policy to decide how much currency to print.

Which branch of our government sets this policy?

Executive, Legislative, Judicial?

The surprising answer is none of the above.

In fact, monetary policy is determined by an independent Federal Reserve, or Federal Reserve, made up of 12 regional banks in major cities across the country.

A board appointed by the President and approved by the Senate reports to Congress, and all Fed profits go to the U.S. Treasury Department.

However, to keep the Fed immune to day-to-day political shifts, the Fed is not under the direct control of any government department.

Why wouldn't the Fed decide to print an infinite number of $100 bills to make everyone happy and wealthy?

Well, because that would make the bill worthless.

Consider the purpose of currency for exchanging goods and services.

If the total amount of money in circulation increased faster than the total value of goods and services in the economy, the individual parts would be able to buy less of those things than before.

This is called inflation.

On the other hand, if the money supply stays the same and more goods and services are produced, the value of each dollar increases in a process known as deflation.

So which one is worse?

With too much inflation, the money in your wallet today will be worth less tomorrow, and you'll want to spend it sooner.

While this would stimulate business, it would also encourage overconsumption, or hoarding of commodities such as food and fuel, driving up prices, causing consumer shortages and further inflation.

But when deflation hits, people don't want to let go of their money, private consumption falls, corporate profits fall, unemployment rises, spending falls even further, and the economy continues to shrink.

Therefore, most economists believe that too much of either is dangerous, but that small amounts of consistent inflation are necessary to drive economic growth.

The Fed uses a huge amount of economic data such as past inflation rates, international trends, and unemployment rates to determine the amount of currency in circulation.

Like the Goldilocks story, you need to get the right numbers to stimulate growth and keep people employed without letting inflation reach destructive levels.

The Fed not only determines how much the paper in your wallet is worth, it also determines your chances of getting or staying in a job that makes money.

Did you know that every time a musician picks up an instrument, fireworks go off in their brains?

On the surface, they may appear calm and focused, reading music and making the precise, disciplined movements that are required.

But there's a party going on in their brains.

How do we know this?

Over the last few decades, neuroscientists have made great strides in understanding how our brains work by monitoring them in real time using instruments such as fMRI and PET scanners.

When people are connected to these machines, activity is observed in areas of the brain corresponding to each task, such as reading or solving math problems.

But when the researchers played music to the participants, they saw fireworks.

Multiple areas of their brains were activated simultaneously as they processed the sound, broke it down to understand elements such as melody and rhythm, and then put it all back together into a unified musical experience.

And our brains do all this in the split second from when we first hear the music to when we start tapping on our feet.

But when scientists switched from looking at the brains of music listeners to looking at the brains of musicians, the little backyard fireworks became a celebration.

While listening to music engages the brain in very interesting activities, it turns out that playing music is the equivalent of a full-body exercise for the brain.

Neuroscientists have observed multiple areas of the brain light up and process different information simultaneously in complex, interconnected, and surprisingly fast sequences.

But why does making music activate the brain?

This research is still fairly new, but neuroscientists have a very good idea.

Playing an instrument simultaneously stimulates almost all areas of the brain, especially the visual, auditory, and motor cortices.

Like any other form of training, disciplined and structured practice of playing music strengthens brain function and allows you to apply that power to other activities.

The most obvious difference between listening to music and playing music is that the latter requires fine motor skills controlled by both hemispheres of the brain.

It also combines the linguistic and mathematical accuracy that the left hemisphere is more involved with, and the novel and creative content that the right hemisphere excels at.

For these reasons, we know that playing music increases the amount and activity of the corpus callosum, the bridge between the two hemispheres, allowing messages to travel through the brain faster and through more diverse routes.

This may enable musicians to solve problems more effectively and creatively in both academic and social settings.

Because making music also involves creating and understanding its emotional content and message, musicians often have a higher level of executive function. It is a category of interrelated tasks involving planning, strategy, and attention to detail that require simultaneous analysis of both cognitive and emotional aspects.

This ability also influences how our memory system works.

And indeed, musicians have enhanced memory functions, allowing them to create, store, and retrieve memories more quickly and efficiently.

Research suggests that musicians use their highly connected brains to attach multiple tags to each memory, such as conceptual, emotional, phonetic, and contextual tags, much like the Internet's great search engines.

How can we know that all these advantages are specific to music as opposed to, say, sports or painting?

Or were the people who got into music already smart from the beginning?

Neuroscientists have investigated these issues, and so far, have found that the artistic and aesthetic aspects of learning to play an instrument are distinct from other studied activities, including other arts.

And several randomized studies of participants who exhibited similar levels of cognitive function and neural processing at start-up found that participants who underwent a period of music learning had enhancements in multiple brain regions compared with other participants.

This recent study of the mental benefits of playing music has advanced our understanding of mental function, revealing the internal rhythms and complex interactions that make up our brain's amazing orchestra.

One of the most remarkable aspects of the human brain is its ability to recognize patterns and describe them.

One of the most difficult patterns we have tried to understand is the concept of turbulence in fluid dynamics.

German physicist Werner Heisenberg said, "When I meet God, I will ask you two questions: Why relativity and why turbulence?"

I really believe he has the first answer. ”

Turbulence is difficult to understand mathematically, but we can use art to describe what it looks like.

In June 1889, Vincent van Gogh painted a view just before sunrise from the window of his room at the Saint-Paul-de-Mausole psychiatric hospital in Saint-Rémy-de-Provence. After going insane and cutting off his own ears, Van Gogh confessed.

In "The Starry Night," his circular brushstrokes create a night sky filled with swirling clouds and swirls of stars.

Van Gogh and other Impressionists represented light in a different way than their predecessors, as if capturing its movement, for example, in the sun-dappled water surface, here in the starlight melting into the opalescent waves of the blue night sky.

This effect is caused by luminance, which is the intensity of the color light on the canvas.

The more primitive parts of our visual cortex perceive light contrast and movement, but not color. This part blends two different color areas if they have the same luminance.

However, the primate subdivision of our brain perceives contrasting colors without blending.

Because of these two interpretations at once, the light in many Impressionist works appears to pulsate, flicker, and radiate strangely.

In this way, this and other Impressionist works capture something astonishingly real about the movement of light, using rapidly executed and distinctive brushstrokes.

Sixty years later, Russian mathematician Andrei Kolmogorov furthered the mathematical understanding of turbulence by proposing that the energy of a turbulent fluid of length R varies as R to the 5/3 power.

Although experimental measurements have shown that Kolmogorov was significantly closer to the mechanics of turbulence, a complete explanation of turbulence remains one of the unsolved problems in physics.

Turbulence becomes self-similar if there is an energy cascade.

In other words, large eddies transfer their energy to small eddies, which act similarly at other scales.

Examples of this include Jupiter's Great Red Spot, cloud formations, and interstellar dust particles.

In 2004, scientists used the Hubble Space Telescope to observe swirls of distant dust and gas clouds around stars that reminded us of Van Gogh's "Starry Night."

This prompted scientists in Mexico, Spain, and England to study the brightness of Van Gogh's paintings in detail.

They found that many of Van Gogh's paintings conceal distinct patterns of turbulent fluid structures that approximate Kolmogorov's equations.

The researchers digitized the painting and measured how the brightness changed between any two pixels.

From curves measuring pixel separation, they concluded that Van Gogh's paintings during his period of psychotic agitation behaved very much like fluid turbulence.

Van Gogh's self-portrait with a pipe, painted during the calmer period of his life, showed no indication of this correspondence.

So did works by other artists that at first glance look equally eventful, such as Munch's The Scream.

It is too easy to say that Van Gogh's turbulent genius enabled him to paint the upheaval, but it is too difficult to pinpoint the moving beauty of the fact that, in a time of intense suffering, he was somehow able to recognize and express one of the most difficult concepts that nature has brought to mankind, and to connect his unique mind's eye with the deepest mysteries of movement, fluid and light.

Every day you move through systems of power created by others.

do you feel them?

Do you understand power?

Do you understand why it matters?

Talking about power is something we often feel awkward about.

It especially applies to civic life, how we live together in a community.

In a democracy, power is believed to belong to the people.

Any more talking about power and who actually has it can seem a little dirty, maybe even evil.

But power, like fire and physics, is neither inherently good nor evil.

That's exactly right.

It determines how all forms of government work.

It determines who determines the rules of the game.

Therefore, learning how power works is key to being effective, taken seriously, and not taken advantage of.

In this lesson, we'll look at where power comes from, how it's wielded, and what you can do to become more powerful in public.

Let's start with a basic definition.

Power is the ability to get others to do what you want them to do.

Of course, this happens in all areas of life, from family to work to relationships.

Our focus is the civic arena, where power means letting communities make choices and take the actions they want.

There are six main sources of civil power.

First, there is the physical power and the ability of violence.

Whether police or militia, control of the means of force is the most fundamental power.

The second core source of power is wealth.

Money creates the ability to buy outcomes and almost every other kind of power.

The third form of power is state action, or government.

This is the use of laws and bureaucracy to force people to do or not do certain things.

For example, in a democracy, we the people theoretically give power to the government through elections.

In a dictatorship, state power derives from the threat of force rather than the consent of the ruled.

A fourth type of power is social norms, or what other people think is okay.

Norms do not have a centralized mechanism like government.

They work in a peer-to-peer, softer way.

They can indeed change people's behavior and even change laws.

Consider how the norms of marriage equality are evolving today.

The fifth form of power is ideas.

Ideas such as individual liberty and racial equality, for example, can create limitless power if they motivate enough people to change their thinking and behavior.

And the sixth source of power is numbers, the many humans.

Mass voices create power by expressing the strength of collective concern and asserting legitimacy.

Remember the Arab Spring and the rise of the Tea Party.

The crowd counts.

These are the six main sources of power, what is power.

Now let's consider how the forces work.

There are three laws of force worth considering.

Law #1: Forces are never static.

It always either accumulates or decays in the civil field.

So if you do not act, you will be acted upon.

Law #2: Power is like water.

It flows like an electric current in our daily life.

Politics is the business of using the currents to your advantage.

Policymaking is an effort to freeze and perpetuate certain power flows.

The policy is power frozen.

Law #3: Power Compound.

Power breeds more power, and powerlessness does the same.

The only thing that prevents Law No. 3 from leading to a one-man-all-power situation is how Laws No. 1 and No. 2 are applied.

What rules can be put in place to prevent a few from accumulating too much power, and from infusing their privileges into policy?

That is the question of democracy, and you can see these laws at work in any news article.

Low paid workers organize to get higher wages.

Oil companies are seeking approval for large pipelines.

Gay and lesbian couples want their legal right to marry.

Urban parents are demanding school assistance.

You may or may not support these efforts.

Getting what you want depends on how adept you are at wielding power. So we finally know what we can do to be more powerful in public.

Here it is helpful to think in terms of literacy.

Your challenge is to learn to read and write.

Reading power means paying attention to as many power sentences as possible.

I'm not just talking about books.

That is, to see society as a series of texts.

Don't like what your campus, city or country looks like?

Plan who has what power and in what systems.

Understand why it turned out this way, who made it happen, and who wants to keep it.

Study the strategies others have used in these situations. Frontal or indirect attacks, coordination or charismatic authority.

read to write

To be a good writer, you must first believe that you have the right to write and that you have the right to make a difference.

you do.

As with other types of writing, learn to express yourself and speak with an authentic voice.

Organize your own ideas before you organize others.

Practice consensus building.

practice clash.

Like writing, it's all practice.

Every day you have the opportunity to practice in your neighborhood and beyond.

Set goals, then set bigger goals.

Observe the patterns to see what works.

Adapt and repeat.

This is citizenship.

In this short lesson, we explored where civic power comes from, how it works, and what you can do to wield it.

One of the big questions that remains is the 'why' of power.

Do you want power that benefits everyone, or just yourself?

Are your goals pro-social or anti-social?

This question is not about strategy.

It's about character, and it's also a set of lessons.

But remember this. Power and character equal a great citizen, and you have the power to be a great citizen.

It's often said that elephants never forget, but this amazing animal is more than just a giant walking hard drive.

The more we learn about elephants, the more we realize that their impressive memory is just one aspect of their incredible intelligence that makes them some of the most social, creative and benevolent creatures on the planet.

Unlike many proverbs, the one about elephant memory is scientifically accurate.

Elephants know all members of their herd and can recognize up to 30 mates by sight and smell.

This is very helpful when traveling or encountering other potentially hostile elephants.

They can also remember and distinguish certain cues that signal danger, and can remember important places even after their last visit.

But it's the non-survival memories that are most fascinating.

Elephants remember not only their herd mates, but also other creatures that have made a strong impression on them.

In one case, two circus elephants who performed together briefly were overjoyed when they crossed paths 23 years later.

This perception is not limited to other races.

Elephants have also come to recognize humans they bond with after being apart for decades.

All of this indicates that elephant memory goes beyond responding to stimuli.

Look inside their heads and you'll see why.

Elephants have the largest brains of any land mammal and an excellent cerebralization index.

This corresponds to the brain size we would expect for an animal's body size, and an elephant's EQ is about the same as a chimpanzee's.

And despite a distant relationship, convergent evolution has made it strikingly similar to the human brain, with an equal number of neurons and synapses and a highly developed hippocampus and cerebral cortex.

The hippocampus is strongly associated with emotions and aids in recall by encoding important experiences into long-term memory.

This ability to discriminate importance makes elephant memory a complex and adaptive capacity beyond rote memorization.

This means that clans with older matriarchs have higher survival rates, as elephants that survived drought at an early age are able to recognize the danger signals of drought in adulthood.

Unfortunately, this is also what makes elephants one of the few animals to suffer from post-traumatic stress disorder.

The cerebral cortex, on the other hand, enables problem-solving, which elephants demonstrate in many creative ways.

They also work together to tackle problems, sometimes outmaneuvering researchers and manipulating their partners.

They then master basic arithmetic and track the relative amounts of fruit in the two baskets after multiple changes.

The unusual combination of memory and problem-solving may explain some of elephants' smartest behaviors, but it doesn't explain some of what we're just beginning to learn about their mental lives.

Elephants communicate using everything from body signals and vocalizations to infrasound, which can be heard several kilometers away.

And their understanding of syntax suggests that they have their own language and grammar.

This sense of language may go beyond mere communication.

Elephant creates art by carefully selecting and combining different colors and elements.

It can also recognize 12 different musical sounds and reproduce melodies.

And yes, there are elephant bands.

But perhaps the most amazing thing about elephants is their abilities, which are even more important than their cleverness: empathy, altruism, and a sense of justice.

Elephants are the only non-human animals to mourn, perform burial ceremonies, and return to visit graves.

They show interest in other species as well.

One working elephant refused to let a log down into the hole where the dogs slept, but when it encountered an injured human, it would occasionally keep watch and even gently comfort it with its trunk.

Elephant attacks on human villages, on the other hand, usually occur shortly after large-scale poaching or culling, suggesting deliberate revenge.

Considering all this evidence and the fact that elephants are one of the few species capable of recognizing themselves in mirrors, one cannot escape the conclusion that elephants are conscious, intelligent, and emotional beings.

Unfortunately, human treatment of elephants, which continue to suffer from habitat destruction in Asia, ivory poaching in Africa and captive abuse around the world, does not reflect this.

Given what we now know about elephants, and what they continue to teach us about animal intelligence, it is more important than ever to ensure that what the English poet John Donne described as "the great masterpiece of nature" does not disappear from the world's canvas.

It's 4am now, 8 hours later I have a big test and then a piano recital.

I've been studying and playing for days and I'm still not ready for either.

So what can you do?

You could have another cup of coffee and spend the next few hours cramming and practicing, but believe it or not, you might be better off closing your books, putting away your music, and going to bed.

We spend nearly a third of our lives sleeping, yet many of us pay surprisingly little attention to it.

This neglect is often the result of a big misunderstanding.

Sleep isn't a waste of time, nor is it just a way to rest when all the important work is done.

Rather, it is the key function by which your body balances and regulates its vital systems, affecting respiration and regulating everything from circulation to growth to the immune response.

That's great, but after this test, it's okay to worry about that, right?

Well, not so fast.

Sleep is also important for the brain, and we know that one-fifth of the body's circulating blood is sent to the brain during sleep.

And what's happening in the brain during sleep is a very active period of restructuring that's crucial to how our memories work.

At first glance, our ability to remember things doesn't seem all that great.

The 19th-century psychologist Herman Ebbinghaus proved that humans typically forget 40% of new content within the first 20 minutes, a phenomenon known as the forgetting curve.

However, this loss can be prevented by memory consolidation, the process of transferring information from fleeting short-term memory to more durable long-term memory.

This integration takes place with the help of a major part of the brain known as the hippocampus.

Its role in long-term memory formation was demonstrated in the 1950s by Brenda Milner in a study of a patient known as H.M.

After removing the hippocampus, H.M.'s ability to form new short-term memories was impaired, but he was able to learn physical tasks through repetition.

Hippocampal resection also impaired H.M.'s ability to form long-term memories.

In this case, it became clear that, among other things, the hippocampus is specifically involved in consolidating long-term declarative memory, such as facts and concepts that need to be remembered for the test, rather than procedural memory, such as finger movements that need to be mastered at a presentation.

Milner's findings, along with Eric Kandel's work in the 90s, gave us the current model for how this integration process works.

Sensory data is first transcribed and temporarily recorded in neurons as short-term memory.

From there, it travels to the hippocampus to strengthen and strengthen neurons in that cortical area.

Thanks to the phenomenon of neuroplasticity, new synaptic sprouts are formed, allowing new connections between neurons and strengthening the neural network through which information is returned as long-term memory.