A professor said, "Maybe I can help you."

So I went in that direction.

(Laughter.) Just like you can never say no to a child.

And after 3 months, I finally made a tight deadline with this person. And I went into his lab and excitedly then sat down and started talking with my mouth open. And five seconds later he called another PhD.

PhDs swarmed into this small room and bombarded me with questions. By the end, I felt like I was in a clown's car.

Twenty Ph.D.s plus me and my professor were crammed into this tiny office space, and they threw me a barrage of questions and tried to drown my proceedings.

How unlikely is that? In other words, Push.

(Laughter) But after that interrogation, I answered all of their questions, and guessed quite a few things, and I answered correctly. And finally we were able to secure the necessary laboratory space.

But I soon realized that there were a million holes in my once-great surgery, and I spent seven months meticulously filling each hole.

result?

One small paper sensor costs 3 cents and takes 5 minutes to run.

This makes it 168x faster, over 26,000x cheaper, and over 400x more sensitive than the current standard for pancreatic cancer detection.

(Applause.) But one of the best things about this sensor is that it's close to 100 percent accurate, detecting cancer in its early stages when survival rates are close to 100 percent.

And in the next two to five years, this sensor could raise pancreatic cancer survival rates from the dire 5.5 percent to nearly 100 percent, and it could do the same for ovarian and lung cancer.

But it doesn't end there.

By switching that antibody, we will be able to look at different proteins, different diseases, every disease in the world.

They range from heart disease to malaria, HIV, AIDS and other cancers.

So hopefully one day we will all have an uncle, a mother, a brother, a sister, and another loving family member.

And our hearts hope to lift the burden of just one disease from pancreatic cancer, ovarian cancer, lung cancer, and potentially all.

But through the Internet, everything is possible.

You can share theory and you don't have to be a professor with multiple degrees to get your ideas evaluated.

It is a neutral space where appearance, age, and gender do not matter.

All that matters is your idea.

For me, it's about looking at the internet in a whole new way and realizing there's more to it than just posting pictures of your own duck face online.

(Laughter) You might change the world.

So imagine what a 15-year-old who didn't even know what the pancreas could do if he could find a new way to detect pancreatic cancer.

thank you.

(applause)

(Sounds of Nature) When I first started recording wild soundscapes 45 years ago, I had no idea that ants, insect larvae, sea anemones, and viruses could create sound signatures.

But they do.

And just like the Amazon rainforest you hear behind me, so are all wild habitats on earth.

In fact, temperate and tropical rainforests each produce vibrant animal orchestras that are immediate and organized representations of insects, reptiles, amphibians, birds and mammals.

And every soundscape that springs from its wild habitat produces its own unique signature, and that signature contains an incredible amount of information, some of which I want to share with you today.

A soundscape consists of three basic sources.

The first is geophony, non-biological sounds that occur in specific habitats, such as wind in trees, water in streams, waves on the coast, and the movement of the earth.

The second is biophony.

Biophony is all sounds produced by an organism in a particular habitat, one place at a time.

And the third, with all the sounds we humans make, is called anthrophony.

Some of it is controlled like music or theater, but most of it is chaotic and incoherent, some of us call it noise.

There was a time when I thought wild soundscapes were worthless artifacts.

It was just there and meant nothing.

Well I was wrong. What I have learned from these encounters is that attentive listening provides an incredibly valuable tool for assessing habitat health across a range of organisms.

When I started recording in the late '60s, the typical recording method was initially limited to capturing fragments of individual species, mainly birds, but later also animals such as mammals and amphibians.

For me, this was a bit like trying to understand the magnificence of Beethoven's Fifth Symphony by abstracting the sound of a single violinist from the context of an orchestra and only listening to part of it.

Fortunately, a growing number of institutions are adopting the more comprehensive model that I and a few colleagues have introduced into the field of soundscape ecology.

When I started recording over 40 years ago, I could record 10 hours and capture 1 hour of usable material. This was more than enough for an album, movie soundtrack, or museum installation.

Today, it can take up to 1,000 hours or more to shoot the same thing due to various factors such as global warming, resource extraction and human noise.

Fifty percent of my archive is from habitats that are completely silent or so radically altered that they are deafening in their original form.

The usual method of assessing habitats has been by visually counting the number of species within a given area and the number of individuals within each species.

However, by comparing data that combines both the density and diversity of information heard, more accurate fitness results can be reached.

And I would like to give some examples that represent the possibilities that can be unlocked by plunging into this world.

This is Lincoln Meadows.

Lincoln Meadows is a three-and-a-half-hour drive east of San Francisco, in the Sierra Nevada Mountains at an altitude of about 2,000 meters, and I've been recording there for many years.

In 1988, a logging company was experimenting with a new method called "selective logging," which cuts trees here and there instead of clearcutting the entire area, convincing locals that there would be no environmental impact.

I wanted a really good baseline, so with permission to record both before and after the surgery, I set up the equipment and followed a very strict protocol and coordinated recordings to capture a number of dawn choruses.

Here is an example of a spectrogram.

A spectrogram is a graphical representation of a sound with time from left to right on the page (representing 15 seconds in this case) and frequency from bottom to top, lowest to highest on the page.

Here you can see that the bottom third or half of the page represents a stream feature, and the top feature represents a bird that once lived in that meadow.

There were many.

And here is Lincoln Meadows before selective logging.

(Sounds of Nature) Well, I came back a year later and recorded some of the same dawn chorus examples using the same protocol and recording under the same conditions. And now this is what we got.

This is after selective logging.

You can see the stream in the bottom third of the page, but notice what's missing in the top two thirds?

(Sounds of nature) I can hear the sound of woodpeckers.

Well, I've visited Lincoln Meadows 15 times in the last 25 years, and I can say that the biophony, its density and diversity, is still not what it was before surgery.

But this is a picture of Lincoln Meadows taken after that, and you can see that the sticks and trees don't look out of place to the camera or the human eye. This supports the logging company's claim that there is no environmental impact.

But our ears tell a completely different story.

Young students always ask me what these animals are saying, but I have no idea.

But we can say that they express themselves.

Whether you can understand it or not is another story.

I was walking along the coast of Alaska and came across this tidal pool filled with corals and a colony of sea anemones, a member of the jellyfish family.

And, wanting to know if any of them were making noise, I dropped a hydrophone, a rubber-covered underwater microphone, into its mouthpiece, and soon the creature began absorbing the microphone into its belly, its tentacles searching the surface for something nutritious.

A very low static-like sound that you can hear now.

(pauses) Yeah, but look. When you can't find anything to eat -- (honking) (laughter) I think that's an expression you can understand in any language.

(Laughter) At the end of their breeding cycle, the Great Basin Spadefoot Toad burrows about a meter beneath the hardened desert soil of the western United States. There, they remain there for many seasons until the conditions are perfect for them to reappear.

In spring, when the soil has enough moisture, the frogs burrow into the surface and congregate in large numbers around this large spring pond.

And they vocalize in chorus in perfect sync with each other.

And they do so for two reasons.

The first is competitive. because they are looking for a companion. Second, be cooperative. This is because it becomes very difficult for predators such as coyotes, foxes, and owls to select specific individuals for food if they are all vocalizing at the same time.

Here's a spectrogram of what a chorus of frogs looks like when it's in a very healthy pattern.

(frog croaking) Mono Lake, just east of California's Yosemite National Park, is a favorite habitat for this toad, and a favorite of US Navy jet pilots. They are trained to fly fighter planes at speeds in excess of 1,100 kilometers per hour and just a few hundred meters above the Mono Basin. So fast, so low, so loud that even a 6 year old can hear human noise, human noise. Half a kilometer away from the frog pond we just heard, this pond obscured the sound of a chorus of toads.

In this spectrogram, you can see that all the energy that was once in the first spectrogram has disappeared from the top of the spectrogram, and the chorus breaks off at 2 1/2, 4 1/2, and 6 1/2 seconds. After that, the signature jet sound is displayed in yellow at the bottom of the page.

(frog croaking) Well, at the end of that flight, it took the frogs a full 45 minutes to regain choral synchronicity. Meanwhile, under the full moon, we watched two coyotes and an horned owl coming for a few numbers.

The good news is that a bit of habitat recovery and a reduction in migratory numbers has brought the frog population back to near normal after a decline in the 1980s and early 90s.

I would like to end with a story told by Bieber.

This is a very sad story, but it does show that animals can sometimes exhibit emotions, a subject that is highly controversial among some older biologists.

A colleague of mine was recording around this pond in the American Midwest that probably formed at the end of the last ice age 16,000 years ago.

It was also formed in part by a beaver dam at one end, keeping the whole ecosystem in a very delicate balance.

Then, one afternoon, as he was recording, out of nowhere, a few game wardens appeared, walked up to the beaver dam for no reason, dropped a stick of dynamite on it and blew it up, killing the females and their young babies.

My horrified colleagues gathered his thoughts and remained to document what they could for the rest of the afternoon. And that night he caught a remarkable event. It featured a lone surviving male beaver swimming in slow circles, wailing inconsolably for its lost mate and offspring.

This is probably the saddest sound I have ever heard, whether human or any other living creature.

(Bieber cries) Yes. good.

There are many aspects to soundscapes, including the way animals taught us to dance and sing, but we'll save that for another time.

But you've probably heard how biophony helps clarify our understanding of the natural world.

You've heard the effects of resource extraction, human noise, and habitat destruction.

And while environmental science has typically tried to understand the world from what we see, a more complete understanding comes from what we hear.

Biophony and geophony are the characteristic voices of the natural world, and listening to them gives us a sense of the place, the true story of the world in which we live.

Within seconds, Soundscapes reveals more information from multiple perspectives, from quantifiable data to cultural inspiration.

Visual capture implicitly constitutes a limited head-on perspective of a particular spatial context, while soundscapes extend that reach to 360 degrees, completely enveloping us.

And while a picture is worth 1,000 words, a soundscape is worth 1,000 pictures.

And our ears tell us that the whisper of every leaf and creature speaks to our natural sources of life. Indeed, there may be a hidden secret of love for all things, especially our own humanity. And the final word goes to the Amazon jaguar.

(grunts) Thank you for your attention.

(applause)

where do you come from?

This is a very simple question, but today, of course, simple questions lead to more complex answers.

People always ask me where I'm from, and they expect me to answer Indian, and as long as 100 percent of my blood and ancestry is of Indian origin, they're totally right.

However, I have never lived there for a single day in my life.

I can't speak a single word of over 22,000 dialects.

So I guess I don't really get the right to call myself an Indian.

And then, "Where are you from?"

It means "Where were you born, raised and educated?"

And although I'm entirely from the quirky little country of England, I left the UK as soon as I finished my undergraduate education, and all the way up growing up, I was the only kid in my class who didn't look like a classic English textbook hero.

And then, "Where are you from?"

It means "Where do you pay your taxes?"

Where do you see your doctor or dentist? ”

Also, I'm very American, and I've lived in America for 48 years, ever since I was really young.

For years, though, I had to carry around this funny little pink card with a green line across my face indicating I was a permanent resident.

In fact, the longer you live there, the more alien it feels.

(Laughter) And if, "Where are you from?"

It means, "Where are you deepest inside of you and where are you going to spend most of your time?"

Well, I'm Japanese. I have lived in Japan as much as possible for the past 25 years.

However, I've been there on a tourist visa for years and I'm sure few Japanese would want to think of me as one of those on a tourist visa.

I say this to emphasize how quaint and simple my biography is. Because when I go to Hong Kong or Sydney or Vancouver, most of the kids I meet are much more international and multicultural than I am.

And they say, one house is related to their parents, another is related to their partner, the third is related to where they probably happen to be, the fourth is related to where they dream, and so much more.

And their whole life will be spent taking pieces from different places and putting them together to create a whole stained glass.

A house for them is a work in progress.

It's like a project that we're constantly upgrading, improving and fixing.

And for more and more of us, home is more a part of the soul than the soil.

If someone suddenly asks, "Where is your house?"

I think about my lover, my best friend, the song that accompanies me wherever I am.

I always felt that way, but a few years ago, when I was climbing the stairs of my parents' house in California, I looked in through the living room window and saw that we were surrounded by 70-foot-high flames. This is one of the regular wildfires in the hills of California and many other similar places.

And three hours later the fire had reduced my house and everything but me to ashes.

And when I woke up the next morning, I was sleeping on the floor of my friend's house. All I had in the world was a toothbrush I had just bought at the All-Night Supermarket.

Of course, if someone asks me, "Where is your home?"

I literally couldn't point to any physical structure.

My home should be what I carried inside me.

In many ways, I think this is a wonderful liberation.

Because when my grandparents were born, they were assigned a sense of home, a sense of community, and even animosity at birth, and didn't get much of a chance to get out of there.

And today, at least some of us can choose our sense of home, create our sense of community, shape our sense of self, and in doing so may be able to move a little beyond the black-and-white distinctions of our grandparents' time.

It's no coincidence that the president of the most powerful country on earth is half Kenyan, half Indonesian and has a Chinese-Canadian stepbrother.

There are now 220 million people living outside their own country, an almost unimaginable number, but if you add all of Canada and all of Australia, plus all of Australia and all of Canada, and double that number, you still have fewer people than belong to this great floating tribe.

And the number of us living outside the confines of the old nation-state has grown rapidly by 64 million in the last 12 years alone, and soon we will outnumber Americans.

We already represent the fifth largest nation on earth.

And indeed, in Toronto, Canada's largest city, the average resident today is born in a completely different country, once called a foreigner.

And I've always felt that the beauty of being surrounded by foreigners is that it wakes you up.

Nothing can be taken for granted.

For me, travel is a bit like love. Because suddenly all the senses are set to marked "on".

Suddenly you become aware of secret patterns in the world.

As Marcel Proust famously said, the true voyage of discovery consists not in seeing new sights, but in seeing with new eyes.

And of course, with new eyes, old landscapes and even houses become something else.

Many people living in countries other than their own are refugees, do not want to leave their homes and long to return to their homes.

But for the lucky ones among us, I think the age of mobility brings exciting new possibilities.

Indeed, when I travel, especially in the world's major cities, the typical person I meet today is a young half-Korean half-German woman living in Paris, for example.

And as soon as she met the young Thai-Canadian man from Edinburgh, she recognized him as a relative.

She realizes that she has a lot more in common with him than perhaps she does wholly Korean or wholly German.

So they become friends. they fall in love.

They move to New York City.

(laughs) Or Edinburgh.

And the little girl born of their union is, of course, not Korean, German, French, Thai, Scottish, Canadian, or American, but a wonderful and ever-evolving mixture of all those places.

And all of the ways young women dream about the world, write about the world, and think about the world can potentially be something different. Because it comes from this almost unprecedented fusion of cultures.

Where you came from is much more important than where you are going.

Many of us are rooted in the future and present tense as well as the past.

And we know that home is not just where you happen to be born.

It's where you become who you are.

Still, there's one big problem with moving. It's very difficult to orient when you're in the air.

A few years ago, I realized I had a million miles on United Airlines alone.

As you all know, it's a crazy system where 6 days is hell and the 7th is free.

(Laughter.) And it actually got me wondering if movement could be as good as the sense of stillness that you can bring to give it perspective.

Then, eight months after my house burned down, I met a friend who was teaching at a local high school. and he said: "We have the perfect place for you."

"Really?" I said. I'm always a little skeptical when people say things like that.

"Well, let's be honest," he continued, "it's only a three-hour drive away, it's not that expensive, and it's probably unlike anywhere you've stayed before."

"Hmm." I'm starting to get a little curious. "what is that?"

"Well--" my friends agreed at this point--"well, it's actually a Catholic hermitage."

This was the wrong answer.

I spent 15 years in Anglican school, so I had a lifetime of hymns and crosses.

There are actually several lifetimes.

But a friend of mine assured me that he was not Catholic, and most of his students were not Catholic, but he took classes there every spring.

And as he experienced, even the most restless, easily distracted, testosterone-challenged 15-year-old Californian boy just spent three days in silence cooled and purified something inside him.

he found himself

And I thought, 'If it works for a 15-year-old boy, it should work for me.

So I got in my car and drove three hours north along the coast. Then the road became narrower and narrower, then into an even narrower road, barely paved, winding for two miles to the top of the mountain.

When I got out of the car, the air was pulsating.

The whole place was completely silent, but the silence was not without noise.

It was just some kind of energy or acceleration.

And at my feet was the great still blue plate of the Pacific Ocean.

All around me was 800 acres of dry bush.

Then I headed to the room where I was going to sleep.

It was small but very comfortable, with a bed, a rocking chair, a long desk, and a long window overlooking a small private walled garden and 1,200 feet of golden pampas grass that stretched out to the ocean.

And I sat down and started writing, writing, writing. Even though I really went there to get away from my desk.

By the time I woke up, four hours had passed.

As night fell, I stepped out under a large overturned starry sky and saw the taillights of cars fading 19 miles south around the cape.

And the anxiety of the previous day seemed to really disappear.

And the next day, when I woke up without my phone, TV, or laptop, the day felt like a thousand hours longer.

I felt really free during the trip, but at the same time I felt like I was at home.

And I'm not a religious person, so I didn't go to church.

I didn't ask a monk for guidance.

I just took a walk on the monastery road and sent postcards to my loved ones.

While I was looking at the clouds, I did something I wouldn't normally do, but it was nothing at all.

And I started going back to this place. And I found myself just sitting still, doing the most important work behind the scenes, making certainly the most important decisions in ways I never could when I was rushing from last email to the next appointment.

And I began to wonder if something inside me really wanted silence, but of course I couldn't hear it because I was running around.

I was like a crazy man blindfolded and complaining that he couldn't see anything.

And I remembered those wonderful words I learned from Seneca as a boy. “He is poor not because he has little, but because he wants more.”

And of course, I am not advising anyone here to enter a monastery.

it doesn't matter.

But I think that only by stopping the movement will you know where to go.

And only by stepping out of your life and out of the world can you see and find a place for what you care most about.

And I've noticed that so many people now take the conscious precaution of sitting quietly for 30 minutes each morning without a device and focusing in a corner of the room, going for a run every night, or leaving their phone behind when having a long conversation with a friend.

Being physically active is a wonderful privilege and allows us to do many things our grandparents never dreamed possible.

But moving, after all, only makes sense if you have a home to return to.

And a home is more than just a place to sleep, after all.

that's where you stand.

thank you.

(applause)

(Applause) (Music) (Applause)

They say the grass behind the fence is always greener, and I believe this to be true, especially when I hear President Obama often talk about the South Korean education system as a measure of success.

Well, with the rigid structure and competitive nature of the Korean school system, also known as the pressure cooker, it can be said that not everyone thrives in that environment.

Many people had mixed reactions about our education system, but my reaction to the high-pressure environment was to make a bow out of a piece of wood found near my apartment.

why a bow?

I'm not so sure.

Perhaps my caveman survival instincts combined with the bow in the face of constant pressure.

Come to think of it, bows have really helped facilitate human survival since prehistoric times.

During the Joseon Dynasty, silkworms were fed mulberry leaves in mulberry forests within three kilometers of their homes.

To raise historical awareness of this fact, the government planted mulberry trees.

The seeds of these trees were also spread by birds around sound barriers on urban highways built before and after the 1988 Olympics.

This area near the wall, where no one cares, has been left without major intervention, and this is where I first found my treasure.

As I fell in love with bow making, I began exploring beyond the neighborhood.

On school excursions, family trips, or on the way home from extracurricular classes, I would walk around the forest area with the tools I hid in my school bag and collect tree branches.

They were things like saws, knives, sickles and axes, covered with towels.

I barely held it in my hand and took the bus or subway to take the branch home.

And I didn't bring my gear here in Long Beach.

airport security.

(Laughter) I spent the night in my room, covered in sawdust, sawing, trimming, and polishing the wood until it was shaped like a bow.

One day, when I was changing the shape of the bamboo, I set fire to that place.

where? The roof of my apartment is where 96 families live.

A customer at the department store across from me called 911, so with my hair half-burnt, I ran downstairs to tell my mother.

I would like to take this opportunity to say to the mothers in the audience today. "Mom, I'm really sorry. I'll be more careful when handling fire from now on."

The mother had to give many explanations to tell people that her son did not set the fire on purpose.

We also thoroughly researched bows around the world.

Along the way, I tried to combine different bows from time and place to create the most effective bow.

We also used various types of wood, such as maple, yew, and mulberry, and conducted numerous photography experiments in the thicket of trees near the urban highway I mentioned earlier.

This is the bow that works best for me.

1: Curved tip allows for maximum resilience when drawing and shooting arrows.

2: The berries are pulled inwards to increase draw weight, which means more power.

3: Sinew is used on the outer layer of the limb to retain maximum tension.

And fourth, the horn is used to store compression energy.

I fixed it, broke it, remade it, fixed it, bent it, modified it, and the ideal bow took shape, and when it was completed, it looked like this.

I was so proud to have invented the perfect bow myself.

Here is a picture of a traditional Korean bow taken from a museum. See how my bow looks like.

I thank my ancestors for stealing my invention. (Laughter) Through bow making, I got in touch with some of my own traditions.

Learning the information accumulated over time and reading the messages left by my ancestors was better than any comforting therapy or advice a living adult could give me.

You see, I searched far and wide, but neither near nor near.

From this realization, I began to take an interest in Korean history, which I had never been interested in before.

After all, we don't realize it, but the grass on this side of the fence often looks greener.

Now let me explain how my bow works.

And let's see how this works.

This is a bamboo bow with a draw weight of 45 lbs.

(Sound of arrows being shot) (Applause) A bow works with a simple mechanism, but to make a good bow requires a very fine sensibility.

Wood needs to be comforted and communicated.

Each wood fiber has its own reason for existence and function, and only when they work together and harmoniously can a great bow be created.

I may be an [eccentric] student with unconventional interests, but I hope I can contribute by sharing my story with you.

My ideal world would be a place where no one is left behind, a place where everyone is needed, like the fibers and tendons of a bow, where the strong are flexible and the weak are resilient.

Bows are like me and I am like bows.

Now I'm filming a part of myself for you.

Or better yet, a piece of my heart has been shot into yours.

Shocked?

thank you.

(applause)

Here are the most important economic facts of our time.

We live in a time of skyrocketing income inequality, especially between those at the top and those below.

This change is most pronounced in the US and UK, but it is a global phenomenon.

It's happening in communist China, old communist Russia, India and my native Canada.

We see it in cozy social democracies like Sweden, Finland and Germany.

Let me give you some numbers to show what's going on.

In the 1970s, One Percent accounted for about 10 percent of US national income.

Today, its share has more than doubled to over 20 percent.

But even more surprising is what happens at the very tipsy top of the income distribution.

0.1 percent in the US

Today it accounts for over 8% of the national income.

They are where One Percent was 30 years ago.

Let me give you another number to put this into perspective. That's a figure calculated by Clinton Administration Labor Secretary Robert Reich in 2005.

Reich found that the wealth of Bill Gates and Warren Buffett, two apparently billionaires, equaled the wealth of the bottom 40 percent of the U.S. population, 120 million.

Now, as it happens, Warren Buffett is not only a plutocrat himself, but one of the phenomenon's sharpest observers, and has his own favorite numbers.

Buffett likes to point out that in 1992, people on the Forbes 400 list (which is the list of the 400 richest Americans) had a total wealth of $300 billion.

Think about it.

In 1992 you didn't even have to be a millionaire to be on that list.

Today, that number has more than quintupled to $1.7 trillion. It probably goes without saying that middle-class wealth is stagnating, if not actually declining.

In other words, we live in an age of global plutocracy, but we realized it too late.

One of the reasons, I think, is something like the boiled frog phenomenon.

Slow, gradual changes can be hard to notice, even if the final impact is very dramatic.

Consider what happened to the poor frog after all.

But I think something else is going on.

Talking about income inequality can make us feel uncomfortable, even if it's not on the Forbes 400 list.

Talking about how you slice the pie is less positive and less optimistic than thinking about how to make it bigger.

And if you happen to be on the Forbes 400 list, talking about income distribution, and its inevitable cousin income redistribution, can be downright threatening.

So we live in a time of skyrocketing income inequality, especially at the top.

What causes it and what can we do about it?

One reason is political. Tax cuts, deregulation of financial services in particular, privatization, and weakening legal protections for trade unions all contribute to increasing incomes at the very top.

Many of these political factors can be broadly categorized under the category of “criminal capitalism”. So while political change benefits a group of well-connected insiders, it really doesn't do much for the rest of us.

In practice, getting rid of crony capitalism is incredibly difficult.

Consider, for example, the long efforts of reformers from all walks of life to combat corruption in Russia, how difficult it is to reregulate banks even after the worst financial crisis since the Great Depression, or how difficult it is to get large multinationals, including those whose motto is "do no evil," to pay taxes even close to those paid by the middle class.

But actually getting rid of crony capitalism is a very difficult problem, at least intellectually, but an easy one.

After all, no one actually supports crony capitalism.

In fact, this is one of those rare issues where lefts and rights agree.

Criticism of crony capitalism is as central to the Tea Party as it is to occupying Wall Street.

But if crony capitalism is the easy part of the problem, at least intellectually, things get more complicated when we look at the economic drivers of soaring income inequality.

By itself, it's not all that mysterious.

Globalization and the technological revolution, the twin economic transformations that are changing our lives and transforming the global economy, are also driving the rise of the ultra-rich.

Think about it.

For the first time in history, if you're a dynamic entrepreneur with a great new idea or a great new product, you'll have near-instantaneous, almost frictionless access to a global marketplace of over a billion people.

As a result, if you are very, very smart and very lucky, you can get rich very, very quickly.

The latest poster boy for the phenomenon is David Karp.

Tumblr's 26-year-old founder recently sold his company to Yahoo for $1.1 billion.

Let's think about it. $1.1 billion, 26 years old.

It is easiest to see how the technological revolution and globalization are creating this kind of superstar effect in high-profile areas such as sports and entertainment.

We can all see how great athletes and great performers can leverage their skills across the global economy like never before.

But today, that superstar effect is happening across the economy.

We have superstar technicians.

We have superstar bankers.

We have superstar lawyers and superstar architects.

There are superstar cooks and superstar farmers.

There are superstar dentists, but this is my personal favorite example. Its brightest exemplar is Frenchman Bernard Tuati, who serves the smiles of fellow superstars like Russian oligarch Roman Abramovich and European-born American fashion designer Diane von Furstenberg.

But while it is very easy to understand how globalization and the technological revolution are creating this global plutocracy, it is much harder to understand what to think about it.

That's because, in contrast to crony capitalism, much of what globalization and the technological revolution have brought is very positive.

Let's start with technology.

i love the internet I love mobile devices.

I love the fact that it means that whoever chooses can watch this talk well beyond this auditorium.

I'm also a fan of globalization.

This is the transformation that has lifted hundreds of millions of the world's poorest people out of poverty and into the middle class, and if you live in affluent parts of the world, it has made many new products affordable. Who do you think made your iPhone? — And the things we've depended on for so long are now a lot cheaper.

Think dishwashers and T-shirts.

So what don't you like?

Okay, some things.

One of my concerns is how easily so-called meritocratic plutocracy can become crony plutocracy.

Imagine that you are a brilliant entrepreneur who has successfully sold your idea or product to billions of people around the world, becoming a millionaire in the process.

At that point, the temptation is to use your economic notions to manipulate the political and economic rules of the world to your advantage.

And this is not just a hypothetical example.

Think Amazon, Apple, Google, Starbucks.

These are some of the world's most admired, most loved and most innovative companies.

They are also particularly adept at leveraging the international tax system to bring the tax bill down very significantly.

And why stop at exploiting the global political and economic system as it exists to the maximum benefit for ourselves?

Once you have the enormous economic power to top the income distribution, and the political power that comes with it, it's tempting to start trying to change the rules of the game in your favor.

Again, this is no mere hypothesis.

That is, the Russian oligarchy has created a once-in-a-century sale-privatization of Russia's natural resources.

This is one way to explain what happened with the deregulation of financial services in the US and UK.

My second concern is how easily meritocratic plutocracy turns into aristocracy.

Plutocrats can be summed up in one word: “alpha geeks,” who are acutely aware of the importance of highly sophisticated analytical and quantitative skills in today's economy.

That's why they devote unprecedented time and resources to educating their children.

The middle class is also spending more on schooling, but the 99 percent is increasingly outstripped by the 1 percent in the global education race, which starts at nursery school and ends at Harvard, Stanford and Massachusetts Institute of Technology.

The result is what economists Alan Kruger and Miles Collack call the "Great Gatsby Curve."

Widening income inequality reduces social mobility.

Plutocracy may be meritocracy, but increasingly you have to be born at the top of the ladder to enter the race.

The third, and this concerns me the most, is to what extent the same predominantly positive forces driving the rise of global plutocracy happen to hollow out the middle class in advanced Western economies.

Let's start with technology.

The same forces that create millionaires are eating away at many traditional middle-class jobs.

When was the last time you used a travel agency?

And in contrast to the Industrial Revolution, our new economic giants haven't created that many new jobs.

At its peak, G.M. had hundreds of thousands of employees, while Facebook had less than 10,000.

The same is true for globalization.

Despite lifting hundreds of millions of people out of poverty in emerging markets, it outsources many jobs from the developed West.

The horrifying reality is that there are no economic laws that automatically turn increased economic growth into widely shared prosperity.

It's reflected in what I consider to be the most terrifying economic statistics of our time.

Since the late 1990s, productivity growth has been decoupled from wage and employment growth.

It means that while our country is getting richer and our businesses are becoming more efficient, we are not creating more jobs or paying people more as a whole.

One of the scary conclusions that all of this leads to is worrying about structural unemployment.

What worries me more is another nightmare scenario.

After all, in a completely free labor market, almost everyone can find a job.

The dystopia I worry about is a world where a few geniuses invented Google and the like, and the rest of us are hired to give them massages.

So when I'm really down about all of this, I console myself by thinking about the Industrial Revolution.

After all, despite its gruesome and devilish factory, it worked out pretty well, didn't it?

After all, all of us here are wealthier, healthier, taller, and, with a few exceptions, outlived our early 19th-century ancestors.

But before we can learn how to share the fruits of the Industrial Revolution with the broader society, it is important to remember that we had to go through two crises: the Great Depression of the 1930s, the Great Depression of the 1870s, two world wars, the communist revolutions in Russia and China, and a period of tremendous social and political upheaval in the West.

We have also experienced, not by accident, a period of tremendous social and political invention.

We have created a modern welfare state.

We created public education.

We created public health.

Created a public pension.

We formed a union.

Today, we are living in an era of economic transformation that rivals the Industrial Revolution in scale and scope.

To ensure that this new economy benefits us all, not just plutocracy, we need to embark on a relatively ambitious era of social and political change.

We need a new New Deal policy.

(applause)

My name is Tom. I'm here today to confess what I do for money.

Basically use a strange mouth in exchange for cash.

(Laughs) I do stuff like this all the time downtown in shady bars and corners, so this might not be the best environment, but I want to demonstrate a little bit of what I'm doing.

(Beatbox) Well, I'd like to go back to the classics for the next number.

(Applause.) We bring it back, long ago.

(Beatboxing: "Billie Jean") ♫ Billie Jean is not my lover ♫ ♫ She's just a girl who claims I'm her ♫ ♫ But she's not my son ♫ (Applause) Okay.

what happened.

Thank you very much, TEDx.

For those of you who haven't figured it out yet, my name is Tom Sam, Beatboxer. In other words, all the sounds I just heard were made entirely with my voice, and the only one is my voice.

And we assure you that this mic will not be affected at all.

And I'm very, very excited — (applause) you guys are all applauding. it's great.

Look at this, mom! Hooray!

I am so happy to be here today on behalf of my family and all those who have not been able to make a career out of their innate ability to make inhuman noise.

Because it's a bit of a niche market, especially where I'm from.

As you know, I'm from Brisbane and it's a wonderful city to live in.

yes! have understood! Most of Brisbane is here. that's good.

(Laughter.) You know, I'm from Brizy, and it's a great city to live in, but let's be honest, it's not exactly the cultural capital of the Southern Hemisphere.

So I've done a lot of work outside Brisbane and outside of Australia, and pursuing this crazy passion has allowed me to see so many amazing places in the world.

So I would like to share my experience if possible.

So, ladies and gentlemen, I would like to take you on a journey across continents and sound itself.

We start our journey from the central desert.

(didgeridoo) (airplane) India.

(Beatboxing) (Sitar) China.

(Kosei) (Beatboxing) Germany.

(Beatboxing) Party, party, yeah.

(Laughter) And before we get to our final destination, folks, I want to share with you some of the technology I brought all the way from the thriving metropolis of Brisbane.

These things here in front of me are called Chaos Pads and they allow me to do different things with my voice.

For example, the one on the left here can add a touch of reverb to the sound, giving it a -- (trumpet) -- flavor.

(Laughs) And the others here can be used in unison to mimic effects such as drum machines.

You can sample your own sound and play it just by hitting the pad here.

(Noise) TEDx.

(music) (applause) We ran out of time.

And last but not least, the one on the right here allows you to loop loop loop loop loop loop loop loop your voice.

With that in mind, ladies and gentlemen, I would like to take you on a journey to a whole other part of the globe, transforming the Sydney Opera House into a smoky downtown jazz bar.

OK boys, take it away.

(music) Ladies and gentlemen, I would like to introduce a special friend of mine. One of the greatest contrabass players I know.

Smokey Jefferson, let's go for a walk. Come on baby.

(music) Ladies and gentlemen, I would like to introduce you to the star of this show, one of the greatest jazz legends of our time.

Music lovers and jazz lovers alike, please give a warm round of applause to the one and only Mr. Peeping Tom. take it away

(music) (applause) Thank you. thank you very much.

(applause)

we are at a critical moment.

Our leaders, some of our great institutions, are letting us down.

why?

Sometimes it's because they're bad or unethical, but more often than not they lead us to the wrong end.

And this is unacceptable.

This has to stop.

How are you going to fix these mistakes?

How do I choose the right course?

It's not easy.

I've worked with talented teams over the years and they have chosen the right and wrong goals.

Many have succeeded, but some have failed.

And today I want to share with you something that really makes a difference. That's what matters, how and why to set meaningful and bold goals, the right goals with the right reasons.

Let's go back to 1975.

yes this is me

I have a lot to learn. I'm a computer engineer, I have long hair, and I work for Andy Grove. He has been called the greatest manager of his time or otherwise.

Andy was a great leader and teacher, and he said to me, "John, it hardly matters what you know.

So Andy invented a system called "goals and key outcomes".

It kind of rolls off your tongue.

And it all depends on good execution.

Here is Professor Andy Grove's classic video from the 1970s.

(Video) Andy Grove: The two key words in Management with Objective Systems are objectives and key outcomes, and these two objectives are aligned.

Purpose is direction.

Important results need to be measured, but in the end, without arguing, you can say, "Did I do that or didn't I?" yes. No, it's simple.

John Doerr: It's Andy.

yes. No, it's simple.

Goals and Key Results (OKRs) is a simple goal-setting system that works for organizations, teams, and even individuals.

A goal is what you want to achieve.

The important result is how you achieve it.

the goal. main results.

what and how

But here is the truth. Many of us set the wrong goals, and most of us don't set any goals at all.

Many organizations set goals and achieve them.

They're making sales, introducing new products, and driving numbers, but they lack the sense of purpose to inspire their teams.

So how do you set those goals appropriately?

First, we must answer the question, "Why?"

why?

Because truly transformative teams combine ambition, passion and purpose, and develop a clear and compelling sense of why.

I would like to talk to you.

I work with great entrepreneurs.

Her name is Kim Jin Hee.

She runs a company called Nuna.

Nuna is a healthcare data company.

And when Nuna was founded, they used data to meet the health needs of many employees at large companies.

And two years after the company was founded, the federal government announced a proposal to build the first-ever cloud database for Medicaid.

Now, remember that Medicaid is a program that serves 70 million Americans, the poor, children, and people with disabilities.

Nuna was just 15 people at the time, the database had to be built in a year, and there were a series of promises that had to be adhered to, and frankly, the project wasn't very lucrative.

This was the moment that put the company on the line, and Jini grabbed it.

She jumped at the opportunity. She didn't flinch.

why?

Well, it's for personal reasons.

Jinnie's younger brother Kimon is autistic.

At age 7, he had his first major seizure at Disneyland.

he fell to the ground. he held his breath.

Jinnie's parents are Korean immigrants.

They came to the country with limited resources who spoke little English, so it was up to Gini to enroll her family on Medicaid.

she was 9 years old.

That moment defined her mission, and that mission became her company, and that company would bid, win, and fulfill that contract.

Gini explains why.

(Video) Ginny Kim: Medicaid saved my family from bankruptcy and now supports the health of Kimon and millions of others.

Nuna is my love letter to Medicaid.

Every row of data is life and its story deserves to be told with dignity.

JD: And Gini's story teaches us that a compelling sense of reason can be the starting point for our goals.

Remember that is what we want to achieve.

And goals are important, action-oriented, inspirational, a kind of vaccine against vague thinking.

It might seem unlikely that Rockstar would use "goals and key outcomes," but for years Bono has used OKRs to wage a global war on poverty and disease. His ONE organization has also focused on two very ambitious and ambitious goals.

The first is debt relief for the world's poorest countries.

Second is universal access to anti-HIV drugs.

So why are these goals good?

Let's go back to the checklist.

important? check. concrete? yes.

action oriented? yes.

Inspiring?

Now let's listen to Bono.

(Video) Bono: Are you passionate?

How passionate are you?

What actions do your passions lead you to?

Your passion means nothing if your heart doesn't rhyme perfectly with your head.

The OKR framework fosters the madness within it, the chemistry.

It gives us an environment of risk and trust, and an environment where failure is not condemned.

With that kind of structure and environment and the right people, magic is just around the corner.

JD: I love it.

OKRs breed madness and magic is just around the corner.

this is perfect.

Ginny explained why, and Bono explained the goal setting.

Let's focus on how.

Remember the method is the result that matters.

That's how we reach our goal.

And good results are tangible and time-bound.

They are aggressive but realistic.

They are measurable and verifiable.

These are good and important results.

In 1999, I introduced OKRs to Google co-founders Larry and Sergey.

They are 24 years old in the garage.

And Sergei enthusiastically said that he was going to adopt them.

Well, not quite.

His true words were, "There's no other way to run this company, so I'm going to try."

(Laughter.) And I took that as an endorsement of sorts.

But every quarter since then, every Googler has written down goals and key achievements.

They scored them and published them for everyone to see.

These are not used for bonuses or promotions.

they are set aside.

They are used for a higher purpose, which is to get a collective commitment to achieve a true goal.

In 2008, Googler Sundar Pichai set out with the goal of building the next generation client platform for the future of web applications: building the best browser.

He was very thoughtful in how he chose the important results.

How do you measure the best browser?

It could be an ad click or an engagement.

No, he said is the number of users. It's up to you to decide if Chrome is a good browser.

So he had a three-year goal to build the best browser.

And year after year, they raised the bar while still sticking to the same key outcome: number of users.

In his first year, his goal was 20 million users, but he fell short.

He scored less than 10 points.

In the second year, the hurdle was raised to 50 million.

His user count has reached 37 million.

Somewhat better.

In his third year, he again raised the ante to $100 million.

He launched an aggressive marketing campaign, expanded distribution reach, improved technology, and Kaboom!

He has 111 million users.

Here's why I love this story. Rather than a happy ending, it depicts someone carefully choosing the right goal and sticking to it year after year.

A perfect story for a geek like me.

Now, I see OKRs as transparent vessels made from the content and methods of our ambitions.

What really matters is why you pour into that vessel.

That's why we work.

OKRs are not a silver bullet.

They're no substitute for a strong culture or stronger leadership, but if these basics are in place, they can take you to the top of the mountain.

Think about your life for a moment.

Do you have good metrics?

Take the time to write down your values, goals, and key outcomes.

let's do it today

If you need any feedback please send it to me.

I'm john@whatmatters.com.

When you think about Intel, Nuna, Bono, and Google's world-changing goals, they're remarkable. Ubiquitous computing, affordable healthcare, quality services for all, eradication of global poverty, and access to the world's information.

This is the conclusion. Today, all of these goals are driven by OKRs.

According to Andy Grove, I'm called Johnny Appleseed of OKR for spreading the good gospel, and I want you to join the movement.

OKRs extend beyond your business, so fight for what really matters.

We can take them to families, schools and even governments.

We can hold those governments accountable.

We can transform those information.

If you can measure what really matters, you can get back on the right track.

thank you.

(applause)

What keeps you up at night?

Thinking about deep questions?

Excited for a big trip?

Or is it stress about unfinished business, upcoming tests, or dreaded family gatherings?

For many people, this stress is temporary and its causes are quickly resolved.

But what if it's the stress of not being able to sleep that's keeping you awake?

This seemingly insoluble loop is at the heart of the world's most common sleep disorder, insomnia.

Nearly all of your partner's snoring, physical pain, and emotional distress can cause occasional sleepless nights.

Also, extreme sleep deprivation, like jet lag, can throw your body clock out of whack and wreak havoc on your sleep schedule.

But most of the time, sleep deprivation is short-term.

Eventually, exhaustion will hit us all.

However, respiratory illness, gastrointestinal illness, and many other long-term conditions can exacerbate fatigue.

And as the sleepless nights pile up, the bedroom can start to have associations with anxious, sleepless nights.

When bedtime comes, people with insomnia feel stressed.

Their stressed brains hijack their stress response system, flooding their bodies with fight-or-flight-freeze chemicals.

Cortisol and adrenocorticotropic hormone travel through the bloodstream to increase heart rate and blood pressure, causing the body to sway and become hypervigilant.

In this state, the brain is searching for potential threats and can no longer ignore slight annoyances or nighttime noises.

And when an insomniac finally falls asleep, the quality of their rest is compromised.

Our brain's main source of energy is brain glucose, and during healthy sleep our metabolism slows down and this glucose is stored for waking hours.

However, PET studies also show that adrenaline, which disrupts sleep in insomniacs, boosts metabolism.

While they sleep, their bodies work overtime, depleting the brain of glucose for energy.

This sleep deprivation symptom causes the insomniac to wake up in a state of fatigue, confusion, and stress, causing the process to start all over again.

When this cycle of stress and restlessness lasts for several months, it is diagnosed as chronic insomnia.

Insomnia is rarely fatal, but its chemical mechanism resembles the anxiety attacks seen in people experiencing depression and anxiety.

Thus, having one of these conditions puts you at increased risk of developing the other two.

Luckily, there are ways to break the insomnia cycle.

Managing stress that leads to hypervigilance is one of the best understood treatments for insomnia, and good sleep habits can help rebuild your relationship with bedtime.

Try to keep your bedroom dark and comfortably cool to minimize the "threat" during hyperarousal.

Use your bed only for sleep, and if you feel restless, leave the room and de-stress with relaxing activities such as reading, meditating, or journaling.

Regulate your metabolism by setting regular rest and wake times to keep your body clock on track.

This clock, or circadian rhythm, is also sensitive to light, so avoid bright lights at night to let your body know it's time to sleep.

In addition to these habits, some doctors prescribe medications to help you sleep, but there is no reliable medication that will help in all cases.

In addition, over-the-counter sleeping pills are highly addictive and can cause withdrawal symptoms and exacerbate symptoms.

However, before seeking treatment, make sure your insomnia is really caused by insomnia.

About 8% of patients diagnosed with chronic insomnia actually suffer from a less common genetic problem called delayed sleep phase disorder (DSPD).

People with DSPD have significantly longer circadian rhythms than 24 hours and their sleep habits are out of sync with traditional sleep hours.

Therefore, it is difficult to fall asleep at normal bedtime, but it is not due to increased stress.

And when the opportunity arises, they can sleep comfortably on their own delayed schedules.

Our sleep-wake cycle is a delicate balance and it is essential to maintain it for physical and mental health.

For all of these reasons, it's worth the time and effort to maintain a stable bedtime routine, but be careful not to lose sleep because of it.

I love paper and technology and my job is to make paper interactive.

That's what I say when people ask me what I do, but it really confuses most people, so the best way to really communicate that is to leverage technology to be creative and create experiences.

So I was trying to figure out what I could use here, and a few weeks ago I had the crazy idea of ​​printing two DJ decks to mix music.

And I'm going to show it one last time, and if it works, the suspense will be just as much mine.

Also, I'm not a DJ or a musician, so that's a little scary.

So I thought the best way to describe my journey would be to talk about a few small incidents that happened to me throughout my life.

There are 3 special things I did. I'll describe them first, then I'll talk about some of my work.

So as a kid, I was obsessed with wires, running them under carpets, running them behind walls, and having little switches and little speakers. And we wanted the bedroom to be interactive, yet completely hidden.

And I was also very interested in wireless.

So I bought the little kit I could get my hands on to make a radio transmitter, got an old book, cut out the contents and hid it in it, then put it next to my dad, sneaked back to my bedroom and tuned the radio so I could listen.

I had no interest in what he said.

More than that, I just liked the idea of ​​having something inside an everyday object and doing something different.

A few years later, I managed to pass all my exams, but left school without any notable achievements. My parents probably bought me a one-way ticket to Australia as a reward, and I returned home about four years later.

We ended up at a farm in the middle of nowhere.

It was in the far west of New South Wales.

And this farm was 120,000 acres.

There were 22,000 sheep and the temperature was about 40 degrees, or about 100 degrees Fahrenheit.

And on this farm there was a farmer, his wife, and a four-year-old daughter.

And they took me to the farm to show me what it's like to live and work.

Obviously, one of the most important things was the sheep, so my job was to do, well, pretty much everything, but it was to get the sheep back on the farm.

They built fences and used bikes and horses to do it, and the sheep made their way all the way back to the shearing shed each season.

And what I've learned is that at the time, like everyone else, I thought sheep were pretty stupid because they didn't do what we wanted them to do, but now, probably for the first time in retrospect in the last few weeks, I realize that sheep weren't stupid at all.

We put them in an environment they didn't want and they didn't want what we wanted.

So the challenge was to get them to do what we wanted by listening to the weather and land conditions and creating something that allowed the sheep to flow and go where we wanted to go.

After another few years, I settled down at the Cavendish Institute, University of Cambridge, UK.

in Physics doing a PhD.

My PhD was to move the electrons one at a time.

And I, again, this is a retrospective recognition of what I did, but now I realize that it was almost the same as moving sheep.

It really is.

You can do that by simply changing your environment.

And that was a big lesson for me, you can't act on any object.

Objects flow when you change the environment.

So we made it very small, about 30 nanometers in size. It will be very cold, so it will be the temperature of liquid helium. Changing the environment by changing the voltage allows the electrons to loop around one at a time, turning them on and off, creating tiny storage nodes.

And I wanted to go one step further and turn one electron on and one electron off.

And I was told I couldn't do that. I've heard it from other people and that's what drives you.

And I was determined to show that I could do it.

And I think a lot of that learning came from that farm. When I worked on the farm, we had to use what was around us, we had to use the environment. There was nothing we couldn't do. Because if you can't do what you have to do, you're in an environment where you could die. And I've seen things like that happen.

So what I'm obsessed with right now is printing, and I'm really fascinated by the idea of ​​using a traditional printing process, the kind of printing process used to create a lot of the things around us to make paper and cards interactive.

When I started talking to some printers and told them what I wanted to do, which was to print conductive inks on paper, they again said they couldn't do that kind of thing.

So I took out a dozen or so credit cards and loans, nearly bankrupted myself, and bought myself a huge printing press that I had no idea how to use.

It was about five meters long and I covered myself and the floor with ink and wreaked havoc, but I learned to print.

Then I took it back to the printer and showed them what I did, and they said, 'Of course you can do it.

Why didn't you come here in the first place? ”

It's always like that.

So what we do is use a conventional press, make a conductive ink, and run it through the press. Basically, you can make a piece of paper interactive by just running hundreds of thousands of electrons through it.

And it's really simple.

This is a collection of things that have been done before, but put them together in a different way.

Take a piece of paper with conductive ink and add a small circuit board with some chips on it. One is for running capacitive touch software, which tells you where you touch. The other is to frequently run wireless software to allow paper to connect.

So here are some of the things we created.

There are many different things we have made.

I love cake, so this is one of them.

It's a big poster that, when you touch it, has a little speaker behind it, and when you touch it, the poster talks to you, asks you a series of questions, and creates the perfect cake for you.

However, it doesn't tell you the cake on the spot.

Upload a photo and why you chose that cake to your Facebook page and Twitter.

So we're trying to create a connection between the physical and the digital, but making it look like a regular poster, not on a screen.

We have worked with many universities on projects looking at interactive newsprint.

For example, I created a newspaper, a regular newspaper.

Put on your wirelessly connected headphones and you'll hear unreadable music on the top.

In addition to listening to the content of the press conference, you can also read what the editors have judged on the content of the press conference.

You can also hit the Facebook like button or vote for something.

Another one we created, this was an idea I had a few years ago. So we did a project on this.

It was for government funding for user-centered design for energy efficient buildings. It's hard to say, but I had no idea what it was when I attended the workshop, but I figured it out right away.

And we wanted to encourage people to make better use of their energy.

And instead of looking at the dial and reading what it says, I wanted to create a poster that looked at the energy usage, was wirelessly connected, and had color-changing ink. I really liked the idea that if your energy usage trended upwards, leaves would appear, rabbits would appear, and all would be well.

Otherwise it will be graffitied and leaves will fall from the trees.

So instead of expecting people to do something in a remote environment, they were trying to get them to take care of something in a familiar environment that they didn't want to look too bad.

And just like going back to the farm, I think it's about how you get people to do what you want them to do instead of getting them to do what you want them to do.

have understood.

So this is what I am really afraid of.

So here are some that I created. Here is a poster where you can play the drums.

And I'm not a musician. At the time it seemed like a good idea.

Anyone who wants to try playing the drums can do so.

I'll explain how this works.

This poster is wirelessly connected to my phone and connects to the app when touched.

(Drums) The response speed is also very good.

It uses Bluetooth 4, so it works very instantly.

have understood. thank you.

(Applause) There are a few others.

It's like a soundboard, so you can touch it. I love this scary noise.

(Sirens, explosions, breaking glass) Okay, this is the DJ. Turntable.

In other words, it's wirelessly connected to the iPad, and this is software running on the iPad.

Oh yes. I just like doing it.

But I'm not a DJ, but I've always wanted to do it.

(Scratch) So I have a crossfader and I have two decks.

So I developed some new technology. I love being creative and I love working with creative people.

My 15 year old niece, she's a wonderful girl and her name is Charlotte. I asked her to record something and worked with a friend named Elliot to put together some beats.

So this is my niece, Charlotte.

(music) Yay!

(Applause) That's pretty much what I do.

I love bringing technology together, having fun, and being creative.

But it's not a technology issue.

I just want to create a great experience.

Thank you very much.

(applause)

I'm talking about consciousness.

why consciousness?

Well, this is a strangely neglected subject in both our scientific and philosophical cultures.

Why is it interesting?

It is the most important aspect of our life for a very simple and logical reason. So what we are conscious of is a prerequisite for what is important in our life.

I'm interested in science, philosophy, music, art, whatever, but I don't want to turn into a zombie or go into a coma, right?

In other words, consciousness comes first.

The second reason is that when people get into it, which I think they should, they tend to say the scariest things.

And even if they weren't saying horrible things and were really trying to do some serious research, well, it was late. Progress was slow.

When I first got interested in this, I thought it was a simple problem in biology.

Let's get these brain thugs busy and figure out how they work inside the brain.

So I went to UCSF and spoke to all the senior neurobiologists there, and they showed a bit of impatience, as scientists often do when they ask embarrassing questions.

But what struck me was what a very famous neurobiologist said indignantly. "Look, in my field it's fine to be interested in consciousness, but get tenure first. Get tenure first."

I have been working on this for a long time now.

Now I think that working on consciousness might actually earn tenure.

If so, that's really a step forward.

Now, why, then, is this strange resistance and strange hostility directed at consciousness?

I think it's a combination of two features of our intellectual culture. Although they are often thought to be at odds with each other, they actually share a common premise.

One of the characteristics is the tradition of religious dualism. Consciousness is not part of the physical world.

It is part of the spiritual world.

It belongs to the soul, which is not part of the material world.

That is God, Soul and Immortal Tradition.

There is another tradition that accepts the worst assumptions, even though we think against it.

In that tradition, we are considered to be out-and-out scientific materialists, and consciousness is not part of the physical world.

Either it doesn't exist at all, or it's something else, a computer program or some crap, but either way it's not part of science.

And I often got into arguments and got really sick to my stomach.

Here's what it looks like:

There is no science of consciousness because science is objective and consciousness is subjective.

Now, these twin traditions are paralyzing us, aren't they?

It is very difficult to break out of this twin tradition.

There is only one real message I want to convey in this lecture. That is, consciousness is a biological phenomenon like photosynthesis, digestion, and mitosis. You know all biological phenomena. And once it is accepted, most, if not all, of the difficult problems of consciousness simply disappear.

We will look at some of them.

Well, I promised to tell you some of the crazy things that have been said about consciousness.

1: Consciousness does not exist.

It is an illusion like the setting sun.

Science has proven that sunsets and rainbows are illusions.

Consciousness is an illusion.

2: Well, it may exist, but it's actually something else.

A computer program that runs in your brain.

3: No, there really is only action.

It's embarrassing how influential activism has been, but let's get back to it.

And four: Consciousness may exist, but it cannot bring about any change in the world.

Can spirituality move anything?

Now, do you want to see spirituality move something every time someone tells me that?

clock. When you consciously decide to raise your arm, things go up. (Laughter) Also notice that: We don't say, "Well, the weather is a bit like Geneva, isn't it?"

Some days it goes up and some days it doesn't. ”

No, go up whenever I want.

have understood. I will explain how it is possible.

Well, I haven't given a definition yet.

You can't do this without giving a definition.

People always say that consciousness is very difficult to define.

If you don't try to give a scientific definition, I think it's pretty easy to define.

The scientific definition is not ready yet, but here's a common sense definition:

Consciousness consists of all states of emotion, sensation, and consciousness.

It begins in the morning when you wake up from a dreamless sleep and continues throughout the day until you fall asleep, die, or lose consciousness.

According to this definition, dreams are a form of consciousness.

Now, this is the common sense definition. That's our goal.

If you're not talking about it, you're not talking about consciousness.

But they think, "If so, that's a terrible problem."

How could such a thing exist as part of the real world? ”

As anyone who has taken a philosophy course knows, this is known as the famous mind-body problem.

I think there is an easy solution for that too. I'll give it to you.

And it is: All our states of consciousness, without exception, are caused by low-level neurobiological processes in the brain, which are realized in the brain as features of higher levels or systems.

It is as mysterious as the fluidity of water.

right? Fluidity is not extra juice spewed out by H2O molecules.

That's how the system works.

And just as a bottle of water can change from liquid to solid depending on the behavior of its molecules, the brain can also change from conscious to unconscious depending on the behavior of its molecules.

The famous mind-body problem is very simple.

have understood? But here comes a more difficult question.

Let us identify the precise characteristics of consciousness so that we can answer the four objections I have made to it.

Now, the first feature is that it is real and irreducible.

you can't get rid of it.

As you know, the difference between reality and fantasy is how things appear to us consciously and how they appear in reality.

Consciously, I like the French "arc en ciel", but it makes it look like there is an arch in the sky or the sun is setting over the mountains.

We consciously think so, but in reality it is not.

But the distinction between how things consciously appear and how they actually are cannot be made about the existence of consciousness itself. Because when it comes to the existence of consciousness itself, if consciously you appear to be conscious, then you are conscious.

I mean, if a bunch of experts come to me and say, "We're big-time neurobiologists, and we've done a study of Mr. Searle, and we're convinced you're an unconscious, highly engineered robot," I don't think, "Well, maybe they're right?"

For although Descartes may have made many mistakes, he was right about this one.

You cannot doubt the existence of your own consciousness.

Yes, that is the first feature of consciousness.

It is real and irreducible.

As with any standard illusion, showing it is an illusion will not make it go away.

Now, the second feature is the one that really bothers us. All of our states of consciousness have this qualitative characteristic.

Drinking beer feels different than paying income tax or listening to music. This qualitative sense automatically yields a third characteristic. That is, states of consciousness are by definition subjective in the sense that they exist only as experienced by some human or animal subject, the self that experiences them.

Maybe we can build a machine with consciousness.

We don't know how our brains work, so we're not in a position to build a conscious machine right now.

have understood. Another feature of consciousness is that it exists in a unified realm of consciousness.

So instead of just feeling the people in front of me, the sound of my voice, the weight of my shoes on the floor, they emerge within me as part of a single large field of consciousness that stretches forward and backward.

That is the key to understanding the immense power of consciousness.

And no robot could do that.

The disappointment with robotics stems from the fact that we don't know how to make robots that are conscious, so there is no machine that can do something like this.

Now, the next conscious feature of this amazing unity consciousness field is that it functions causally in our actions.

I raised my hand and did a scientific demonstration, but how is that possible?

How can this thought in my head move matter?

Well, I will tell you the answer.

I mean, I don't know the detailed answer, but I know the basic parts of the answer. That is, there is a series of neuronal firings that terminate at the axonal endplate of the motor neuron where acetylcholine is secreted.

Sorry for the philosophical terminology here, but a lot of great things happen with ion channels when they're secreted at the axonal endplates of motor neurons, arm up.

Now think about what I told you.

In the exact same event, there is a level of explanation that my conscious decision to raise my arms contained all these moving spiritual qualities.

This is what I'm thinking in my brain, but at the same time it's busy secreting acetylcholine and doing everything else as it travels down from the motor cortex through the nerve fibers in the arm.

Now, what this tells us is that the traditional vocabulary for discussing these issues is completely outdated.

The very same event has one level of description if it is neurobiological and another level of description if it is mental and it is a single event and that is how nature works. This is how consciousness can function causally.

Now, with that in mind, let's go back and answer some of the early objections, considering the various features of consciousness.

Well, the first thing I said was that consciousness doesn't exist, it's an illusion. Well, we already answered that.

I don't think you need to worry about that.

But the second is incredibly influential and may still exist today. "Even if consciousness exists, it is really something else.

It's actually a digital computer program running in your brain and all we need to do to create consciousness is get the right program.

Yes, forget about hardware. Any hardware is fine as long as it is capable and stable enough to run the program. ”

Now we know it's wrong.

So if you've ever thought about computers for a second, you'll know you're wrong. Because the computation is defined as a symbolic operation and is usually thought of as converting 0 to 1, it can be any symbol.

You get an algorithm that you can program in binary code, and that's the nature of computer programs.

But I know it's purely syntactic. It's symbolic.

We know there is more to actual human consciousness than that.

In addition to syntax, there is also content.

It has semantics.

Now, about that argument, I made that argument over 30 years ago -- I hate to think about it -- over 30 years ago, but there's a deeper argument implied in what I've told you, and I'd like to briefly touch on that argument. Consciousness creates a reality that is independent of the observer.

It creates the reality of money, property, governments, marriages, CERN meetings, cocktail parties, summer vacations, all of which are creations of consciousness.

Their existence is relative to the observer.

A piece of paper being money, or a stack of buildings being a university, etc., is only relative to a conscious agent.

Now ask yourself about the math.

Is it something absolute, like force, mass, gravitational pull?

Or is it observer relative?

Well, some calculations are inherent.

2 plus 2 equals 4.

No matter what anyone thinks, it continues.

But when you take out your pocket calculator and do the math, the only inherent phenomena are the electronic circuits and how they work.

It is the only absolute phenomenon.

We take care of the rest.

Computation exists only for consciousness.

Either a conscious agent is performing the computation, or we have a machine that allows computational interpretation.

This does not mean that the calculation is arbitrary.

I spent a lot of money on this hardware.

However, there is a consistent confusion between objectivity and subjectivity as features of reality and objectivity and subjectivity as features of claim.

And here's the gist of this part of my story. It is possible that there is a science that is completely objective, a science that makes objectively correct claims about a realm whose existence is subjective, consisting of the subjective states of perception, emotion, and consciousness that exist in the human brain.

So the counterargument that consciousness cannot be objectively scientific is a joke, because consciousness is subjective and science is objective.

It's a bad pun on objectivity and subjectivity.

It is possible, and indeed neurologists do, to make objective claims about domains whose modes of being are subjective.

In other words, there are patients who are actually suffering from pain, and we are trying to understand them objectively and scientifically.

Well, I promised to rebut all these people, and I don't have much time left, but let me rebut a few more.

I said that activism should be one of the great shames of our intellectual culture. Because the moment you think about it, it's refuted.

Is your state of mind the same as your behavior?

Now think about the difference between feeling pain and doing painful actions.

I don't mean to show painful behavior, but I can say that I feel no pain right now.

So it's an obvious mistake. Why did they make mistakes?

The mistake – which can be seen over and over again in the literature on this subject – was that they thought that accepting the irreducible existence of consciousness meant abandoning science.

You will abandon 300 years of human progress and hope and everything else.

And the message I want to give you is that consciousness must be accepted as a genuine biological phenomenon and subject to scientific analysis like other phenomena in biology and for that matter in science.

thank you very much.

(applause)

So if I asked you what is the relationship between your bottle of Tide detergent and your sweat, you'd probably think that's the simplest question you'd be asked in Edinburgh this week.

But you probably think I'm a little crazy when I say they're both examples of alternative or new forms of currency in a hyper-connected, data-driven global economy.

But believe me, I work in advertising.

(Laughter) I'll tell you the answer, but of course after this short break.

So the more challenging question was actually asked by one of our writers a few weeks ago and I didn't know the answer. "What is the best performing currency in the world?"

It's actually Bitcoin.

Now, for those unfamiliar, Bitcoin is a cryptocurrency, a virtual currency, and a synthetic currency.

It was founded in 2008 by this anonymous programmer using the pseudonym Satoshi Nakamoto.

No one knows who he is or what he is.

He's like the Banksy of the internet.

And while I'm probably not going to do a proper service here, my interpretation of how it works is that Bitcoin is released through this process of mining.

In other words, there is a network of computers trying to solve a very complex mathematical problem, and the first person to solve it wins Bitcoin.

And then bitcoin is released, put on a public ledger called blockchain, and then floats, so it becomes a currency and is completely decentralized. That's what's kind of scary about this and that's why it's so popular.

Therefore, it is not run by any authority or state.

actually managed by the network.

And the reason it's proven so successful is because it's private, anonymous, fast, and cheap.

And then we reach a point where we see violent fluctuations in Bitcoin.

So at one level it literally went from around $13 to $266 in 4 months, then crashed and lost half of its value in 6 hours.

And now it's worth around $110.

But what it shows is that it's kind of earned status and garnered respect.

You can use services like Reddit and Wordpress that actually accept Bitcoin as a payment currency.

And it shows that people are actually putting their trust in technology, which is breaking down, destroying, and questioning traditional institutions, our way of thinking about currencies and money.

That's not surprising either. Given that the basket case is E.U.

I think a recent Gallup poll said that trust in banks in the United States is at an all-time low, around 21 percent.

Here you can see some photos of London where Barclays sponsored the city bike scheme and some activists did some great guerrilla marketing here and defaced their slogans.

"Subprime Pedaling". “Barclays will guide you.”

What I can tell you today is something more polite.

But I hope you get the point, people are starting to lose faith in the system.

There's a PR firm called Edelman, and they do a really interesting survey every year on the subject of trust and exactly what people think.

Since this is a global survey, these numbers are global.

And what's interesting is that we've found that the hierarchy has started to wobble a bit, and heresy is now in the mainstream, so people trust people like themselves more than they trust corporations and governments.

And if you look at these numbers for more developed markets like the UK and Germany, they're actually much lower than that.

And I find it scary.

In fact, people trust businessmen more than governments and leaders.

So what's starting to happen is, if you think about money, if you boil it down to its essence, it's literally just an expression of value, an agreed upon value.

What's happening now in the digital age is that there are many ways to quantify value and do it more easily. It may also be much easier to create new and valid forms of currency depending on how you quantify their value.

In that context, we can see that networks like Bitcoin are suddenly starting to make a little more sense.

So if you think we are beginning to question, confuse and interrogate what money means, how we relate to it, how we define it, the ultimate extension is: Is there any reason for governments to control money anymore?

So obviously I'm looking at this through the prism of marketing, so from a brand standpoint, brands literally hinge on reputation.

And come to think of it, reputation is now currency.

As you know, reputation is built on trust, consistency and transparency.

So if you really decide that you trust brands, want to build relationships with them, and want to engage with them, you are already participating in a lot of new forms of currency.

So let's think about loyalty.

Loyalty is inherently microeconomic.

Think about reward programs and airline miles.

A few years ago, The Economist said there were actually more unredeemed air miles in the world than dollar bills in circulation.

As you know, when you stand in line at Starbucks, 30 percent of your daily Starbucks transactions are actually made with Starbucks Starpoints.

So this is like Starbucks currency that stays within the ecosystem.

And what I found interesting is that Amazon recently launched Amazon Coin.

So it's certainly a purely Kindle currency at this point.

I mean, you can buy apps, you can shop within those apps, but if you think about Amazon, you can see a trust barometer that shows that people are starting to trust companies, especially those they trust and trust more than the government.

So all of a sudden you start wondering if Amazon could push this.

It's a natural extension to not only buying things, but potentially taking it out of your Kindle to buy books, music, physical products, electronics and merchandise.

And suddenly Amazon, as a brand, is at odds with the Federal Reserve on how money is spent, what money is, and what money is made of.

And as promised, I'll have Detergent Tide back now.

This is a great article I found in New York Magazine. It said drug users across America were actually buying drugs in bottles of Tide detergent.

So they go into a convenience store and steal Tide. And a $20 bottle of Tide equals $10 of crack cocaine or cannabis.

What they're saying is that some criminologists have looked into this and, well, okay, Tide as a product is being sold at a premium.

This is 50% above the category average.

Infused with a very complex cocktail of chemicals, it has a very luxurious, very distinctive scent and is endorsed by many mass media advertisements as it is a Procter & Gamble brand.

So what they're saying is that drug users are consumers too, so they have this built into their neural pathways.

Once they discover the tide, there is a shortcut.

It's trust, they say. I believe it. That's what quality is.

So it became this unit of currency that New York Magazine described as a very strangely loyal crime wave, a brand loyal crime wave, and criminals actually refer to the Tide as "liquid gold."

Now, what I found interesting was the reaction of a P&G spokesperson.

While they clearly tried to stay away from drugs, they said, "I was reminded of one thing: the brand's value has been consistently maintained." (Laughter) This supports my claim and shows that he didn't even break a sweat when he said that.

So back to our relationship with sweat.

In Mexico, Nike recently launched a campaign literally called "Bid Your Sweat."

So think about whether this Nike shoe has built-in sensors or uses Nike Fuel Bands, which basically track movement, energy and calorie burn.

What's going on here, this is where you actually chose to join the Nike community. you agreed to that

They're not yelling their message at you. And that's where advertising is starting to shift to services, tools, applications, and more.

In short, Nike literally acts as a wellbeing partner, health and fitness partner and service provider.

What happens with this is what they say. “Yes, we have a data dashboard. We know how long you ran, how far you traveled, how many calories you consumed, etc.

What you can do is the more you run, the more points you earn. And you have an auction where you can buy Nike items, but you have to prove that you actually did something with them. ”

And you can't get into this. This is purely for the community that sweats using Nike products. You can't buy anything with pesos.

This is literally a closed environment, a closed auction space.

In Africa, airtime has literally become a currency in itself.

Mobile is king, so people are very accustomed to sending money and making payments via mobile.

One of my favorite examples from a brand perspective is Vodafone. In Egypt, many people shop in markets and in very small independent shops.

Change, small change is really a problem, and it's common to buy a lot of things when you need to pay, say, 10 or 20 cents.

Shopkeepers don't have change, so they tend to give you things like onions, aspirin, and gum.

So when Vodafone realized this problem, the consumer bane, it created a coin called Fakka. This is literally sitting down and handed out by the store owner to people, and the credit is reflected directly on the mobile phone.

Therefore, this currency becomes a credit. This is also really, really interesting.

And we know that 45 percent of people in this very important demographic in the United States are

They say they are comfortable using independent or branded currencies.

This is where it gets really interesting and there's a very interesting dynamic going on.

And you think companies should think about their assets differently and start trading.

And don't you think it's quite a leap?

It seems farfetched, but come to think of it, in 1860 America had 1,600 companies issuing paper money.

There were 8,000 denominations of banknotes in America.

And the only thing that stopped it was the government controlling 4 percent of the supply, and the only thing that stopped it was the outbreak of the Civil War, and the government suddenly tried to control the money.

So governments, money, wars, nothing changes there.

So my question is, basically, does history repeat itself?

Are there technologies that make banknotes obsolete?

Are we separating money from government?

As you know, brands are starting to fill that gap.

Businesses are filling a gap that governments cannot.

So next year, will we be on stage buying organic, fair-trade coffee with TED Florins or TED Shillings?

thank you very much.

(Applause.) Thank you. (applause)

Francesca Federi: Hello.

So he's Mario. he is our son

He was born two and a half years ago and I had a pretty tough pregnancy as I had to stay in bed for about eight months.

But in the end everything seemed to be under control.

Therefore, the weight at birth was appropriate.

He got the correct Apgar index.

So we were pretty relieved with this.

But eventually, 10 days after he was born, we found out he had a stroke.

As you may know, a stroke is a brain injury.

A perinatal stroke could have happened during nine months of pregnancy or suddenly after giving birth and in his case, as you can see, he lost the right part of his brain.

So the effect this stroke has on Mario's body could be the fact that Mario has no control over the left side of his body.

Please try to imagine. Let's say you have a computer and a printer and you want to send a document, fill it out and print it, but the printer doesn't have the right drive, so does Mario.

It's like wanting to move the left side of your body but not being able to give the correct inputs to move your left arm and leg.

Therefore, I had to change my life.

I had to reschedule.

We needed to change how this birth affected our lives.

Roberto D'Angelo: Unfortunately, as you can imagine, we weren't ready.

As many questions as possible began to pop into our minds because no one had told us how to deal with these kinds of obstacles.

And it was a really tough time.

Questions, some basics, like why did this happen to us?

And what went wrong?

Some are tougher, like what effect it actually has on Mario's life.

After all, can he do the job?

can he be normal?

And why is he not better than us as parents, especially as first-time parents?

This is really hard to say, but after a few months we found ourselves feeling really failing.

So the only real achievement in our life was ultimately failure.

And you know, it wasn't a failure for us ourselves, but it was a failure that affected his whole life.

To be honest, we were let down.

I mean, we got really depressed, but at the end started staring at him and said we had to react.

So immediately, as Francesca said, we changed our lives.

We started physical therapy and started rehabilitation. One of the paths we took in rehabilitation was piloting mirror neurons.

Basically, we spent months on this with Mario.

You have an object, so we taught him how to grasp it.

Now, the mirror neuron theory simply says that the very moment you see me doing this, you are activating the exact same neurons in your brain as you are doing the act.

This seems to be the cutting edge of rehabilitation.

But one day we noticed that Mario wasn't looking at our hands.

he was looking at us

We were his mirrors.

And the problem, as you may have felt, was that we were depressed, depressed, and saw him as a problem, not as a son, not in a positive light.

And that day our perspective really changed.

We realized we had to be a better mirror for Mario.

We restarted from our strengths, but also from his strengths.

We stopped seeing him as a problem and started seeing him as an opportunity for improvement.

And really, this is the change, and from our side, we said, 'What are our strengths that we can really bring to Mario?

And we started with passion.

So, after all, my wife and I are quite different, but we also have a lot in common.

We love to travel, we love music, we love being in places like this and we started taking Mario just to show him the best we could show him.

This short video is from last week.

I'm not saying it's a miracle. It's not the message because we're only at the beginning of the road.

But we want to share what was the important lesson Mario taught us, the important lesson. It's about thinking of what you have as a gift, not just what you're missing, and what you're missing as just an opportunity.

And this is the message we want to share with you.

This is why we are here.

Mario!

This is why we decided to share with him the best mirror in the world.

And thank you very much to all of you.

Fufu: Thank you. RD: Thank you. good bye.

(Applause) Fufu: Thank you. (applause)

I am 5 years old and I am very proud.

My father just built the best barn in a small Ukrainian village.

Inside it's a smelly hole, gaping in the ground, but outside it's pearly white formica, literally glistening in the sun.

This made me feel so proud and so important that I appointed myself the leader of a small group of friends and devised a mission for us.

So we go from house to house looking for flies caught in spider webs and releasing them.

Four years ago, when I was one year old, after the Chernobyl accident, black rain fell, my sister's hair fell out in clumps, and I spent nine months in the hospital.

No visitors were allowed, so my mother bribed the hospital staff.

She got a nurse outfit and sneaked in every night to sit next to me.

Five years later, an unexpected silver lining.

Thanks to Chernobyl, we were able to get asylum in the United States.

I'm 6 years old and I don't cry when I leave home and come to America. Because I expect it to be a place full of rare and wonderful things: bananas, chocolates, bazooka bubble gum, bazooka bubble gum with little cartoon wrappers inside, bazooka balloons that you get once a year in Ukraine.

So on my first day in New York, my grandmother and I found a penny on the floor of the homeless shelter where my family was staying.

But we don't know it's a homeless shelter.

Hotel, I think a hotel with a lot of rats.

So this Penny found what looked like a fossil on the floor. Normal people don't just lose money, so we figure that a very wealthy man must have put it there.

And when you put this penny in the palm of your hand, it's sticky and rusty, but it feels like you're holding a lot of money.

I decided to get my very own bazooka bubblegum.

And in that moment, I feel like a millionaire.

About a year later, I started feeling the same way again when I found a bag full of stuffed animals in the trash, and suddenly I had more toys than I ever had in my life.

And I also get that feeling when there's a knock on my Brooklyn apartment door to find the delivery guy with a box of pizzas my sister and I didn't order.

So we picked up a pizza, picked up our first pizza, and devoured it piece by piece as the delivery guy stood there staring at us from the doorway.

And he told us to pay but we don't speak English.

My mother comes out and asks for money, but I don't have enough money.

She walks 50 blocks to work every day just to avoid wasting bus fare.

A neighbor shows up, red-faced and furious to discover that the immigrants from downstairs have somehow gotten her pizza.

everyone is upset.

But pizza is delicious.

We didn't realize how much we had until a few years later.

To commemorate the 10th anniversary of my arrival in the United States, I decided to celebrate by booking a room at the first hotel I stayed in.

The man at the front desk laughed and said, "You can't book rooms here. This is a homeless shelter."

And we were shocked.

My husband Brian was also homeless when he was a child.

His family lost everything, and when he was 11, he had to live with his father in a motel. At the motel, they collected all the food and held it hostage until the bill was paid.

And one time, when I finally got the Frostflake box back, there was a cockroach crawling inside.

But he had one thing.

He had this shoe box and carried it everywhere. There were 9 comic books and 2 GIs inside. Jaws painted like Spider-Man and 5 Gobots. And this was his treasure.

This was his own collection of heroes who kept him away from drugs and gangs and never gave up on his dreams.

I would like to tell you about another former homeless member of our family.

It's Scarlett.

Scarlett was once used as bait for fighting dogs.

She was tied up and thrown into the ring for the other dogs to attack, making her more aggressive before the match.

And now, even though she eats organic food and sleeps on an orthopedic bed with her name on it, she still looks up and wags her tail in gratitude when we pour her a bowl of water.

Sometimes Brian and I take a walk in the park with Scarlett and she rolls on the grass and we just look at her and then look at each other and feel gratitude.

We forget all the frustrations and disappointments of the new middle class and feel like millionaires.

thank you.

(applause)

What do we know about the future?

A difficult question, but the answer is simple. There is nothing.

The future cannot be predicted.

We can only create visions of the future, what it will be like, revealing disruptive ideas and inspiring visions. This is the most important reason to break the chain of common thought.

Many people have drawn their own visions of the future. For example, this vision is from the early 20th century.

It says here that this is the seaplane of the future.

It takes only a day and a half to cross the Atlantic.

Today we know that this vision of the future did not come true.

This is our largest plane, an Airbus A380. It's so huge that a lot of people can fit in it, and technically it's completely different from the vision I gave you.

I work with Airbus and team to create a vision for a more sustainable future for aviation.

Sustainability is therefore very important to us and must incorporate not only social but also environmental and economic values.

So we created a highly destructive structure that mimics the design of bones or skeletons found in nature.

That's why it can seem a little strange, especially to those who deal with structures in general.

But at least this is just a kind of work of art to explore our ideas about alternative futures.

What are your future main customers?

I mean, we have old people, we have young people, we have the power of female uprisings, and we have one big trend that affects us all.

These are the anthropometry of the future.

So our children are getting bigger, but at the same time we are growing in different directions.

What is needed, therefore, is space in highly congested areas within the aircraft.

These people have different needs.

The need for active health promotion is therefore evident, especially for older people.

We want to be treated as individuals.

We want to increase productivity across the travel chain and in the future we want to use modern man-machine interfaces and integrate this into one product.

So we combined these needs and technology themes.

For example, we ask ourselves how we can create more light.

How can we bring more natural light into the aircraft?

For example, this plane no longer has windows.

What about the data communication software that will be needed in the future?

My belief is that future planes will acquire their own consciousness.

It will be more like a living organism than just a collection of highly complex technologies.

This will change significantly in the future.

Communicate directly with passengers around you.

And we are also talking about materials such as synthetic biology, for example.

And since structure is one of the key issues in aircraft design, I believe there will be more and more new materials available that can later be incorporated into the structure.

Now let's compare the old world with the new world.

Here we would like to show you what we are doing today.

This is the A380 crew lounge bracket.

It carries a lot of weight and follows classic design rules.

This is equal parenthesis for the same purpose.

It follows the bone design.

The design process is completely different.

1.2 kilometers on one side and 0.6 kilometers on the other.

So this technology, 3D printing and new design rules can go a long way in reducing the biggest problem in aircraft design: weight. Weight is directly related to greenhouse gas emissions.

Let's take this idea a little further.

So how does nature construct its components and structures?

So nature is very smart. All information is embedded in these little building blocks called DNA.

And nature builds a large skeleton out of it.

So you see a bottom-up approach here. Because, like I said, all information is in your DNA.

This is combined with a top-down approach. Because in our daily life we ​​train our muscles, we train our bones, and they get stronger.

And the same approach can be applied to technology.

So our building blocks are, for example, carbon nanotubes to finally create a large scaffold without rivets.

You can see here how this looks concretely.

So imagine carbon nanotubes growing within a 3D printer, embedded within a matrix of plastic, and following the forces generated within the component.

And you have trillions of them.

So we actually put them together with the wood and use this wood to do some morphological optimization and create a structure, a substructure that allows us to transmit electrical energy and data.

And now we're combining this material with a top-down approach to building ever-larger components.

So what will the planes of the future look like?

Therefore, we have completely different seats based on different anthropometric measurements that adapt to future passenger physiques.

There is a social area on board, which could be a place where you can play virtual golf.

And finally, this biostructure covered with a transparent biopolymer membrane will fundamentally change the way we look at future aircraft.

As Jason Silva said, if you can imagine it, why not make it happen?

Let's meet again. thank you.

(applause)

This is an ambulance.

This is a quick way to respond to medical emergencies.

It has everything you would find in an ambulance except for the bed.

I can see the defibrillator. You can see the equipment.

We all saw the tragedy that happened in Boston.

Looking at these pictures reminded me of my childhood many years ago.

I grew up in a small area of ​​Jerusalem.

When I was 6 years old, I was walking home from school with my older brother on a Friday afternoon.

We passed in front of the bus stop.

We saw the bus explode in front of us.

The bus caught fire and many people were injured or killed.

I remember an old man screaming at us and crying to help us wake up.

He just needed someone to help him.

We were so scared we just ran away.

As an adult, I decided that I wanted to become a doctor and save lives.

Maybe it was because of what I saw as a child.

When I was 15, I took a paramedic course and volunteered with an ambulance.

For two years I volunteered as an ambulance in Jerusalem.

I have helped many people, but when someone really needed help, I could not arrive in time. we couldn't get there.

Traffic is very bad. distance and everything.

We couldn't get there when someone really needed us.

One day, we received a call that a 7-year-old had choked on a hot dog.

The traffic was terrible and we were coming from the other side of town north of Jerusalem.

Twenty minutes later, CPR was started on the child.

A doctor came in from a block away, stopped us, checked the kid, and told us to stop the CPR.

At that moment he declared the child dead.

At that moment, I understood that this child had died in vain.

If this doctor who lived a block away hadn't waited 20 minutes to hear the siren before the ambulance came, had he heard about it earlier, he would have saved this kid.

He could have escaped from a block away.

He could have saved this child.

I told myself there must be a better way.

Together with 15 friends (we were all EMTs), we decided to protect our neighborhood. Therefore, if something like this happens again, I will rush to the scene long before the ambulance arrives.

So I went to the ambulance company manager and said: "Whenever your neighbor calls, please do. We have 15 talented people who are willing to stop everything they're doing and run and save lives.

It just warns with a buzzer sound.

We will purchase these buzzers, so please tell the dispatch office to send them. Then we run and save lives. ”

Well he was laughing. I was seventeen. I was a child

And he said to me—I remember this like it was yesterday—he was a great guy, but he said to me, “Boy, go to school or open a falafel stand.

We are not very interested in new adventures like this.

We are not interested in your help. ’ And he kicked me out of the room.

"I don't need your help," he said.

I was a very stubborn child.

As you can see, I'm walking around like crazy, Meshgena.

(Laughter) (Applause) So I decided to use a very famous Israeli technique that you have probably heard of: Chutupa. (Laughter.) The next day, I went and bought two police scanners and said, ``Well, if you don't want to give me the information, I'll get it myself.''

Then we decided the order of who would listen to the radio scanner.

The next day, as I listened to the scanner, I got a call from a 70-year-old man who had been injured after being hit by a car just a block away on my neighborhood's main street.

I ran there on foot. I didn't have any medical equipment.

When I arrived, a 70-year-old man was lying on the floor with blood spurting from his neck.

He was in Coumadin.

I knew I had to stop his bleeding or he would die.

I didn't have any medical equipment so I removed the yarmulke and applied a lot of pressure to stop his bleeding.

He was bleeding from his neck.

When the ambulance arrived 15 minutes later, I handed over the living patient.

(Applause.) Two days later, when I went to see him, he was hugging me, crying and thanking me for saving his life.

At that moment, after two years of volunteer work in the ambulance, I realized that this was the first person in my life who had saved me, and that this was my life's mission.

So today, 22 years later, we founded United Huzzalers.

(Applause.) For those of you who don't know Hebrew, "hazzarah" means "salvation."

I forgot that I am not in Israel.

So we have thousands of volunteers who are passionate about saving lives and they are all over the place so every time the call comes in they stop everything and run to save lives.

Today, our average response time in Israel has dropped to less than 3 minutes.

(Applause.) I'm talking about a heart attack, a car accident, God forbid a bomb, a shooting, whatever it is, even a woman lying in her house at 3 a.m. wanting someone to help her.

Three minutes later, a man in pajamas rushes to her house and helps her get up.

We are so successful for three reasons.

Thousands of passionate volunteers who give up everything to run to help people they don't even know.

We are not here to replace ambulances.

We are only there to fill the gap between ambulance call and arrival.

And save those who otherwise would not have been saved.

The second reason is due to our technology.

Israelis are good at technology.

All of us have GPS technology developed by NowForce in our mobile phones, no matter what kind of phone. Each time a call comes in, the 5 closest volunteers pick it up. In fact, they actually arrive very quickly and reach their destination without wasting any time navigating the traffic navigator.

This is a great piece of technology that we use all over the country to speed up our response times.

The third is an ambulance.

These ambulances are two-wheeled ambulances.

We don't transport people, but we stabilize them and save their lives.

They never get stuck in traffic. I could walk on the sidewalk.

You will literally never get stuck in traffic.

That's why we get there early.

A few years after I started this organization, two Muslims from East Jerusalem called me in a Jewish community.

they ask me to meet they wanted to see me

Muhammad Asri and Murad Ariane.

When Muhammad told me a personal story about his 55-year-old father collapsing in his home and going into cardiac arrest, it took over an hour for an ambulance to arrive, and seeing him die in front of me, he asked me to start this in East Jerusalem.

I said to myself, I've seen too much tragedy and hate, and it's not about saving the Jews. It's not about saving Muslims.

It's not about saving Christians. It's about saving people.

So I went full steam ahead -- (applause) -- and I started United Huzzarah in East Jerusalem, and that's why the names United and Huzzarah fit so well.

Together we began to save Jews and Arabs.

The Arabs were saving the Jews. The Jews were saving the Arabs.

Something special happened.

Arabs and Jews, they don't always get along, but in this situation, in this community, in this situation, literally incredible, in the midst of this diversity, suddenly they had a common interest. "Let's save lives together".

The settlers were saving the Arabs, and the Arabs were saving the settlers.

This is an incredible concept that only works with a cause this big.

And these are all volunteers.

nobody got paid.

They are all doing it for the purpose of saving lives.

When my own father collapsed from cardiac arrest a few years ago, one of the first volunteers to arrive to help him was one of the Muslim volunteers from East Jerusalem who had taken the first course to Hatzra.

And he saved my father.

Can you imagine how I felt in that moment?

I was 17 when I started this organization.

I never imagined that the day would come when I would speak at TEDMED.

I didn't even know what TEDMED was at the time.

I don't think it existed, but I never imagined it, I never imagined it would spread and spread all over the world. And last year we started in Panama and Brazil.

What I need is a little Meshgena like me, a partner who is passionate about saving lives and willing to do it.

And I'm actually going to start it soon in India with a friend I met at Harvard just recently.

Hatsula actually started in Brooklyn by Hasidic Jews many years before us in Williamsburg, but now it has spread throughout the Jewish community in New York, and even in Australia, Mexico, and many other Jewish communities.

But it can spread everywhere.

Installation is very easy.

In New York, I've even seen these volunteers saving lives at the World Trade Center.

Last year alone, we treated 207,000 people in Israel.

Of these, 42,000 were in life-threatening situations.

And we made a difference.

You could call this a life-saving flash mob, and it works.

If you look around here, no matter who you are, no matter what your religion, no matter where you come from, there are plenty of people willing to run a mile and a mile to help other people.

We all want to be heroes.

All we need is a good idea, motivation and lots of chatter. Then we will be able to save millions of people who otherwise would not have been saved.

thank you very much.

(applause)

You can hear the gentle sound of waves and the distant cries of seagulls.

But then an annoying squeak interrupts the peace and draws closer and closer.

Until... wow!

Get rid of those annoying mosquitoes and calm down.

How did it detect that noise from a distance and target its caller with such precision?

The ability to perceive sounds and locate them is made possible thanks to the auditory system.

It consists of two main parts, the ear and the brain.

The job of the ear is to convert sound energy into nerve signals. The brain receives and processes the information contained in the signals.

To understand how it works, we can track how sound travels to the ear.

Sound sources generate vibrations that travel as pressure waves through particles in air, liquids, and solids.

But our inner ear, called the cochlea, is actually filled with a salt water-like fluid.

So the first problem to solve is how to convert sound waves into waves in a fluid, regardless of where they come from.

The solution is the eardrum, the eardrum and the small bones of the middle ear.

These translate large movements of the tympanic membrane into pressure waves within the cochlear fluid.

When sound enters the ear canal, it hits the eardrum and vibrates like the head of a drum.

The vibrating eardrum moves a bone called the hammer, which strikes the anvil and moves a third bone called the stapes.

That movement forces fluid into the long chamber of the cochlea.

Once there, sound vibrations are eventually converted into fluid vibrations, which travel like waves from one end of the cochlea to the other.

A surface called the basement membrane runs along the length of the cochlea.

It is lined with hair cells with specialized components called stereocilia, which move with the vibrations of the cochlear fluid and basement membrane.

This movement generates a signal that travels through the hair cells to the auditory nerve and then to the brain, which interprets it as a specific sound.

When sound vibrates the basilar membrane, not all hair cells move, only selected ones depending on the frequency of the sound.

This is due to good engineering.

One end of the basilar membrane is rigid and vibrates only in response to short-wave, high-frequency sounds.

The other is more flexible and vibrates only in the presence of longer wavelength low frequency sounds.

In other words, the sounds made by seagulls and mosquitoes vibrate different parts of the basilar membrane, just like playing different keys on a piano.

But that's not all that's happening.

The brain still has another important task to do: identify where the sound is coming from.

It does this by comparing sounds coming into both ears to identify the source in space.

Sound from the front reaches both ears at the same time.

It is also heard with equal intensity in each ear.

However, low-frequency sounds emanating from one side reach the far ear microseconds earlier.

Also, high frequency sounds are blocked by the head from the far ear, so they sound stronger to the near ear.

These information reach special parts of the brainstem and analyze the time and intensity differences between the ears.

They send the analysis results to the auditory cortex.

The brain now has all the information it needs, including patterns of activity that tell what the sound is and information about where the sound is in space.

Not everyone has normal hearing.

Hearing loss is the third most common chronic disease in the world.

Exposure to loud noises and some drugs can destroy hair cells and interfere with the transmission of signals from the ear to the brain.

Due to diseases such as osteosclerosis, the small bones in the ear freeze and stop vibrating.

With tinnitus, the brain does strange things to trick you into thinking there is sound when there is none.

But when it actually works, our hearing becomes an incredibly elegant system.

Our ears contain finely tuned biological machines that convert the cacophony of vibrations in the air around us into precisely tuned electrical impulses that distinguish clapping, tapping, sighing and flies.

As you can imagine, I am very excited to be participating in a conference with the theme "Inspired by Nature".

And I'm excited to join the foreplay section too.

Did you notice that this section is foreplay?

Because I can talk about one of my favorite creatures, the western grebe. You haven't lived until you've seen these guys do their courtship dance.

I was at Bowman Lake in Glacier National Park. It's a long, narrow lake with upside-down mountains in it, and my partner and I have boating shells.

So while we were rowing a grebe came along.

And what they do for the courtship dance is two, two mates, go together and start running in the water.

They paddle faster and faster and faster until they are literally floating out of the water, standing upright and rowing on the water.

Then, while we were rowing, one of the grebes came.

And we're in the skull, moving really, really fast.

And this grebe, seemingly mistaking us for potential customers, began running for miles along the water next to us, doing a courtship dance.

Stop, then start, then stop, then start.

Okay, that's foreplay.

(Laughter.) At that moment, I came to the point of changing seeds.

Clearly, life teaches us something in the field of entertainment. Life teaches us many things.

But what I want to talk about today is what life can teach us in technology and design.

What happened after this book came out -- this book was mostly about biomimetic research -- and what happened since then is that the architects, the designers, the engineers, the people who make our world, started calling and saying they wanted a biologist to sit at the design table so we could get inspired in real time.

Or, and this is the fun part for me, I want them to take us into the natural world. As we tackle our design challenges, we find champion adapters in nature that inspire us.

Here's a photo I took on a trip to Galapagos with some sewage engineers. They purify wastewater.

In fact, some of them were very reluctant to be there.

The first thing they told us was, you know, we're already doing biomimicry.

We use bacteria to clean our water. And we said it wasn't exactly inspired by nature.

That's bioprocessing. That is bio-assisted technology. The use of organisms in wastewater treatment is an old technology called 'domestication'.

This is learning something from living things, learning ideas and applying them.

So they still didn't understand it.

So we took a walk on the beach and asked you to tell us your one big problem. Tell us about the design challenges that hinder sustainability, speed bumps in sustainability.

And they said scaling, that is, mineral buildup inside the pipe.

And they said, what happens is minerals build up – just like in your house.

And the opening closes, so the pipe must be flushed with toxins or dug up.

So I picked up shells on the beach, wondering if there was some way to stop this scale from sticking. And I asked them, "What is scaling?" What's inside the pipe?

And they said "calcium carbonate".

And I said, this is what it is. This is calcium carbonate.

And they didn't know that.

They didn't know what a shell was. The shell is templated by proteins, and ions from seawater crystallize in situ to form the shell.

So the same process is happening inside the pipe, without the protein. they didn't know.

This is not due to lack of information. It's lack of integration.

You know, it's a silo and people are in the silo. They didn't know the same thing was happening. So one of them thought about it and said, "Okay, if this is just crystallization, or self-assembly, that happens automatically from seawater, why aren't shells infinite in size?" What Stops Scaling?

Why can't they just keep going?

And I said, just like they exude proteins to start crystallization, and they kind of lean in and let go of the proteins that stop them from crystallizing.

It literally sticks to the growing surface of the crystal.

And in fact, there's a product called TPA that mimics that protein, a protein-blocking product that's an eco-friendly way to block scale in pipes.

that changed everything. Since then, these engineers can no longer be returned to the ship.

The first day they went hiking and it was a click, click, click, click. Five minutes later they were back on the boat.

It's over. As you know, I have seen the island.

After this they were crawling. They were snorkeling the whole time as long as we let them snorkel.

What happened was that they realized that there were organisms already solving the problems they had spent their careers trying to solve.

Learning about the natural world is another. Learning from the natural world, that is the switch.

That's the deep switch.

What they found was that the answers to their questions were everywhere. It was enough for them to change the lens through which they saw the world.

3.8 billion years of field testing.

10 to 30 -- Craig Venter will probably tell you. I believe there are over 30 million well-adapted solutions.

The point to me is that these are situational solutions.

And that context is Earth. It's the same context we're trying to solve the problem.

In other words, it is a conscious imitation of the genius of life.

It's not a sneaky imitation - although Al is trying to get his hair done - it's not a sneaky imitation. It's about taking the principles of design, the genius of nature, and learning something from it.

Now, in a group with so many IT folks, I have to mention something they don't talk about. That is, your field is one that has learned an enormous amount from creatures in terms of software. So, like the immune system, we have computers that protect ourselves, and we learn from genetic regulation and biological development. And we're learning from neural nets, genetic algorithms, and evolutionary computing.

That's the software side of things. But what's interesting to me is that we don't see much of this. I mean, in the sense that there are dozens of carcinogens in Silicon Valley water, these machines aren't very high tech by my estimation.

In other words, hardware is far from satisfying when it comes to success in life.

So what can we learn about building anything, not just computers?

The plane you've boarded, the car you've been in, the seat you're sitting in.

How do we redesign the world we make, the world made by humans?

More importantly, what should we ask in the next decade?

And there are many wonderful technologies in the world.

What is the syllabus?

Three questions are important to me.

How does life make things?

This is the opposite. This is how we make things.

It's called "heat, hit, treat," and that's what materials scientists call it.

And it's truncating things off the top, leaving 96 percent waste and just 4 percent product. you heat it Beat it with high pressure. use chemicals. OK. It is heated, beaten and processed.

I can't afford to do that in my life. How does life make things?

How does life make the best of things?

It's geranium pollen.

And its shape gives it the ability to roll easily through the air. Look at that shape.

Life adds information to matter.

In other words, "structure".

It gives information. Adding information to a substance gives it a different function than it would without the structure.

And third, how does life cause things to disappear into the system?

Because life isn't really about dealing with things. Nothing in nature is separate from its systems.

Really early syllabus.

Now, as I read more and more books and follow the stories, some surprising things have come out in the field of biology.

At the same time, I listen to many companies and find out what their big challenges are.

The two groups are not talking to each other.

at all.

At this point, what can help the world of biology overcome this kind of evolutionary knothole we're in?

Let's do it right up to 12.

What interests me is self-organization.

Well, you've probably heard about this from a nanotechnology perspective.

Back to the shell. A shell is a self-assembled material.

At the bottom left is a photograph of mother-of-pearl forming from seawater. It has a layered structure of minerals and polymers, making it extremely durable.

Twice as strong as our high-tech ceramics.

But what's really interesting is that it happens in seawater, unlike ceramics that are made in a kiln. It occurs near, in, and near the bodies of living organisms.

This is Sandia National Laboratories.

Someone named Jeff Brinker discovered a way to achieve a self-assembling coding process.

Imagine being able to produce ceramics at room temperature by simply immersing something in a liquid, pulling it out of the liquid, allowing the molecules in the liquid to bond together through evaporation, and in a similar way to this crystallization, the molecules bond to each other.

Imagine making all hard materials that way.

Imagine spraying precursors onto solar cells, solar cells, and roofs and letting them self-assemble into light-harvesting layered structures.

Of interest to the IT world is biosilicon. This is a diatom made of silicate.

And while the silicon we make now is part of the carcinogenic problem in chip manufacturing, it's a biocalcification process that's now being mimicked.

This is the University of California, Santa Barbara. Look at these diatoms.

This is from the work of Ernst Haeckel.

Please try to imagine. Also, this is a templated process, solidifying from a liquid process, but imagine getting such a structure at room temperature.

Imagine being able to create the perfect lens.

The left side is a brittle star. It's covered by a lens discovered by the folks at Lucent Technologies and has absolutely no distortion.

One of the most distortion-free lenses we know of.

And there are many of them all over its body.

Again, what's interesting is that it self-assembles.

A woman named Joanna Eisenberg at Lucent is currently learning how to manufacture this type of lens using a low-temperature process. She's also considering fiber optics.

It's a sponge with optical fibers.

At the bottom of that are fiber optics that actually work better than ours at moving light, but you can also tie them in knots. They are incredibly flexible.

I have another big idea. It's CO2 as a raw material.

A man named Jeff Coates at Cornell University told himself that he doesn't think plants are the greatest poison of our time.

we see it that way. Plants are busy making long chains of starch and glucose from carbon dioxide. He found a way -- he found a catalyst -- and found a way to take the CO2 out and make polycarbonate. Biodegradable plastic made from CO2 looks like a plant.

Sun Change: The most exciting change.

There are people mimicking the energy harvester inside the purple bacteria, the ASU people. What's even more interesting is that recently, in the last few weeks, people have found out that there are enzymes called hydrogenases that can produce hydrogen from protons and electrons and can take up hydrogen. This is basically what happens in fuel cells, fuel cell anodes, and reversible fuel cells.

Our fuel cells use platinum. Life makes it happen with a very common iron.

And one team has just succeeded in mimicking the hydrogenase juggling hydrogenase.

Being able to do that without platinum is very interesting for fuel cells.

Power of form: Here is a whale. I've seen tubercles on the fins of this whale. And those small bumps actually improve the edge efficiency of an airplane, for example, increasing efficiency by about 32 percent.

Even just putting this on the tip of your wing is an amazing fossil fuel savings.

COLOR WITHOUT PIGMENTS: This peacock creates color with its shape.

Light is transmitted and reflected from the layers. It is called thin film interference. Imagine the last few layers using light to create color and allow the product to self-assemble.

Imagine creating shapes on the outside of a surface so that it can self-clean with just water. That is the role of leaves.

Can you see the close-up photo?

That's a ball of water, that's a particle of soil.

This is a close-up photo of a lotus leaf.

There is a company that makes a product called Lotusan. This mimics the unevenness of leaves that self-clean when the paint on the facade of a building dries, mimicking rainwater washing the building.

Water will be our big and grand task to quench our thirst.

There are two creatures that draw water here.

On the left is a Namibian beetle drawing water out of the fog.

The one on the right is a pill bug. It draws water out of the air, but does not drink fresh water.

Pumping water from the fog of Monterey or the sweaty air of Atlanta before it enters the building is a key technology.

Separation technology becomes very important.

What if I told you to stop mining hard rock?

What if you could separate metals from a waste stream—small amounts of metals in water? That's what microbes do. They chelate metals from water.

There's a company here in San Francisco called MR3 that embeds molecular mimics of microbes in filters to mine waste streams.

Green chemistry is chemistry in water.

We are doing chemistry using organic solvents.

Here is a picture of a spinneret coming out of a spider and how silk forms from the spider. Isn't it beautiful?

Green chemistry replaces industrial chemistry with nature's recipe book.

This is not easy, as life forms only use a subset of the elements on the periodic table.

And we use them all, even the toxic ones.

Using a small subset of the periodic table to come up with elegant recipes for creating miracle materials like its cells is the task of green chemistry.

Timed Decomposition: A package that is good until it degrades and dissolves when necessary.

This is a mussel that can be found in the sea here, with timed threads that secure it to the rock. After just two years, they begin to dissolve.

Healing: This is good.

The little man over there is a water bear.

There is a problem that vaccines do not reach patients all over the world. The reason was that the refrigerator was broken for some reason. The so-called “cold chain” is broken.

A man named Bruce Rosner turned his attention to tardigrades. Tardigrades can survive for months and months even when completely dried out, regenerating themselves.

And he found a way to dry the vaccine, encasing it in the same kind of sugar capsules that tardigrades have inside their cells. This means that vaccines no longer need to be refrigerated.

You can even put it in the glovebox.

Learn from living things. This is a session about water. Learn about organisms that can survive without water to create vaccines that remain effective without refrigeration.

I won't go until 12.

But what I'm trying to say is that, besides these adaptations, the most important thing is the fact that these creatures have figured out how to do amazing things while protecting the places where they raise their offspring.

They are thinking about something very important when they are participating in foreplay. It's about leaving our genetic material 10,000 generations from now.

It means finding ways to do what they do without destroying the places that care for their offspring.

That's the biggest design challenge.

Luckily, there are millions of geniuses willing to give us their best ideas.

I would be happy to have a conversation with them.

thank you.

(Applause) Chris Anderson: Talk about foreplay, I -- I need to get to 12, but I'm really in a hurry.

Janine Benyus: Oh, really?

CA: Yes. Just like the 10 second version of 10, 11, 12. Because we just -- your slides are so great and your ideas are so big that we can't bear to let you down without seeing 10, 11 and 12.

JB: OK, put this down -- OK, just keep this. Ok, great.

OK, that's healing.

Sense and Respond: Feedback is very important.

This is a grasshopper. There can be as many as 80 million of them in one square kilometer, and they never collide with each other.

Nevertheless, there are 3.6 million car crashes every year.

(laughs) Yes. There are people in Newcastle who have figured it out that it is a very large neuron.

And she's actually figuring out how to build a collision avoidance circuit based on this gigantic locust neuron.

This is the very important number 11.

And that is increased fertility.

That means pure fertile agriculture.

We must increase our fertility. And yes, you get food too.

For we must grow the capacity of this planet to create more opportunities for life.

And in fact, that's what other organisms do as well.

Taken together, it's the work of the whole ecosystem, creating more and more opportunities for life.

Our farming has done the opposite.

That is, agriculture based on how grasslands make soil, ranching based on how native ungulate herds actually improve the health of their ranges, and wastewater treatment based on how swamps not only clean water but also create incredible productivity.

Briefs with a simple design. So it looks simple because it took 3.8 billion years for this system to work out.

In other words, organisms that do not understand how to enhance or spoil their place are not the ones to teach us about it.

That's number 12.

Life -- And this is the secret trick. Here is the magic trick. Life creates favorable conditions for life.

It builds the soil. clean the air. It cleans the water. It's the cocktail of gas you and I need to survive.

And it does so while doing great foreplay and attending to their needs. So it's not mutually exclusive.

We have to find a way to meet our needs while making this place a Garden of Eden.

CA: Janine, thank you very much.

(applause)

The first day I left home for college was a bright day full of hope and optimism.

I was doing well at school. Expectations were high for me, and I started gleefully into a student life full of lectures, parties, and corn thefts.

Now, of course, appearances can be deceptive, and this feisty, energetic persona of going to lectures and stealing traffic cones was, in a way, a sham, albeit very well-crafted and compelling.

At its core, I was actually terribly unhappy, anxious, and fundamentally scared. I was terrified of others, of the future, of failure, and of the emptiness I felt inside of me.

But I was good at hiding it, and from the outside I looked like someone with all my expectations and aspirations.

This illusion of invincibility was so complete that I deceived myself, and when the first semester ended and the second semester began, no one could have predicted what was to come.

When the seminar began, I was leaving, humming to myself and fiddling with my bag, as I have done hundreds of times before, when suddenly I heard a quietly observing voice saying, “She is leaving the room.”

I looked around and saw no one, but the clarity and decisiveness of the comment was unmistakable.

Agitated, I put the book down the stairs and hurried home, and the same thing happened again.

"She's opening the door."

This was the beginning. I heard a voice say.

And that voice went on for days and weeks, telling me everything I had done in the third person.

"She is going to the library."

"She is going to lecture."

It was neutral, expressionless, and, after a while, strangely friendly and even reassuring, but I found that sometimes that calm exterior was lost, and that it occasionally reflected my own unexpressed feelings.

So, for example, if I was angry and had to hide it (which I used to do, and was very good at hiding my true feelings), then the voice would sound annoyed.

Otherwise, it wasn't ominous or unpleasant, but even at that point it was clear that it was telling me something about my emotions, especially those far-flung and inaccessible.

That's when I made a fatal mistake. When I told my friend about the voice, she was stunned.

A subtle conditioning process began, meaning normal people couldn't hear voices, and the fact that I heard voices meant something was very seriously wrong.

Such fear and mistrust was contagious.

Suddenly the voice didn't seem so calm, and when she insisted I see a doctor, I duly complied, which turned out to be the second mistake.

I took the time to talk to my university GP.

Talking about what I thought was my real problem: insecurity, low self-esteem, anxiety about the future, and being met with bored apathy until I mentioned the voice, he dropped his pen, turned around and started asking me questions with real interest.

And to be fair, I wanted interest and help and started telling him about my weird commentator.

And I always wish at this point the voice said, "She's digging herself a grave."

I was referred to a psychiatrist who likewise took a hard look at the presence of voices and subsequently interpreted everything I said through the lens of potential insanity.

For example, I belonged to a student TV station that broadcast breaking news on campus, and when I was running far behind schedule, I said, 'I'm sorry, teacher, I have to go.

I read the news at 6 o'clock. ”

My medical records document that Eleanor has delusions of being a television newscaster.

At this point, events began to overtake me rapidly.

Hospitalization followed, first followed by a diagnosis of schizophrenia, and then, worst of all, a toxic, painful sense of hopelessness, humiliation and hopelessness about myself and my future.

But being encouraged to view the voice as a symptom rather than as an experience reinforced my fear and resistance to it.

Now, in essence, this represented an aggressive attitude towards my own mind, a kind of mental civil war, which resulted in an increase in the number of voices that gradually became hostile and threatening.

Helpless and hopeless, I began to retreat into this nightmarish inner world. In it, the voice was destined to be my only companion as well as my persecutor.

For example, they told me that if I could prove I was worthy of their help, they could put my life back together, and I was charged with a series of increasingly bizarre missions that became a kind of Herculean task.

At first it was very small, like pulling out three hairs, but it gradually became more extreme, and eventually led to orders to harm oneself, and especially dramatic ones. "Can you see the tutor over there?"

Can you see the cup of water?

Well, you have to go to him and pour it in front of the other students. ”

I did, and needless to say, the faculty didn't like me.

In effect, a vicious cycle of fear, avoidance, mistrust and misunderstanding had been established, a battle in which I felt helpless and unable to build any peace or reconciliation.

After two years, the deterioration was severe.

By now, I had a frenzied repertoire of everything: terrifying voices, grotesque visions, strange and unruly delusions.

My mental health was triggering discrimination, verbal abuse, physical and sexual assault, and my psychiatrist told me, "Eleanor, you'd be better off with cancer because it's easier to treat than schizophrenia."

I was diagnosed, medicated, thrown away, and at the time was so annoyed with my voice that I almost punched a hole in my head to get it out.

Looking back on the devastation and despair of those days, it seems as if someone died there, and yet someone else was saved.

A scarred and possessed person started the journey, but the one who appeared survived and eventually I grew up to be the person I was meant to be.

Many people have done me harm in my life, and I remember them all, but the memory grows pale and faint in comparison to those who helped me.

My friends who survived, my friends who listen to my voice, my comrades and collaborators. My mother never gave up on me, she knew I would come back one day and she waited for me as long as it took. A doctor who was with me for a short period of time, but who strengthened my belief that recovery was not only possible but inevitable, said to my family, frightened by the dreadful time of relapse, 'Don't give up hope.

I believe Eleanor can get through this.

Sometimes it snows even in May, but summer always comes at the end. ”

Fourteen minutes is not enough time to fully commend the good and generous people who fought with me for me and waited for my return from that painful and lonely place.

But together they have forged a blend of courage, creativity, integrity, and an unwavering belief that my shattered self can be healed and whole.

I used to say they saved me, but now I know they did something even more important in giving me the power to save myself. And crucially, they helped me understand what I had been wondering all along. It is that my voice is a meaningful response to traumatic life events, especially childhood ones, not my enemy in itself, but a source of insight into solvable emotional problems.

Well, at first I had a very hard time believing this. Especially since that voice seemed so hostile and menacing, an important first step in this regard was learning to distinguish the figurative meaning from what I had hitherto interpreted to be the literal truth.

For example, I have learned to interpret voices threatening to attack my home as my own sense of fear and anxiety about the world, rather than actual objective danger.

Well, at first I would have believed them too.

For example, I remember sitting on guard one night outside my parents' room to protect them from what I thought was a genuine vocal threat.

Because I self-harmed so badly that I hid most of the cutlery in the house, so I ended up arming myself with a plastic fork that looked like a picnic utensil, clutching it and sitting outside my room waiting to be able to act quickly if something happened.

It was like, "Don't interfere with me."

I have a plastic fork, don't you know? ”

Strategic.

But what's more helpful in subsequent reactions is trying to break down the message behind the words. So when I hear a voice warning me not to leave the house, I thank them for their attention to how unsafe I feel, and if I am aware of it, I can do something positive about it, but I go on to reassure them and myself that we are safe and need not be afraid anymore.

I set boundaries for my voice, tried to interact with them in a positive yet respectful way, and established a slow process of communication and collaboration in which I learned to work together and support each other.

Through all of this, what I eventually realized was that each voice was closely related to an aspect of myself, each containing memories of overwhelming emotions, sexual trauma and abuse, anger, shame, guilt, and low self-esteem that I had never had a chance to process or resolve.

A voice took the place of this pain and gave me words. Perhaps one of the greatest revelations was when I realized that the most hostile and aggressive voices actually represent the parts of me that hurt most deeply, and therefore it is these voices that need to be shown the greatest compassion and care.

Armed with this knowledge, he eventually collected his shattered self, each fragment represented by a different voice, gradually weaned himself from all drugs, and then returned to psychiatry on the other side.

Ten years after I heard my first voice, I finally graduated. This time I got the best psychology degree the university ever gave me and a year later I got the best masters degree. I can say that this is not bad for a lunatic.

In fact, one of the voices during the exam actually dictated the answer, which could technically constitute cheating.

(Laughter.) And to be honest, there were times when I really enjoyed their attention too.

As Oscar Wilde said, the only thing worse than being talked about is not being talked about.

It's also very good at eavesdropping, as you can listen to two conversations at once.

So it's not all bad.

I have worked in mental health services, spoken at conferences, published book chapters and scholarly articles, and advocated and continue to advocate the relevance of the following concepts: That is, the important question in psychiatry should not be what is wrong with you, but rather what happened to you.

And all the while, I listened to myself. They had finally learned to live together in peace and respect, and their voices reflected a growing sense of compassion, acceptance and respect for themselves.

And I remember one of the most touching and special moments when I supported another young woman who was terrified of her voice and realized for the first time fully that I was no longer feeling that way myself and that I was finally able to help someone else.

I am now very proud to be part of Intervoice, the organization of the International Aural Voice Movement. This movement, an effort inspired by the research of Professor Marius Romm and Dr. Sandra Escher, positions voice hearing as a survival strategy, a sane response to insane situations, not as a freak symptom of schizophrenia to endure, but as a complex, important and meaningful experience to explore.

Together, we envision and realize a society that understands and respects being heard, supports the needs of the individual who is being heard, and respects them as full citizens.

Such a society is not only possible, it is already happening.

In Chavez's words, once social change begins, it cannot be reversed.

You cannot humiliate someone who feels pride.

You can no longer suppress people who are not afraid.

For me, the achievements of the Hearing Voice movement are a reminder that empathy, camaraderie, justice and respect are more than words. They are beliefs and beliefs that beliefs can change the world.

Over the past two decades, the Hearing Voice movement has established a Hearing Voice network in 26 countries on five continents, working together to promote dignity, solidarity and empowerment of individuals in distress, and to create a new language and practice of hope centered on an unwavering belief in the power of the individual.

As Peter Levin said, the human animal is a unique being with an instinctive ability to heal and an intelligent mind that harnesses this innate ability.

In this regard, there is no greater honor or privilege for a member of society than to facilitate someone's healing process, to bear witness, to reach out, to share the burden of suffering, and to carry on the hope of recovery.

And likewise, remember that those who survive suffering and adversity do not have to live lives forever defined by the harmful events that happened to them.

we are unique We are irreplaceable.

What is in us is never truly colonized, distorted, or robbed.

The light never goes out.

As a very good doctor once said to me, "Don't tell me what others have said about you.

Please tell me about yourself. ”

thank you.

(applause)

(Music) ["Oedipus Rex"] ["The Lion King"] ["Titus"] ["Frida"] ["The Magic Flute"] ["Across the Universe"] (Applause) Julie Taymor: Thank you. thank you very much.

These are just a few of the plays, operas and films I've been to over the last 20 years.

But what I want to start now is to bring you back to the moment I experienced in Indonesia. It was a seminal moment in my life, and like all myths, these stories need to be retold and told lest we forget.

And as we know, when I am in turbulent times, I am now in the crucible and the fire of change, which is actually what all of you are doing.

Anyone who makes things knows that there is a point that is neither a phoenix nor a charred char.

(Laughter) And I'm really on the brink, but that's another story.

I would like to go back to Indonesia, where I spent my time on the fellowship some 21-22 years ago.

And after two years of playing and learning there, I found myself standing at Gunung Batur, on the edge of a crater in Bali.

And I was in a village, and there was an entrance ceremony for young people, a rite of passage.

Little did I know it was mine.

And when I was sitting in the dark in the temple square under this giant Beringinga banyan tree, there was no electricity, only the full moon in this empty square. And I heard the most beautiful sounds like a Charles Ives concert while listening to gamelan music from all the different villagers who came to this 5 yearly ceremony.

And I thought I was alone in the dark under this tree.

And suddenly, in the darkness, from the other side of the square, I saw the glow of a moonlit mirror.

And suddenly the twenty old men I had seen before stood up in full warrior costume with headdresses and spears, and there was no one in the square, and I hid in the shadows.

No one was there, but they came out and performed an incredible dance.

"Fufufufufuhahahahaha"

And then they moved their bodies, stepped forward, and the light reflected off these costumes.

And I've been in the theater since I was 11, performing and creating, and I thought, 'Who are they performing for, with all these elaborate costumes and these extraordinary headdresses?

And I realized that they were playing for God, whatever that means.

But somehow the publicity was not an issue.

Money was irrelevant.

It wasn't meant to be written down. It wasn't news.

And the performances of these wonderful artists felt like an eternity to me.

The next moment, as soon as they had finished and disappeared into the shadows, a young man came with a propane lantern, hung it on the tree, and set up the curtains.

The village square was filled with hundreds of people.

And they put on an opera all night.

Humanity needed light.

They needed light to see.

What I've learned and gleaned from this incredibly original moment in my life as a young artist is that as an artist you have to stay true to what you believe to the very end, but at the same time recognize that the audience is outside of our lives at this time and they need the light too.

And I think it's this incredible balance that when we create something groundbreaking, when we're trying to do something that's never been seen before, when we're not really sure where we're going in the imaginary world, that's the thin line on the edge of the crater I've been walking all my life.

This time I would like to talk a little bit about the way I work. Look at "The Lion King".

You've seen many examples of my work there, but this is one that people know about.

We start with the concept of ideograms.

Ideograms are like Japanese brush paintings.

3 strokes will give you a whole bamboo forest.

I went to the "Lion King" concept and said, "What is the essence of it?"

What is abstraction?

If you could combine this whole story into one image, what would it be?"

Circle. Circle. It's clear.

circle of life. Ring of Mufasa's mask.

When we come to Act 2 and drought occurs, how would you describe the drought?

It is a circle of silk on the floor that disappears into a hole in the floor of the stage.

The Wheel of Life comes on a leaping gazelle wheel.

And you can see the mechanics.

And as a theater person, what I know and love about theater is that when the audience walks in and suspends their disbelief, they know it's Savannah when they see a man or woman walking with a plate of grass on their head.

you are not questioning it.

I love the plain truth in theater.

I love it when people are happy to fill in the blanks.

The audience happily says, "Oh, I know it's not the real sun.

You took a piece of stick.

Added silk to the bottom.

You paused these works. Drop it flat on the floor.

And when it rose with the string, it turned out to be the sun.

But the beauty of it is that it's just silk and a stick.

And in a way, that's what makes it spiritual.

that's what drives you.

What is coming is not a literal sunrise.

it's an art.

In other words, in theater, the story is as important as the story itself, as much as the book, the language, the way the story is told, the way it is told, the structure, the methods used.

And I'm one of those people who loves high tech and low tech.

For example, I will introduce "Spider-Man" later. It's an incredible machine that moves people.

But really, without a dancer who knows how to use his body and how to swing on the wire, it's nothing.

So here are some clips from another big project of my life this year, Tempest.

it's a movie. Since 1984 and 1986, I have performed The Tempest three times in theaters and I love this play.

I've always done it with male Prospero.

And suddenly I thought, "Who shall I have to play Prospero?"

Why not Helen Mirren? she is a great actor. why not? "

And this material actually worked for women as well.

Now let's take a look at some images from Tempest.

(music) (video) Prospera: Soul, have you completed the storm I commanded you?

Ariel: I got on the King's ship. In every cabin I blazed with amazement.

Prospera: At first glance they changed their eye color.

Miranda: Do you love me?

Ferdinand: You are over the limit.

HM: They are both in authority.

Trinclo: A miserable man meets a strange bedmate.

(music) Governor, are you looking for a business?

Caliban: You fell from heaven, didn't you?

Stefano: Out of the moon, I assure you.

Prosperity: Caliban!

Caliban: This island is mine.

Prospera: I'm sure I'll have a seizure tonight because of this.

Antonio: Here your brother lies on the same earth he lies on.

Sebastian: Please draw your sword.

And I, the King, love you.

Prospera: I'll annoy them all until they roar.

Ariel: I pissed you off.

Prospera: We are a dream come true.

And our little life ends with sleep.

(music) JT: Okay.

(Applause.) So I stepped away from theater and did a very low-budget production of The Tempest on stage many years ago. I love this play and think it's Shakespeare's last play. And, as you can see, this piece really lends itself to cinema.

However, I would like to give you a few examples of how it can be presented in theaters and how the same ideas and stories can be transferred to film.

The ideograms we talked about before, what is the ideogram for "Tempest"?

In summary, what is one image that can put a hat on this?

And it was the idea that we would build these civilizations sandcastles, nurture versus nature - she talks about it at the end of Helen Mirren's Prospera - we would build them, but under nature, under epic storms, these cloud-capped towers, these gorgeous palaces would fade, and there would be no racks left.

So in the theater, I started the play, it was a black sand rake, a white bicycle, and on the horizon there was a little girl named Miranda, building drip castles, sand castles.

And when she was at the edge of the stage, two stagehands in all black with watering cans ran over and started pouring water into the sandcastle. The sandcastle began to drip and sink, but before the audience saw a stagehand dressed in black.

The medium was clear. it was mediocre. we saw it

But when they started pouring water, the light changed from showing a black-clad stagehand to focusing. This wild magic in theater focused on the water itself.

And suddenly the audience's perspective changes.

It magically becomes something big.

It becomes a storm.

The masked actors and puppeteers disappear and the audience is plunged into this world, the imaginary world of "The Tempest" as it happens.

Well, the difference when you go to the cinema and do it, the actual movie started with a close-up of the sandcastle, the black sandcastle. What the film can do is by using the camera, perspective, and long shots and close-ups, starting with a close-up of a sandcastle, and as the sandcastle moved away, we realized it was a miniature sitting on a girl's palm.

So I could play with that medium. The reason I move from one medium to another is to be able to do this.

This time, I will introduce "Spider-Man".

(music) (video) Peter Parker: ♪ Standing on a cliff, I can fly from here. ♪ JT: We're trying to do everything in live theater that we can't do in 2D in film and television.

PP: ♪ Rise above yourself and take control. ♪ George Tzipin: We see New York from Spider-Man's point of view.

Spider-Man is not bound by gravity.

Manhattan in the play is also not bound by gravity.

PP: ♪ Be yourself and overcome everything. ♪ Ensemble: ♪ Socks! Captive! ♪♪ Slam! scratch! ♪ Danny Ezralow: Don't think there's a choreographer.

It's true, what's going on

I prefer to see people moving and think, "Oh, what was that?"

(music) JT: When I give the sculpture enough movement and the actors move their heads, it feels alive.

Comic live. It's a lively cartoon.

(music) Bono: It's a myth.

They are modern myths and comic book heroes.

PP: ♪ They believe. ♪ (shouting) (music) (applause) JT: Oh, yeah. What?

Circus, rock and roll, drama.

What the hell are we doing on that stage?

Now, let's talk about the last part.

When we reached the village and crossed the lake, we saw a volcano erupting at Gunung Batur on the other side, and an extinct volcano next to a live volcano.

I never thought I would be swallowed by a volcano, but I'm here now.

But it's so easy to climb, right?

You can reach the top by clinging to the roots and stepping onto small rocks. I was with my best friend who is an actor and I said, 'Let's climb over there.

Let's see if we can get close to the rim of that living volcano. ”

And we climbed to the top and we are at the edge of this precipice, Roland disappeared in the sulfurous smoke of the volcano on the other side, and I am alone on this incredible precipice.

did you hear the lyrics?

I'm on a cliff overlooking an extinct volcano on the left.

To my right is a sheer shale. It's getting out.

I wear a thong and a sarong. That was many years ago.

And no climbing shoes.

And then he disappeared, this mad French gypsy actor disappeared in the smoke, and I realized I could never go back the way I came. I can not do it.

So throw the camera away. I stripped off my thong, stared at the line in front of me, got on all fours like a cat, kneeled on either side of this line in front of me, and for 30 yards or 30 feet I didn't know.

The wind was blowing so hard that I had to look at the line in front of me to get to the other side.

I'm sure you've been there too.

I'm in the crucible now.

It is my trial with fire.

That's my company's test.

We can survive because the theme song is "Rise Above".

A boy falls from the sky and rises up.

It's in our hands, in the hands of all my company.

I have great collaborators, but as creators we can only reach our goals together.

you understand that

And just keep moving forward and you'll see this extraordinary thing in front of you.

thank you.

(applause)

Auto racing is an old and interesting business.

We build a new car every year and then spend the rest of the season trying to figure out what we made to make it better, faster.

And next year, we will start again.

Well, the car in front of you is very complicated.

The chassis consists of about 11,000 parts, the engine another 6,000 and the electronics about 85,000 parts.

So there are about 25,000 things that could go wrong.

Attention to detail is therefore very important in auto racing.

Another thing I can say about Formula 1 in particular is that we are constantly changing cars.

We always try to make it faster.

So every two weeks, we end up creating about 5,000 new components to fit our cars.

5-10% of race cars change every two weeks of the year.

So how do we do that?

Well, our life begins with a racing car.

Cars have a lot of sensors to measure things.

About 120 sensors are installed in the race car in front of you participating in the race.

Measure everything around your car.

That data is logged. We record about 500 different parameters in our data system, about 13,000 health parameters and events that notify us when things aren't working as they should, and use telemetry to send that data back to our garage at speeds of 2-4 megabits per second.

That means each car will transmit 750 million numbers during the two hour race.

This is twice as many words as each of us speaks in our lifetime.

It's a huge amount of data.

But just getting the data and measuring it is not enough.

You have to be able to do something with it.

So we've spent a lot of time and effort turning data into stories that can tell us what the engine is doing, how the tires are deteriorating, what the fuel economy is like, and so on.

So it's all about taking data and turning it into actionable knowledge.

Now let's look at some data.

Let's take some data from another 3-month-old patient.

This is a kid, what you're looking at here is actual data. And on the far right, everything starts to get a little catastrophic and the patient goes into cardiac arrest.

It was determined to be an unexpected event.

This was a heart attack that no one could have foreseen.

But if you look at the information there, you can see that about five minutes before the cardiac arrest, things start to get a little fuzzy.

You can see small changes such as heart rate movements.

All of these were not detected by the normal thresholds applied to the data.

So the question is, why didn't you see it?

Was this a predictable event?

Couldn't we see more patterns in the data to do things better?

So this is a 3-month-old kid, about the same age as the racing car on stage.

A patient with heart problems.

Now, if you look at some of the data on the screen above, heart rate, pulse, oxygen rate, breathing rate, etc., all of which are abnormal for a normal kid, but quite normal for a kid out there. So one of the challenges in healthcare is how to look at the patient in front of you, have something unique about that patient, and be able to detect when things start to change, when things start to get worse.

Because, like a racing car, when things start to go wrong for any patient, the time to make a change is short.

So what we did was take a data system that ran every two weeks in F1 and installed it on a hospital computer at Birmingham Children's Hospital.

We streamed data from bedside equipment in a pediatric intensive care unit. This allowed us to see the data in real time and, more importantly, store the data so that we could learn from it.

Then we applied an application on top of that to be able to uncover patterns in the data in real time so we could see what was happening and determine when things started to change.

Now, in the world of auto racing we can all be a little ambitious, bold and a little arrogant. So we decided to also look at the children who are being transported to the intensive care unit.

Why should we wait until they arrive at the hospital before starting the examination?

So we set up a real-time link between the ambulance and the hospital, allowing the ambulance to become an extra bed in the intensive care unit by simply sending data using a regular 3G phone.

Then I started looking at the data.

The wavy line at the top, all the colors, are the usual kinds of data you see on your monitor, like heart rate, pulse, oxygen in your blood, and respiration.

The bottom line, blue and red, this is the interesting one.

The red line shows the automated version of the Early Warning Score that Birmingham Children's Hospital was already running.

They have been doing this since 2008 and have already stopped cardiac arrests and suffering in hospitals.

The blue line marks when the pattern starts to change, and we can quickly see what the data are telling us before we even start clinical interpretation.

It tells us something is wrong.

A plot with red and green blobs plots different components of the data against each other.

Green is what we are learning about what is normal for the child.

We call it the "cloud of normalcy."

And when things start to change, when things start to get worse, you move to the redline.

No rocket science here.

It provides another way to view and amplify the data that already exists, providing cues to doctors and nurses so they can see what's going on.

Just as a good racing driver relies on cues to know when to brake or turn a corner, we need to help doctors and nurses know when things are starting to go awry.

So we have prepared a very ambitious program.

We think racing is trying to do something different.

We think big. That's right.

Our approach, if successful, has no reason to stay inside the hospital.

It can go over walls.

With the availability of wireless connectivity these days, patients, doctors and nurses don't always have to be in the same place at the same time.

In the meantime, we're taking our little 3-month-old baby to the circuit to keep him safe and keep him going faster and better.

thank you very much.

(applause)

good morning!

Are you awake?

They took my name tag away and I would like to ask, has anyone here written their name on the name tag in Arabic?

Who! no one? Ok, no problem.

Not long ago, I was sitting in a restaurant with a friend ordering food.

So I looked at the waiter and said "Do you have a menu (in Arabic)?"

Thinking he heard me wrong, he looked at me curiously.

He said, "Excuse me?"

I said "Give me the menu (Arabic)".

He replied, "Don't you know what to call it?"

"that's right."

He said, "No, it's called 'menu' (English) or 'menu' (French)."

Is your French pronunciation correct?

"Come on, come on, take care of this!" said the waiter.

When he talked to me, he was bored as if he was talking to himself. "If this was the last girl on earth, I wouldn't look at her!"

What does "menu" mean in Arabic?

A Lebanese youth judged a girl backward and ignorant in two words.

How could she speak like that?

At that moment, I started thinking.

It pissed me off.

It sure hurts!

Am I denied the right to speak my language in my country?

Where does this happen?

how did we get here

Now, while we are here, there are many people like me who have reached the stage of unconsciously abandoning everything that has happened in the past in their lives in order to be able to say that they are modern and civilized.

Should I forget all my culture, my thoughts, my intellect, and my memory?

Your childhood stories may be your best memories of war.

Should I forget everything I learned in Arabic and just follow along?

How to become one of them?

Where's the logic?

Despite all that, I tried to understand him.

I didn't want to judge him with the same cruelty that he judged me.

Arabic does not meet today's needs.

It's not the language of science and research, it's not the language you're used to in college, it's not the language you use at work, it's not the language you rely on when doing advanced research projects, it's not the language you use at the airport.

If we do that, they will strip us of our clothes.

Where should I use it? Anyone can ask this question.

So you want me to use Arabic. where should i do it?

This is one reality.

But we have another, more important reality to consider.

Arabic is my mother tongue.

Studies show that learning another language requires mastering your mother tongue.

Mastering your mother tongue is a prerequisite for creative expression in other languages.

how?

Gibran Khalil Gibran used Arabic when he first started writing.

All his ideas, imagination and philosophy were inspired by this boy who smelled a certain smell, heard a certain voice and thought a certain thought in the village where he grew up.

So when he started writing in English, he had enough baggage.

Even when he writes in English, reading his writing in English smells the same and feels the same.

I can imagine that it is he who writes in English and is the same as the boy from the mountains. From a village in Mount Lebanon.

So this is an example that no one disputes.

Second, it is often said that if you want to kill a nation, the only way to kill it is to kill its language.

This is a reality that developed societies recognize.

Germans, French, Japanese, Chinese, all these countries know this.

That's why they enact laws to protect their language.

they make it sacred.

That's why they use it in production and pay so much for development.

Do we know more than they do?

Ok, we are not from the developed world, this advanced thinking has not reached us yet, and we want to catch up with the civilized world.

Countries like Turkey and Malaysia that were once like us but determined to develop, research and catch up with them carried their language with them as they climbed the ladder and defended it like a diamond.

they kept it close at hand.

Because if you get a product from Turkey or another country and it's not labeled in Turkish, it's not a local product.

It's hard to believe it's a local product.

They will most likely go back to being consumers, ignorant consumers, just like us.

Therefore, they needed to protect their language in order to innovate and produce.

What do you think of when I say "freedom, sovereignty, independence (Arabic)"?

The bell doesn't ring, right?

It doesn't matter who did it, how or why.

Language isn't just for conversation, it's just the words that come out of our mouths.

Language is a term that describes a particular stage in our life and relates to our emotions.

So when we say “freedom, sovereignty, independence,” each of you has a specific image in your mind, a specific feeling of a specific day in a specific historical era.

Language is not a combination of one, two, or three words or letters.

It is an internal idea that has to do with how we think, how we see each other, and how others see us.

What is our intelligence?

How can I tell if this guy understands?

So what if I say "Freedom, Sovereignty, Independence" (English), or if your son comes to you and says, "Dad, have you lived through the slogan of Freedom (English)?"

what do you think

If you don't think there's a problem, stop talking and walk away.

The idea is that these expressions remind you of certain things.

I have a French speaking friend who is married to a French man.

I asked her once how the situation was.

"Nothing is wrong, but once I spent a whole night trying to find out what the word 'tokborni' meant and trying to translate it," she said.

(Laughter.) (Applause.) The poor woman mistook him for "Tokborni" and spent the whole night trying to explain it to him.

He was perplexed at the thought, "How could you be so cruel?

does she want to kill herself?

'bury me? ' (English)' This is one of the few examples.

It made us feel like she couldn't get the word out to her husband because he couldn't understand it, and that it was the right thing for him not to say. He thinks differently.

she said to me "He listens to Files' songs with me. One night I tried to translate for him so that he could feel what I was feeling when I listened to Files' songs."

The poor woman tried to translate this for him: "I reached out from them and stole you--" (laughter) and here is the pickle: "And you are theirs, so I turned my hand back and left you."

(Laughter) Please translate that for me.

(Applause.) So what have we done to protect the Arabic language?

We turned this into a civil society concern and launched a campaign to save the Arabic language.

A lot of people asked me, "Why bother?"

Forget about this headache and have fun. ”

no problem!

A campaign to save the Arabic language has launched the slogan, "I speak to you from the East, but you respond from the West."

We didn't say 'no, we don't accept this either'.

We didn't adopt this style because it doesn't make sense.

And I hate Arabic when someone speaks to me like that.

We say -- (applause) We want to change reality and make sense of it in a way that reflects our dreams, aspirations, and our daily lives.

In a way that dresses like us and thinks like us.

In other words, "I speak to you from the east, you reply from the west."

Very simple, yet creative and compelling.

We then launched another campaign with a scene of letters on the ground.

You may have seen an example of this outdoors. A scene of a letter surrounded by black and yellow tape that says "Don't kill your language!" written there.

why? Seriously, don't kill your own language.

We should not kill language.

If you kill language, you have to find identity.

You have to find existence.

Let's go back to the beginning.

It's not just that we miss the modern, civilized opportunity.

After that, he released a photo of a man and a woman wearing Arabic letters.

Pictures of "cool" boys and girls.

we are so cool!

And someone might say, "Ha! You used an English word!"

I say, "No, I adopt the word 'cool'." Let them oppose as they wish. But please tell me a better and more realistic word.

I keep saying "internet". I don't say 'I'm going to the World Wide Web' (laughs) because it doesn't fit! Don't joke.

But to get to this point, we all need to be convinced that we should not allow anyone higher than us, or anyone who thinks they have any authority over us over language, to control us or make us think and feel the way we want them to.

Creativity is ideas.

So even if we can't reach space, we can't build rockets, etc., we can still be creative.

In this moment, each of you is a creative project.

Creativity in your native language is the way to go.

Let's start from this moment.

Try writing a novel or making a short film.

With just one novel, we may be able to become global again.

That could put Arabic back in the number one spot.

So it's not true that there is no solution. We have a solution!

But we need to know that and be convinced that solutions exist and that we have an obligation to participate in them.

In conclusion, what can we do today?

Now, tweet, who is tweeting?

My time is up, but please speak in Arabic, English, French or Chinese.

But don't mix Latin letters and numbers to write Arabic.

(Applause.) It's a disaster! it's not the language.

It means entering a virtual world using a virtual language.

It is not easy to come back from such a place and stand up.

That's the first thing we can do.

Second, there are many other things we can do.

We are not here today to persuade each other.

We are here to draw attention to the need to preserve this language.

I will tell you a secret from now on.

Babies first recognize their father through language.

When my daughter is born, I'm going to say, "This is your father, honey (Arabic)."

Don't say, "This is your daddy, honey."

And at the supermarket, I promise my daughter Nour that when she says "thank you" (Arabic), I won't say "dis, merci, maman" and I hope no one hears her.

(Applause.) Let's get rid of this cultural phobia.

(applause)

Ask yourself questions that you have never asked yourself before. "What is possible with the human voice?"

What is possible with the human voice?

(Beatboxing) ♪ Oh baby ♪ ♪ Baby ♪ ♪ Baby ♪ ♪ Baby ♪ (Crying baby) ♪ Baby ♪ (Baby crying) ♪ Baby ♪ (Cat meowing) (Dog barking) That's right.

(Applause) (Boomerang sound) It was coming straight at me. I had to. Yes it was.

As you can imagine, I was a weird kid.

(Laughter) Actually, I was always trying to expand my noise repertoire as much as possible.

I was always experimenting with these noises.

And I am still on that mission.

I'm still trying to find every sound I can make.

And the thing is, I'm a little older and wiser now. I know there are sounds I can never make because I am bound by my body, and there are things I can't do.

And there are things no one can say.

For example, no one can play two notes at once.

It's like being able to sing two tones that even a monk can do...

(Two-tone singing) But that's cheating.

and my throat hurts.

Sometimes you can't. These limitations of the human voice have always really bothered me. Because beatboxing is the best way to get musical ideas out of your head and out into the world. But they are sketches at best, and that's what bothers me.

I wish there was a way to bring these ideas to life without the limitations my body gave me.

So I worked with them to build a machine.

We created a system that is basically a live production machine, a real-time music production machine. This will allow me to use only my voice to create music in real time exactly as I hear it in my head, without getting in the way of the physical limitations my body imposes on me.

And we'll show you what it can do.

And before I make noise with it or use it to manipulate my voice, I want to reiterate that everything you will hear is made by my voice.

The system -- thank you, beautiful assistant -- has no sound itself until I start turning it on. As such, there are no pre-recorded samples of any kind.

When this really goes on and the audio I'm entering starts to get really messed up, it's no longer obvious that it's a human voice, but I know it's a human voice. So let's break it down and start with something nice and simple.

The problem with polyphony is that I only have one voice.

How can I get around the problem of wanting to play as many different voices simultaneously as possible?

The easiest way is something like this:

(beatboxing) by dancing. It is like this.

(music) Thank you.

(Applause) That's probably the easiest way.

However, if you want to do something a little more immediate than a live loop can do, there are other ways to layer voices.

Things like pitch shifting are awesome and I'm going to show you what it's like.

So I start the next beat for you, like this.

(Beatbox) You definitely need a little dance at the beginning. Because it's just fun. If you want, you can clap your hands together.

You don't have to. fine. check it out.

I will put the bass sound from now on.

(music) And now a rockabilly guitar.

i like it. But for example -- (applause) -- thank you. For example, what if you want to build a rock organ?

Is that possible? Yes, by recording yourself like this.

(organ sounds) And now I recorded it.

Assign to keyboard.

(music) That's cool.

(Applause) But what if I wanted to sound like the whole Pink Floyd thing?

Impossible, you say. no.

It is possible and very easy with this machine. It's really great. check it out.

(music) So all the noise you hear there is my voice.

I didn't just cause what it sounds like.

No samples available. No synthesizer.

It's literally all my voice being manipulated, and when you get to that point, you have to ask, what's the point?

Why would we do this? (Laughter) I think the short answer is that it's cheaper than hiring all of Pink Floyd.

But really, I didn't build this machine to emulate an existing one.

Built to produce any sound imaginable.

So, with your permission, I'll try to do some things that are on my mind. I hope you enjoy it. Because they are pretty rare. You might not believe it's all my voice, especially when you're doing something this unusual.

(Sound effect) (Music) It's like this.

(music) So, loosely defined, that's what the human voice is capable of.

Thank you very much for your attendance.

(applause)

My name is Dan Cohen, a scholar as he said.

And what that means, I argue.

It's an important part of my life.

And since I'm a philosopher, not just a scholar, I'd like to think I'm actually pretty good at arguing.

But I also like to think a lot about what I discuss.

And while thinking about the argument, I came across some mysteries.

And one of the mysteries is that it's been decades since I've been thinking about arguing for years, but it's gotten better.

But the more you argue, and the better you argue, the more you have to lose.

And the other mystery is that I'm actually fine with that.

Why do I think I can afford to lose, and why do I think good debaters are actually good at losing?

Well, there are some more puzzles.

One is, why are you arguing?

When I think of an argument -- let's call it an academic argument or a cognitive argument -- I'm talking about "Is this proposition true?" where something cognitive is at issue. Is this theory a good theory?

Is this a viable interpretation of the data or text?

I'm not really interested in the debate about who should wash the dishes or who should take out the trash.

Well, we have those discussions too.

I tend to win these arguments because I have a knack.

But those are not the important arguments.

I'm interested in an academic discussion, but here's where it stumps me.

What do you get if I convince you that utilitarianism is not the correct framework for thinking about ethical theory?

Before that, does it matter to me whether you have the idea that Kant's theory works, or whether Mill is the right ethicist to follow?

Whether or not you think functionalism is a viable theory of mind is a no-brainer to me.

So why are we trying to argue?

Why do we try to persuade others to believe what they don't want to believe, and is that a good thing?

Is that a good way to treat other humans and make them think things they don't want to think about?

Well, my answer is going to refer to 3 models for discussion.

The first model -- let's call it the dialectical model -- considers arguments as wars. You know what it feels like, lots of yelling and yelling, winning and losing.

This is not a very useful model for discussion, but it is a fairly common and well-established model of discussion.

But there is another model for discussion. It is an argument as proof.

Consider the argument of mathematicians.

This is my argument. Is it effective? What do you want?

Is the site guaranteed? Is the inference valid?

Do conclusions follow from premises?

No opposition, no hostility. There is not necessarily an argument in a hostile sense.

However, there is a third model to keep in mind that I think will be very useful. It is an argument as a performance, an argument in front of an audience.

We can think of politicians presenting their positions and trying to convince their audience of something.

But there is one more twist to this model that I think is really important. That is, when we argue in front of an audience, the audience can play a more participating role in the discussion. In other words, an argument is also a [performance] before a jury, who makes a judgment and decides the case.

Let's call this the rhetorical model. This model requires you to tailor your arguments to the audience in front of you.

Presenting a sound, well-argued, tense argument in English in front of a French-speaking audience does not work.

So there is a model of argument as war, argument as proof, and argument as performance.

Of these three, the argument as war is dominant.

It governs how we speak about an argument, how we think about an argument, and thus shape how we argue and how we actually act in an argument.

Now, when we talk about the debate, we speak in very militaristic terms.

We want strong arguments, punchy arguments, and to-the-point arguments.

We want to strengthen our defense and have all our strategies in place.

We want killer arguments.

That's the kind of discussion we want.

It's the dominant way of thinking about the discussion.

When I was talking about arguments, you probably thought of the adversarial model.

But I think war metaphors, war paradigms, or models for thinking about arguments have a transformative influence on how we argue.

First, it is more tactical than content.

You can take classes in logic and argumentation.

Learn all about the deceptions, or false tactics, that people use to try to win an argument.

It expands the us versus them side.

It becomes hostile. It's polarizing.

And the only foreseeable outcome is victory—a glorious victory—or a miserable and ignominious defeat.

These are distorting influences that, at worst, seem to hinder negotiation, consideration, compromise and cooperation.

Think about it. Have you ever entered an argument with the thought, "Let's see if we can discuss something instead of fighting it"?

What can we solve together? ”

I think the trope of the argument as war prevents any other kind of resolution to the argument.

And finally, and this really sucks, the argument seems to get us nowhere. they are a dead end.

It's like roundabouts, traffic jams, and conversation dead ends.

I can't go anywhere.

One more after.

And as an educator, this is what really bothers me. If an argument is a war, then there is an implicit equality of learning and losing.

And let me explain what I mean.

Suppose you and I had an argument.

Mr. P, you believe a certain proposition, but I do not.

And I say, "So why do you believe P?"

And you tell me why

And I object and say, "So what about...?"

And you answer my objection.

And then there's the question: "So what do you mean?

How does it apply here? ”

Now suppose, after all, that I objected, questioned, raised objections of all kinds, and in all cases you gave me a satisfactory answer.

So at the end of the day, I say: "Did you know? I think you are right. P"

It gave me a new belief.

And it's not just belief. It is a well-expressed, examined, and battle-tested belief.

Great cognitive improvement.

Well, the war trope seems to force us to say you won, even though I'm the only one with a cognitive benefit.

What did you gain cognitively by persuading me?

Sure, you may have gotten some pleasure out of it, perhaps your ego has been stroked, perhaps you've earned a professional status in the field -- "This person is a good argumentator."

But who is the winner, just from a cognitive point of view?

The metaphor of war forces us to think that you are the winner and I am the loser, even if I win.

And there is something wrong with that photo.

And that's the image I really want to change if I can.

So how can we find ways to have discussions and produce positive results?

What we need is a new exit strategy for the debate.

But unless a new entry approach to the discussion is established, no new exit strategies from the discussion are obtained.

We need to think of new kinds of arguments.

For that, hmm, I don't know what to do.

That's bad news.

The trope of argument as war is just... it's a monster.

It just lives in our minds and there is no magic bullet to kill it.

There is no magic wand to make it disappear.

No answer.

But I have some suggestions.

Here is my suggestion. If we want to think of new kinds of arguments, all we have to do is think of new kinds of debaters.

So try this. Consider all the roles that people play in the discussion.

Adversarial, dialectical arguments have proponents and opponents.

A rhetorical argument has an audience.

Arguments as evidence have reasoners.

All these different roles.

Now, can you imagine a discussion where you are both a debater and a member of the audience watching yourself argue?

Can you imagine yourself arguing, losing the argument, and still saying "Wow, that was a good argument!" at the end?

can it?

I think you can do that, and if you can imagine an argument where the loser says to the winner and the audience and jury can say, "Oh, that was a good argument," then I think you've imagined a good argument.

And more than that, I think you imagined an excellent debater, a debater worthy of the kind of debater you should aim for.

I am losing many arguments now.

Being a good debater in the sense that you can profit from losing takes practice, and fortunately I have so many colleagues who are willing to provide that practice.

thank you.

(applause)

In a time of global conflict and climate change, I am here to answer the all-important question: "Why does sex feel so good?"

If you're smiling, you know what I mean.

Now, before we get to that answer, let's talk about Chris Hosmer.

Chris is my best friend since college, but I secretly hate him.

Here's why. Back in college, we had a simple project to design a solar-powered clock.

this is my watch

Use what is called a dwarf sunflower, which grows to about 12 inches tall.

Well, as you know, sunflowers track the sun during the day.

So, in the morning, check which way the sunflower is facing and mark the blank area at the base.

Mark the changed position of the sunflower at noon, mark it again in the evening, and that will be your clock.

I know my watch doesn't tell me the exact time, but flowers can give me an approximate time.

So in my completely unbiased subjective opinion, it's great.

However, this is Chris' watch.

Here are five magnifying glasses, each with a shot glass underneath.

Each shot glass contains a different scented oil.

In the morning, sunlight falls on the first magnifying glass and the rays focus on the shot glass below.

This warms the fragrance oil inside and creates a unique scent.

A few hours later, when the sun hits another magnifying glass, it emits a different smell.

Therefore, five different odors are distributed throughout the environment during the day.

Anyone who lives in that house can tell the time just by smelling it.

You can see why I hate Chris.

I thought my idea was pretty good, but his idea was genius and I knew at the time that his idea was better than mine, but I couldn't explain why.

What I want you to know about me is that I am a competitive person.

This problem has been bothering me for over 10 years.

Now, back to the question of why sex feels so good.

Many years after the solar clock project, a young woman I know suggested that it might be the senses that make sex feel so good.

And when she said, I had an epiphany.

So I decided to evaluate the different experiences I have had in my life from the perspective of the five senses.

That's why I devised the Five Senses Graph.

The Y-axis has a scale from 0 to 10, and the X-axis has the five senses of course.

If you have a memorable experience in your life, record it on this graph like a five-sense diary.

A quick video showing how this works.

(Video) Jinsop Lee: Hi my name is Jinsop. Today I'm going to show you what it's like to ride a motorcycle from a sensory perspective. oi!

Bike Designer: [Unintelligible] Custom Bike Designer.

(motorcycle rpm) [sound] [tactile] [sight] [smell] [taste] JL: That's how the Senses Graph works.

Well, I've been collecting data for three years, not only for myself, but for some of my friends as well. Since I was teaching at a university, I forced them to do the same.

Here are some other results.

The first is for instant noodles.

Obviously, taste and smell are very high, but note that sound is 3.

Many people said that a big part of the noodle eating experience is the slurping sound.

Look. (slurping) Needless to say, I'm not eating with these people anymore.

OK, next is the club.

OK, what I found interesting here is that there are four levels of taste. Many respondents said it was because of the taste of the drink, but in some cases, they also said that kissing was a big part of the club experience.

I still play with these guys.

OK, smoking.

Here I found the touch is [6]. One reason is that smokers have told me that the feeling of holding a cigarette close to your lips is a big part of the smoking experience. This shows that it's a little scary to think how well cigarettes are designed by their manufacturers.

OK. So what would the perfect experience look like on the five-sensory graph?

Of course it will be a horizontal line along the top.

Well, it turns out that the experience isn't even as intense as riding a motorcycle.

In fact, in the years I've been collecting data, I've only had one near-perfect experience.

Of course it's sex. great sex.

Respondents said that great sex stimulates all five senses to the ultimate level.

Let me quote here what one of my students said. "Sex is so good, even if it's bad, it's good."

So the five senses theory helps explain why sex is so great.

In the midst of exercising my five senses, I suddenly remembered the solar-powered clock project I had when I was young.

And then I realized that this theory also explains why Chris' watch is so much better than mine.

As you know, my watch is only visual and a little tactile.

This is Chris' watch.

It is the first clock in history to tell the time using smell.

In fact, Chris watches are a revolution in terms of senses.

And that's what this theory has taught me about my field.

As you know, our designers have always focused on making things look really good and on the little touches. In other words, it was ignoring the other three senses.

Chris' watch shows how enhancing just one of your other senses can create a great product.

So what if we started using the theory of the five senses in all of our designs?

Here are three quick ideas I came up with.

This is a clothes iron with an added spray mechanism. Filling a vial with your favorite scent will not only make your clothes smell better, but it will also make your ironing experience more enjoyable.

You can call this a "Perfumerizer".

Ok, next.

So, I brush my teeth twice a day, but what if I had a toothbrush that tasted like candy, and when it no longer tasted like candy, I knew it was time to replace my toothbrush?

Finally, there is something about flute or clarinet keyboards.

I really like the way it looks and the way it feels when pressed.

Since I don't currently play the flute or clarinet, I decided to combine these keys with the instrument I play, the TV remote control.

Now, if you look at these three ideas together, you'll find that the 5 senses theory changes not only how you use your products, but how they look.

In conclusion, I have found the Five Senses Theory to be a very useful tool in evaluating different experiences in life and taking the best of them and hopefully incorporating them into my designs.

Now I realize that it's not just the five senses that make life interesting.

There are also six emotions and the elusive X-Factor.

Maybe that will be the subject of my next lecture.

Until then, use your five senses and enjoy your life and design.

Oh, just one last thing before I go home.

Here's what everyone had to say when they heard the TED talk.

However, it would be even better if you could enhance some of your other senses, such as smell and taste.

The best way to do that is with free candy.

Are you ready?

have understood.

(applause)

I returned 15 years ago after 20 years in the United States and was called back from Africa.

And I founded the country's first graphic design and new media college.

And I named it the Zimbabwe Institute of Visual Arts.

The idea, the dream, was actually for a kind of Bauhaus-like school where new ideas were interrogated and explored: the creation of a new visual language based on African creative heritage.

It provides a two-year diploma to talented students who successfully complete their high school education.

And typography is a very important part of our curriculum, and we encourage our students to turn their influence inward.

This is a poster designed by one of the students with the theme "Education is a right".

There are also logos designed by my students.

Africa has had a long tradition of writing letters, but this is a little-known fact, and I wrote the book The African Alphabet to address it.

The various types of writing in Africa were originally protoscripts. A secret society script of the Ejagam tribe of southern Nigeria, as described in Nsibidi.

So this is a writing system of special interest.

The Akan people of Ghana and [Côte d'Ivoire] developed the Adinkra symbol about 400 years ago. These are proverbs, historical proverbs, objects, animals, plants and my favorite Adinkra system is the first one on the top left.

It's called Sankofa.

It means "Please come back and receive it". Learn from the past.

Drawn by the Jokwe tribe of Angola, this emoji tells the story of the creation of the world.

The upper part is God, the lower part is human and human, and the left side is the sun and the right side is the moon.

All roads lead to and from God.

Yoruba, Congo and Paro secret societies in Nigeria, Congo and Angola respectively developed this complex writing system, which is still alive today in the New World of Cuba, Brazil, Trinidad and Haiti.

In Ituri communities in the rainforests of the Democratic Republic of the Congo, men knock out cloth from a special tree, and women, who are also hymn singers, draw interwoven patterns that are the same polyphonic structures they use when singing. It's kind of like sheet music.

In South Africa, Ndebele women use these symbols and other geometric patterns to paint their homes in bright colors, and Zulu women use the symbols in the beads they weave into bracelets and necklaces.

Ethiopia has the longest writing tradition, with the Ethiopian script developed in the 4th century AD.

It is used to write the Amharic language spoken by over 24 million people.

King Ibrahim Nyoya of Cameroon's Bamum Kingdom developed schumam at the age of 25.

Shu-mom is a writing system.

Syllabic letters. Not exactly alphabetical.

Here we show the three stages of development that have passed over the last 30 years.

The Vai of Liberia had a long tradition of reading and writing until they first came into contact with Europeans in the 1800s.

Read from left to right in alphabetical order.

The Mende people of neighboring Sierra Leone also developed a syllabary, but theirs reads from right to left.

Africa has had a long tradition of design and a well-defined design sensibility, but the problem with Africa, especially today, is that African designers struggle with all forms of design, especially as they tend to look externally for influence and inspiration.

Africa's creative spirit, its creative traditions, are as powerful as ever if designers can look inward.

This Ethiopian cross shows Dr. Ron Eglash's proof that Africa has made many contributions to computing and mathematics through an intuitive grasp of fractals.

Ancient Africans created civilizations and their monuments that stand today are true testament to their greatness.

Perhaps one of mankind's greatest achievements is the invention of the alphabet, which is thought to be the invention of cuneiform writing by Mesopotamia in 1600 BC, followed by the invention of hieroglyphs in Egypt, and the story was cast in stone as historical fact.

Thus, until Yale University professor John Coleman Darnell discovered these inscriptions in 1998 in the Thebes Desert, a limestone cliff in western Egypt, the inscriptions were dated several centuries before Mesopotamia, between 1800 and 1900 BC.

These inscriptions are called Wadi El Hor, after the place where they were found. Research is still ongoing, and some have been deciphered, but there is consensus among scholars that this is indeed the first human alphabet.

Here you'll see a map of ancient documents showing what has been deciphered so far. It starts with the letter A, then ``ālep'' in the top, ``bêt'' in the middle, and so on.

It's time for African design students to read the work of giants like Senegal's Sheikh Anta Diop. His seminal work on Egypt was justified by this discovery.

The final words go to the great leader of Jamaica, Marcus Mosiah Garvey, and the Akan tribe of Ghana, who have the symbol of Adinkra, the Sankofa, to inform the present and encourage us to go to the past to build a future for us and our children.

It's also time for African designers to stop looking outward.

They had looked outside for a long time, but what they were looking for was right there, within them.

thank you very much.

(applause)

Adam Ockelford: I don't have much to say, and I promise there's a lot to play for Derek, but I wanted to take a quick look at how Derek got to where he is today.

He's a lot bigger than me, so it's amazing now, but when Derek is born, he might fit in the palm of your hand.

He was born three and a half months early, but it's been a great fight for him to survive.

He had to take a lot of oxygen, which affected your eyes, Derek, and how you understood language and how you understood the world.

But that was the end of the bad news. Because when Derek comes home from the hospital, his family decides to hire a questionable nanny who will really take care of Derek for the rest of your childhood.

And Nanny's great insight was really thinking that there are children who are blind.

Music must be important to Derek.

And sure enough, she sang to him during the first few years of his life, on what Derek calls "tweeting."

And I think the excitement of hearing her voice for hours every day made him wonder if maybe there was something stirring in his brain, some kind of musical gift.

Here's a little picture of Derek climbing when you were with your nanny.

Now, another great insight for Nanny was to ask Derek to play something. And sure enough, she dragged this little keyboard out of her loft, not expecting anything to come out of it.

But Derek, your little hands must have reached for it and hit it so hard that you thought it would break.

But out of all the bashing emerged, months later, the most amazing music. I think there was a real miracle moment, Derek, when you realized that all the sounds you hear in the world can be copied with a keyboard.

It was a great eureka moment.

Now, blind means, of course, self-taught.

Derek Paravicini: I taught myself how to play.

AO: Yes, you were self-taught to play the piano, but as a result, Derek, playing the piano often involved knuckles, karate chops, and even a little snort.

And what Nanny did was press the record button on the little early tape recorder they had. This is a great tape Derek played when you were 4 years old.

DP: "Molly Malone (cockles and mussels)"

AO: It wasn't really "cockles and mussels."

This is the "English Country Garden".

DP: "English Country Garden".

(Music: "English Country Garden") AO: Right there.

(Applause.) I think that's really great.

There is a little kid who is blind, doesn't know much about the world, has no one in his family who plays an instrument, and is self-taught to play an instrument.

And as you can see from the picture, Derek, there was quite a lot of body action going on while you were playing.

Now Together -- Derek and I met when he was four and a half years old. Derek, at first I thought you were mad. To be honest, when you played the piano, you seemed to want to play every note on the keyboard, and you had a little habit of tapping me out of the way.

As soon as I tried to approach the piano, I was hit hard.

And I told your dad, Nick, that I would try to teach you, but I was a little confused as to what to do if I wasn't allowed to be near the piano.

But after a while, I thought, well, the only way is to pick you up, push Derek across the room, and then have 10 seconds until Derek comes back to give him something quick to remember.

And in the end, Derek, I think you agreed that we could actually play the piano together and have some fun.

As you can see, there's me in my pre-marriage youth with a brown beard, and a young Derek focused there.

I just realized this is being recorded, right? right. have understood.

(Laughter) Well, by the age of 10, Derek was really taking the world by storm.

This is a picture of you, Derek, playing with the Royal Philharmonic Pops at the Barbican.

It was basically a really exciting trip.

At the time, Derek, you didn't talk much, so there were always moments of tension about whether we actually understood what we were going to play, whether we were going to play the right song in the right key, things like that.

But the orchestra was equally astounded, and press from all over the world were mesmerized by your ability to perform these marvelous pieces.

Now the question is, how do you do that, Derek?

And hopefully I can show the audience how you are doing now.

Derek, I think one of the first things that happened to you when you were young was that by the time you were two years old, your musical ear already surpassed that of most adults.

So whenever you hear a note, just play a random note (a piano note), you instantly know what it is and also have the ability to find it on the piano.

This is called perfect pitch, and some people have absolute pitch to the few white notes in the middle of the piano.

(Piano notes) You know what it feels like to play with Derek.

(Applause.) But Derek, your ears don't end there.

Just put a few mics and you're playing a chunk of sound.

Anyone who can see would know the number of notes, but of course Derek doesn't.

Not only can you specify the number of notes, but you can also play all notes simultaneously. I'm here.

(chord) Well, forget the jargon, Derek. wonderful.

And that ability, not just a single note, but the ability to hear simultaneous notes when a whole orchestra is playing, Derek, you can hear all the notes and after hours of practice you can instantly reproduce them on the keyboard, and I think that's the foundation of all your abilities.

Now.

Without technique, there is no point in having such raw abilities. Luckily Derek, you decided to have me help you learn the fingerings for all the scales once we start learning.

For example, use the bottom of your thumb in C major.

(Piano sound) etc.

So, in the end, it became very fast, so there was no problem with "Flight of the Bumblebee", was there?

DP: No.

Ao: Right. So here, Derek was doing this sort of thing by the age of 11.

DP: This is it.

(Music: "Flight of the Bumblebee") (Applause) AO: Derek, bow.

wonderful.

Now, what's really amazing is that with all this scale, Derek, not only can you play "Flight of the Bumblebee" in the normal key, but Derek can play any note I play.

Now, if we pick a note at random, it will look something like this:

(Piano note) Can you play "Flight of the Bumblebee" on that note?

DP: "Bumblebee Flight" in that respect.

(Music: "Flight of the Bumblebee") AO: Or another song? How about in G minor?

DP: G minor.

(Music: "Flight of the Bumblebee") AO: Great. Well done Derek.

Look, Derek, you have this amazing music computer in your brain that can instantly rearrange and recalculate every song in the world.

"Excuse me, but could you play 'Flight of the Bumblebee' in B minor instead of A minor?" Most pianists would have a heart attack. as we continue.

In fact, Derek, the first time you played it with the orchestra, you learned the version you learned, but then the orchestra actually had another version, so while we were waiting for rehearsals and two hours before the concert, Derek was able to listen to another version, quickly learn it, and then play it with the orchestra.

Great chapter.

Another great thing about you is your memory.

DP: Memory. AO: Your memory is really good. Every time we do a concert, of course, we invite the audience to participate by suggesting songs that Derek would like to play.

And people say, "That's very brave, because what if Derek didn't know that?"

And I say, "No, it's not brave at all because if you ask Derek something he doesn't know, he'll invite you to come sing it first, and he'll pick it up."

But seriously, does anyone want to choose a work?

DP: Please select a work. Choose, choose, why don't you choose? AO: Because it's pretty dark. Just shout.

do you want to hear me play?

(Audience: "Paganini's Theme") AO: Paganini. DP: "Paganini's Theme".

(Laughter) (Music: "Paganini's Theme") (Applause) AO: Well done.

Derek is going to Los Angeles soon, and this is a milestone. Because Derek and I will be spending over 100 hours together on long haul flights. This is very interesting, isn't it, Derek?

DP: Very interesting, Adam, yes. long-haul flight. yes.

AO: Talking for 13 hours may seem like a long time, but Derek does it effortlessly. Now.

(Laughter) But in the US, they've coined Derek with the term "human iPod," and I think that's missing the point. Because, Derek, you are so much more than an iPod.

You are a wonderful, creative musician. And I don't think I've seen it more clearly anywhere than when we went to Slovenia. And someone, who in a long concert is often attended by people, came on stage very, very nervous.

DP: He played "Chopsticks." AO: And we played "Chopsticks."

DP: "Chopsticks."

AO: It's kind of similar. DP: Like this. yes.

(Piano sounds) AO: Actually, I have to get Derek's manager to come and play.

he is sitting there

DP: Someone played "Chopsticks" like this. AO: You're just kidding, right? please.

(Music: "Chopsticks") DP: Let Derek play it.

AO: What's up with that, Derek?

DP: You have to improvise, Adam.

AO: I'm Derek, a musician.

(Music: improvising "Chopsticks") (Applause) (Music) (Applause) Follow Derek.

(music) (applause) We'll get killed by the TED guys, but maybe we'll have time for an encore.

DP: One encore. AO: There was only one encore.

So this is one of Derek's heroes.

That's the great Art Tatum -- DP: Art Tatum.

AO: -- He was also a blind pianist and, like Derek, I think he thought the world was all about the piano. So whenever Art Tatum plays something, it sounds like there are three pianos in the room.

And this is Derek's interpretation of Art Tatum's "Tiger Rag."

DP: "Tigerrag"

(Music: "Tiger Rag") (Applause)

Hi. i am an architect

I am the only architect in the world who has made a building out of paper like this cardboard tube, and this is the first exhibition I have made using paper tubes.

In 1986, long before people started talking about ecology and environmental issues, I had just started testing paper tubes for use as building structures.

Testing a new building material is very complicated, but it's stronger than you think, it's very easy to waterproof, and since it's an industrial material, it can be fireproofed.

Later, in 1990, a temporary building was constructed.

This is the first temporary building made of paper.

There are 330 tubes with a diameter of 55 centimeters, but only 12 tubes with a diameter of 120 centimeters, or four feet wide.

As you can see from the photo, there is a toilet inside.

When you're done with the toilet paper, you can peel the inside of the wall off. (laughs) It's very convenient.

In 2000, a large-scale World Expo was held in Germany.

The theme of the Expo was environmental issues, so I was asked to design the building.

So I decided to build the pavilion using paper tubes, which are recyclable paper.

My design goal is not perfection.

My goal was to demolish the building. Each country will build a lot of pavilions, but after half a year there will be a lot of industrial waste, so my building will have to be reused or recycled.

The building has since been recycled.

That was my design goal.

Then we were lucky enough to win a competition to build a second Pompidou Center in Metz, France.

I was very poor, so I wanted to rent an office in Paris, but I didn't have the money, so I decided to take the students to Paris and build our own office above the Pompidou Center in Paris.

So we brought in paper tubes and wooden joints to complete a 35-meter-long office.

We stayed there for 6 years without even paying rent.

(Laughter) (Applause) Thank you. There was one big problem.

We were at an exhibition, so even if my friends wanted to see me, they had to buy tickets.

that was the problem.

and completed the Pompidou Center in Metz.

It is now a very popular museum and has created a large memorial for the government.

However, I was very disappointed in my profession as an architect. Because we're not helping society, we're not working for society, we're working for the privileged, the wealthy, the government, the developers.

they have money and power.

they are invisible.

So they hire us to make their power and money visible by creating monumental structures.

That's what we do, historically, and still do today.

Therefore, I felt very sorry that we are not working for society even though there are many people who lost their homes due to natural disasters.

But I must say that they are no longer natural disasters.

For example, earthquakes don't kill people, but people die when buildings collapse.

That is the architect's responsibility.

People need temporary housing, but they are too busy working for the privileged to have architects to work there.

Therefore, I thought that I could be involved in the reconstruction of temporary housing as an architect.

we can make it better.

That's how I started working in the affected areas.

In 1994, a major disaster occurred in Rwanda, Africa.

Two tribes, the Hutus and the Tutsi, fought against each other.

More than 2 million people became refugees.

However, I was very surprised to see shelters and refugee camps organized by the United Nations.

They are very poor and freeze in blankets during the rainy season. The shelters built by the United Nations were only provided with plastic sheets and the refugees had to cut down trees.

But more than 2 million people are cutting down trees.

It has only become a massive and massive deforestation and environmental problem.

Therefore, we started providing aluminum pipes and aluminum barracks.

So expensive that they throw them away for money and cut down the trees again.

So I proposed the idea of ​​using this recycled paper tube to improve the situation. Because it's very cheap and very powerful, but my budget is only $50 each.

We produced 50 units as a monitoring test for durability, humidity, termites, etc.

A year later, in 1995, there was a big earthquake in Kobe, Japan.

Nearly 7,000 people died, and cities like this Nagata district were burned to the ground after the earthquake.

I also learned that many Vietnamese refugees are suffering and gathering at Catholic churches. All buildings were completely destroyed.

So I went there and suggested to the priests, too, "Why don't we rebuild the church with paper tubes?"

And he said, "Oh God, are you out of your mind?

What do you suggest after the fire? ”

So he never trusted me, but I never gave up.

When I started going to Kobe, I encountered Vietnamese society.

They lived like this with very poor plastic sheeting in the park.

So I proposed a rebuild. I collected a donation.

I made a paper tube shelter for them, but used a beer crate as a base to make it easy for the students to build and also easy to destroy.

The reason I asked Kirin Brewery to make a proposal was because Asahi Breweries used red plastic boxes for their beer at the time, which did not match the color of the paper tubes.

Color coordination is very important.

And I still remember, I was expecting beer in a plastic beer crate, but it was empty. (Laughs) So I remember being very disappointed.

So, during the summer, I worked with the students to build over 50 units of shelter.

Finally, the priest finally trusted me and helped me rebuild.

He said, "If you raise your own money and take the students to build it, you can do it."

So we spent five weeks rebuilding the church.

It was supposed to last 3 years, but people loved it and it actually lasted 10 years.

After that, a big earthquake hit Taiwan, and we proposed donating this church, dismantling it, and asking volunteers to build it.

Today, it remains in Taiwan as a permanent church.

So this building became a permanent building.

So what is permanent and what is temporary?

Even a building made of paper can last forever if people love it.

Even concrete buildings can be very temporary if they are built to make money.

When a big earthquake hit Turkey in 1999, I went there to build a shelter using local materials.

In 2001, we also built a shelter in West India.

In 2004, after the Sumatra earthquake and tsunami, Sri Lanka rebuilt Islamic fisherman villages.

And in 2008, corruption between authorities and contractors killed nearly 70,000 people in Chengdu, China's Sichuan province, and destroyed a particularly large number of schools.

I was asked to rebuild the Temporary Church.

I took Japanese students to study with Chinese students.

Nine classrooms of over 500 square meters were completed in one month.

Even after the recent earthquake in China, it is still in use today.

In 2009, there was also a large earthquake in L'Aquila, Italy.

This is a very interesting photo. Former Prime Minister Berlusconi and former Prime Minister Aso of Japan. As you know, the Prime Minister must be replaced every year.

And they were very kind and provided me with my model.

L'Aquila is very famous for music, all the concert halls were destroyed and the musicians were evicted, so I proposed a large-scale reconstruction, a temporary music hall.

So I proposed to the mayor that we want to rebuild the temporary auditorium.

He said, "You can do it as long as you bring the money."

And I was very lucky.

Mr. Berlusconi hosted the G8 summit and the former prime minister was also there and helped us raise funds. And I received 500,000 euros from the Japanese government to rebuild this temporary auditorium.

A large earthquake struck Haiti in 2010, but it was impossible to fly over it by plane, so together with local students from Santo Domingo, we drove six hours to the neighboring country, Santo Domingo, and built 50 units of shelter using local paper tubes.

This happened two years ago in northern Japan.

After the earthquake and tsunami, people had to evacuate to large rooms like gymnasiums.

But look at this. No privacy.

People suffer mentally and physically.

So we went there and with all the student volunteers we made a partition out of paper tubes, a very simple shelter made of paper tube frames and curtains.

But some facility authorities don't want us to do that. They said it was simply because the facility had become more difficult to manage.

But it really needs to.

There is not enough flat area to build a standard government single story house like this.

Look at this. Even the private government is very lax in constructing temporary housing, with no warehouses and leaking water, so it's crowded and messy. Since there is no land, it is not very comfortable, so I thought that I would have to build a high-rise building.

So I proposed to the mayor while making a partition.

Finally, I met a very nice village chief in Onagawa Village, Miyagi Prefecture.

He asked me to build a three-story house over the baseball field.

I used shipping containers and helped furnish the building so that the students could live comfortably within the budget of the government. The size of the house is also exactly the same, but much more comfortable.

Many people want to stay here forever.

I was very happy to hear that.

I am currently working in Christchurch, New Zealand.

About 20 days before the earthquake in Japan, there was a large earthquake that killed many Japanese students and completely destroyed the city's most important cathedral, the symbol of Christchurch.

Then he asked me to come to rebuild the Temporary Cathedral.

So, this is a work in progress.

And I would like to continue to create monuments that are loved by people.

thank you very much.

(Applause.) Thank you. (Thank you for applause. (applause)

If we evolved from monkeys, why are there still monkeys?

(laughter) Well, we are fish, not monkeys.

(Laughter) Now, knowing that you are a fish and not a monkey is actually very important in understanding where we came from.

I teach the largest evolutionary biology class in the United States, and when my students finally understand why I always call them fish, I know I've done my job.

But we always have to start our lessons by dispelling stereotypes. Because many of us have been misinformed about evolution without really knowing it.

For example, we are taught to say "evolution".

There are actually many theories, and just like the process itself, the ones that best fit the data have survived to this day.

The one we are most familiar with is Darwinian natural selection.

It is a process in which organisms that are the most fit for their environment survive and thrive, while those that are less fit slowly become extinct.

that's all.

Evolution is very simple, it's a fact.

The theory of evolution is as factual as the "theory of gravity".

Equally easy to prove.

It suffices to see the navel it shares with other placental mammals, the backbone it shares with other vertebrates, or the DNA it shares with all other life on Earth.

Those properties did not appear in humans.

They have been passed down from our various ancestors to all our descendants, not just us.

But that's not really how we learn biology early on, is it?

We learn that plants and bacteria are primitive, fish give rise to amphibians, then reptiles and mammals, and finally this fully evolved organism.

But life does not evolve linearly and does not end with us.

But evolution has always shown us that monkeys, chimpanzees, some extinct humans—all moving forward and steadily moving forward to become what we are.

But they don't become us in the same way that we become them.

We are not evolutionary goals either.

But why is it important?

Why should we understand evolution the right way?

Well, the misunderstanding of evolution has caused a lot of problems, but we can't ask the old-fashioned question, "Where did we come from?"

without a proper understanding of evolution.

Misunderstanding it has given rise to many complex and corrupt views of how we should treat other life on Earth, how we should treat each other in terms of race and gender.

Let's go back 4 billion years.

This is the single-celled organism from which we are all born.

Although at first they gave rise to other single-celled life, these have evolved to the present day, with some saying that Archaea and Bacteria, which make up the bulk of this group, are the most successful on Earth.

They will surely come here long after us.

About 3 billion years ago, multicellularity evolved.

This includes fungi, plants and animals.

Fish were the first animals to develop a backbone.

So technically, you and I are fish, just as all vertebrates are fish.

So don't say I didn't warn you.

A lineage of fish came to land and gave rise to, among other things, mammals and reptiles.

Some reptiles become birds, some mammals become primates, some primates become tailed apes, and others become great apes, including various hominids.

So, although we didn't evolve from monkeys, we do share a common ancestor with them.

All the while, the organisms around us continued to evolve. More bacteria, more fungi, more fish, more fish, more fish.

In case you didn't know, yes they are my favorite group.

(Laughter) Life evolves and goes extinct at the same time.

Most species live only a few million years.

That is, most of the life forms on Earth that we see around us today are about the same age as our species.

In other words, it is arrogant and self-centered to think, "Oh, plants and bacteria are primitive, and we've only been here for one minute of evolution, so we're somehow special."

Think of life as this book, definitely an unfinished book.

I'm just looking at the last few pages of each chapter.

If you look at the 8 million species that share this planet, think of them all as having gone through four billion years of evolution.

Consider that we are all young leaves in this ancient, giant tree of life. We are all connected by invisible branches not only to each other, but also to our extinct relatives and evolutionary ancestors.

As a biologist, I am still trying to learn with others how everyone relates to each other and who relates to whom.

It might be better to think of us as little fish out of water.

Yes, those who have learned to walk and speak, but we still have much to learn about who we are and where we come from.

thank you.

(applause)

Chris Anderson: Welcome to TED.

Richard Branson: Thank you. My first TED was great.

CA: Have you met anyone interesting?

RB: Well, the good thing about TED is that people are funny.

I was very happy to meet Goldie Hawn because I wanted to apologize to her.

I had dinner with her about two years ago, and she had a big wedding ring on her finger that wouldn't come off.

And that night I went home and went to my wife. And she wanted to know why I had another woman's big, huge, big wedding ring on my finger.

And anyway, the next morning we had to go to the jeweler and have it cut.

So -- (laughter) -- I'm sorry Goldie.

CA: That sounds great.

So here are some of your company's slides.

Have started one or two in your time.

Virgin Atlantic, Virgin Records -- I think it all started with a magazine called Student.

And yes, so does everything else. I mean, how do you do this?

RB: I read all these instructions from TED. Do not talk about your business or this. And now you ask me

So I don't think you can kick me off the stage now that you asked the question.

(laughs) CA: But it also depends on what the answer is.

RB: No, I think I learned early on that if you can run one company, you can actually run any company.

After all, companies are all about finding the right people, inspiring them, and bringing out the best in them.

I love to learn, I'm incredibly curious, and I love to challenge the status quo and try to turn it upside down.

So, I have thought of life as one long learning process.

And if I fly on another airline and feel that the experience wasn't pleasant (it wasn't 21 years ago), then I think I might be able to create the kind of airline I want to fly.

So I got a used 747 from Boeing and tried it out.

CA: Well, it was weird. Because you did something that many would advise you to be crazy.

And actually, in a way, it almost brought down your empire at some point.

I had a conversation with one of the investment bankers when you were selling Virgin Records and investing heavily in Virgin Atlantic Airways, and his view was that, you know, trading the world's 4th largest record company for the 25th largest airline is insane.

How did you do that?

RB: Well, I think there is a very thin line between success and failure.

And I think if you start a business without financial backing, you're likely going on the wrong side of that line.

We were under attack from British Airways.

They are trying to put our airline out of business and have launched a campaign known as the Dirty Trick Campaign.

And then I realized that if I didn't tip, the whole empire would likely collapse.

And to protect the jobs of the people who work for the airlines, and to protect the jobs of the people who work for the record companies, I had to sell my family jewelry to protect the airlines.

CA: Since Napster, you look like a bit of a genius, actually for that matter as well.

RB: Well, it turned out to be the right thing to do in the end.

But yeah, it was sad at the time, but we moved on.

CA: Well, you use the Virgin brand a lot, and it sounds like you're getting some synergies.

What does brand represent in your mind?

RB: Well, I'd like to think it stands for quality, but if you come across a Virgin company, it's them - CA: They're quality, Richard. Come on, everyone says it's quality. spirit?

RB: No, but I was going to move on to this one.

We are having a great time and I think the people who work there are enjoying themselves as well.

As I'm saying, we've entered and shaken other industries and you know, I think we're doing things differently and I think the industry isn't exactly the same as a result of Virgin attacking the market.

CA: So in some of the launches you've done, maybe the brand didn't work very well.

I mean, virgin brides, what happened there?

(laughs) RB: We didn't find any customers.

(Laughter) (Applause) CA: Actually, I was wondering why, but I think they missed an opportunity with the condom launch. You called it "mate".

I mean, couldn't you have used the Virgin brand?

I don't think I'm a virgin anymore.

RB: Again, we may have had trouble finding customers.

So when we started a company and a customer complained, we were often able to deal with it.

However, about 3 months into the launch of the condom company, I received letters, complaints, sat down and wrote this woman a long letter apologizing over and over again.

But obviously there wasn't much I could do about it.

Then, six or nine months after the issue was resolved, I received a happy letter with a picture of the baby asking if I would be a godfather. And I became a godfather.

So it all worked out.

K: Really? I should have brought a picture. It is amazing.

RB: It should have been.

CA: So give me some numbers.

So what are the numbers in this?

I mean, how big is the group as a whole?

How much -- what is the total revenue?

RB: Currently about $25 billion in total.

CA: How many employees do you have?

RB: About 55,000.

CA: I mean, you've been photographed in different ways at different times, but you've never been afraid to jeopardize your dignity.

What? Was it true?

RB: Right. I think we were setting up a megastore in Los Angeles.

No, I mean, I think -- CA: But is it your hair?

RB: No.

CA: What was it?

RB: I'll stop by for tea.

CA: Okay.

(laughs) RB: Oh, it was a lot of fun. It's a great car boat, and we rode it -- CA: Oh, that car we rode -- actually, we -- I think it was a TEDster event over there.

It's -- in fact, could you stop for a moment?

(laughs) RB: That's a lot of work.

CA: I mean, it's hard work.

(Laughter) When I first came to America, I tried this with my employees, and they sort of have different rules here, which is very strange.

RB: I know, I know -- lawyers say you can't do that -- CA: Come to think of it, let me tell you -- RB: About the "Pummy" we launched, you know, we misunderstood that we could compete with Coca-Cola and launched a bottle of Coke called "The Pummy" that looked a bit like Pamela Anderson.

But the problem was that it kept flipping over. But -- (laughter) CA: Perhaps Philippe Starck designed it?

RB: Of course.

CA: So here are a few more photos. virgin bride. very nice.

So please stop here. This -- do you think it won any awards?

RB: Well, well, 25 years ago we put out The Sex Pistols' God Save The Queen, and 25 years later, I never expected that she would actually knight us.

But somehow, I think she must have had forgetful memories.

CA: Well, God saved her and you got what you deserved.

Do you like to be called Sir Richard or what are you called?

RB: No one ever called me Sir Richard.

Sometimes in America I hear people saying Sir Richard and wonder if there is a Shakespeare play going on.

But anyway nowhere else.

CA: Okay. So can you use your knighthood for anything, or just...

RB: No. If you're having trouble getting restaurant reservations, it might be worth using.

CA: You know, it's not Richard Branson. Sir Richard Branson.

RB: I'll go get my secretary to use it.

CA: Okay. Now let's look at the universe.

I think you've got a video with us showing you what you're up to and Virgin Galactic in the sky. (Video) Is it a spacecraft designed by Burt Rutan?

RB: Well, it will be ready within 12 months, followed by 12 months of extensive testing.

And 24 months from now people will be able to go to space.

CA: So this interior was designed by Philippe Stark?

RB: Philip has done quite a bit of it, like the logo and building the space station in New Mexico.

And basically, he just took an eye, and the space station becomes one giant eye, so when you're in space, you should be able to see this giant eye looking up at you.

And once you land, you can step back inside this giant eye.

But he is an absolute genius when it comes to design.

CA: But you didn't have him design the engine?

RB: I don't think Philip is the best person to design an engine because he's pretty unstable.

CA: He gave a great talk here two days ago.

RB: Really? No, he's -- CA: Well, some people think this is great, some people think it's completely weird.

But I personally thought it was great.

RB: He's a great lover and that's why I love him. but ...

CA: So you've always had this search bug in you.

Have you ever regretted it?

RB: Many times.

I mean the balloon and boat expeditions we've done in the past.

Well, I think I was pulled out of the sea by helicopter six times, and each time I didn't expect to come home to tell this story.

So in a moment like that, you're certainly wondering what you're doing there, or -- CA: where was the closest you were -- when did you think, here, I was about to leave?

RB: Well, I think the balloon adventures were like that, and I think they were pretty close, actually.

And first of all, we had to build a hot air balloon that could fly in the jet stream, because no one had ever actually crossed the Atlantic in a hot air balloon before, but we weren't quite sure if the balloon would actually withstand the 200 or 220 mph winds we see above when it actually hits the jet stream.

So when we first took off from Sugarloaf to cross the Atlantic, when we were entering the jet stream, this giant balloon -- finally the top of the balloon flew at hundreds of miles per hour, the capsule we were at the bottom flew at about two miles per hour, and just took off.

It was like being held by a thousand horses.

And we just crossed our fingers and hoped the balloon would stick, and luckily it did.

But the end of all these balloon trips, as you know, always seemed to go wrong. And on that special occasion, the more experienced balloonist who was with me jumped off, and I would hang on for the rest of my life.

(Laughter) CA: Did he tell you to jump off, or did he just say, "Get out of here!"? and ...

RB: No, he told me to jump, but when his weight was gone the balloon just went up to 12,000 feet and I...

CA: So I think you inspired the Ian McEwan novel.

RB: Right. No, I put on my oxygen mask, parachute in hand, standing on top of the balloon, watching the billowing clouds below, and mustering up the courage to jump into the North Sea, it was a very, very, very lonely moment.

But anyway, we managed to survive it.

CA: Did you jump? Or did it end up going down?

RB: Well, we knew we had about half an hour of fuel left, and we knew that if we jumped out, we might only have a few minutes left to live.

So I went back to the capsule, desperately trying to make sure my decision was right.

And wrote some notes to the family. Then we climbed up again, looked down at the clouds again, and went back to the capsule.

And finally, I thought there was a better way.

Look, there's this giant balloon over your head, it's the biggest parachute ever, why not use it?

So I managed to fly the balloon through the clouds and threw myself about 50 feet short of hitting the ocean.

Then the balloon hit the ocean and flew away without me to 10,000 feet.

But it felt great to be in the water, and -- CA: What did you write to your family?

RB: What I would do in that situation is, I just love you so much. And I had already written to them before going on this trip, just in case something happened.

But luckily they didn't have to use it.

CA: Your company has delivered incredible PR value with these heroic acts.

For many years, and until I stopped looking at the polls, you were considered a great hero in Britain and elsewhere.

And cynics might say this is just a smart businessman doing what it takes to execute his own unique style of marketing.

How much of this was PR value?

RB: Well, of course PR experts have said that as an airline owner, you should never take off in a balloon or a boat and crash into the ocean.

(laughter) CA: They have a point, Richard.

RB: Actually, I think our airline did a full-page ad at the time that said, 'Come on, Richard, there's a better way to cross the Atlantic.

(laughs) CA: You must have been a genius to do something like this, right?

RB: Well, I'm not going to argue with that.

(Laughter) CA: Okay, this isn't exactly hard. OK.

It wasn't -- you were just terrible at school, weren't you?

RB: I was dyslexic. I couldn't even understand what I was studying at school.

I definitely would have failed the IQ test.

That was one of the reasons I left school when I was 15.

And if I'm not interested in something, I can't understand it.

As a dyslexic, you can also find yourself in very strange situations.

So, for example, I have run the largest private group of companies in Europe and have never been able to tell the difference between net and gross.

So the board meeting was very interesting.

(Laughter) So is it good news or bad news?

And generally people will say, "Oh, that's bad news."

CA: But let me be clear, $25 billion is a lot, right? Is it terrible?

(laughter) RB: Well, I really hope it's the net -- (laughter) -- I get it right.

CA: No, believe me, it's terrible.

(Laughter) RB: So when I turned 50, someone took me out of the boardroom and said, "Look, Richard, here's a diagram. Let me draw a diagram."

There is a net here in the sea, and the fish are drawn into this net from the sea.

That's the profit left in this little net, and everything else is eaten. ”

And finally solved everything.

(Laughter) (Applause) CA: But in school, you were pretty miserable academically, and you were also captain of the cricket and football teams.

I mean, you were kind of a natural leader, but just a little bit...were you a rebel then, or what would you do...

RB: Well, I guess I was a bit of a maverick, and I was…and I was, well, fortunately good at sports, so at least I had something good in school.

CA: And some strange things happened shortly before your life.

So, the story goes that your mother threw you into the field when you were 4 years old and said, "Okay, walk home."

Did this really happen?

RB: She felt that we needed to stand on our feet from an early age.

So she did things like pushing us out of the car and telling us to go to Grandma's house herself about 5 miles before we actually got there.

And takes us on a wonderful long bike trip.

And we were never allowed to watch TV or anything like that.

CA: But is there a risk here?

I mean, there are a lot of rich people in this room, they have kids, and we have a dilemma about how to raise them.

Looking at the children of the current generation who are about to be born, do you think that they are too spoiled, they don't know what they have, that we are going to raise a privileged generation...

RB: No, I think if you're raising kids, you just want to smother them with love and admiration and enthusiasm.

So I don't think you can spoil your children too much.

CA: I have to say you weren't that bad, but I...

The headmaster told you - he discovered you were an enigma at school - he said you were either going to be a millionaire or you were going to jail, but you didn't know which.

Which happened first?

(laughs) RB: Well, I've done both. I think I went to jail first.

I was actually charged in the UK under two very old laws.

I was indicted under the Venereal Diseases Act 1889 and the Obscene Advertising Act 1916.

When we first used the term venereal disease publicly, we had a center to help troubled youth.

One of the problems young people face is venereal disease.

And there's an ancient law that says you can't actually mention the word venereal disease or print it publicly.

So the police knocked on my door and said if I continued to say the word venereal disease they would arrest me.

When I turned it into a social disease, people with acne and blemishes came, but no one came with VD anymore.

So we brought it back to VD and got arrested right away.

And then we were arrested for using the word bolok on a Sex Pistols album after the police decided that the word bolok, "Don't mind the bolok, here are the Sex Pistols" was rude.

And playwright John Mortimer defended us.

And he asked if he could find a linguistics expert to come up with another definition for the word "Borok".

So I called the University of Nottingham and asked to speak to a linguistics professor.

And he said, "Look, Bollok has nothing to do with balls.

In fact, it is a nickname given to clerics in the 18th century. ”

(Laughter.) And he said, "Besides, I am a priest myself."

So I said, "Can you come to court?"

And he said he would be delighted. And when I said, he said, "Can I put a collar on the dog?"

And I said, "Yes, please. Please."

(laughs) CA: That's amazing.

RB: So our key witness claimed that it was actually 'Never mind the priest, here are the Sex Pistols'.

(Laughter) And the judge found us -- reluctantly acquitted us, so...

(laughs) CA: That's ridiculous.

(Applause.) Seriously, do you have a dark side?

Many would say it's impossible for someone to put together this incredible business conglomerate without stabbing a few people in the back with a knife or doing something ugly.

You are accused of being ruthless.

There was a terrible biography someone wrote about you.

Are any of these true? Is there an element of truth in it?

RB: Generally speaking, I don't really think the stereotype that business people run over people to get to the top works.

If you value people, they will come back and ask for more.

And I think all you have in life is your reputation and it's a very small world.

And I actually think the best way to be successful as a business leader is to treat people fairly and appropriately, and I like to think that's how we run Virgin.

CA: And what about the people who love you and watch you spend money? You keep getting hooked on these new projects, but you feel like you're hooked on launching new ones.

Excited for the idea, Kapau!

I mean, are you thinking about life balance?

How does your family feel each time you step into something big and new?

RB: I also believe that being a father is very important, so from a young age, when they go on vacation, I go on vacation with them.

So we spent 3 months of very good time together.

yes i will contact you we are very lucky There is this little island in the Caribbean that allows you to do just that. So you can take it there, you can bring your friends, you can play with them, but you can also stay on top of what's going on.

CA: You recently started talking about the term capitalist philanthropy.

what is that?

RB: Capitalism has proven to be a working system.

As you know, the alternative, communism, did not work.

But I think the problem with capitalism is that extreme wealth ends up in the hands of a few people, and with that wealth comes extreme responsibility.

And I think it's important that individuals in such fortunate positions use that money to create new jobs and tackle problems around the world, rather than competing for ever bigger ships and ever bigger cars.

CA: And what are the issues that you are most concerned about, most interested in, and want to dedicate resources to?

RB: Well, there are many problems.

So global warming is indeed a big threat to humanity and we are putting a lot of time and energy into A to come up with alternative fuels and B, as you know, we just launched this award, but it's really an award in case we don't get answers on alternative fuels, we really fail to reduce carbon emissions quickly, and we've passed a tipping point.

We need to encourage people to come up with ways to extract carbon from the Earth's atmosphere.

And we just wanted to get the brightest minds in the world to start thinking about it, and also try to extract methane from the Earth's atmosphere, because, you know, no one has ever worked on it.

And in fact, about 15,000 people have filled out the "I want to try it" form.

I only need one, so I hope so.

CA: So you are also working on some projects in Africa?

RB: Yes, I mean, we have something called a war room, but that's probably the wrong word.

We are trying to change that, but in any case, this is the war room for coordinating all the attacks in Africa and various social issues in Africa and considering best practices.

For example, African doctors found that giving mothers antiretroviral drugs at 24 weeks' gestation prevented their babies from contracting HIV when they were born.

It is therefore important to disseminate that information to other parts of Africa.

CA: Sounds in the war room, powerful and dramatic.

And is there a risk that Western business heroes are so excited—they have ideas, are accustomed to getting things done, and deeply believe in their ability to make a difference in the world?

Is there a risk that we go to places like Africa and say, "We have to solve this problem and we can do it, I have billions of dollars, da da da"? Here's the big idea. And considering the more complicated situation actually ends up confusing it. Are you worried about it?

RB: Well, first of all, we are actually working with the government on this particular situation.

I mean, Thabo Mbeki had a problem accepting HIV and AIDS, which is related, but I think this is how he tackles this issue, and how the world works with him and his government instead of criticizing him.

It's important if people actually go to Africa and try to help, rather than just going into Africa and leaving after a few years.

Must be consistent.

But I think business leaders can bring their entrepreneurial know-how to help governments approach things a little differently.

For example, we will set up clinics in Africa to provide free antiretroviral drugs, free tuberculosis treatment, and free malaria treatment.

But we are also trying to make the clinic self-reliant so that people can pay for other things.

CA: I mean, a lot of the cynics say this is real about people like you, Bill Gates, etc., but it's also driven by some kind of lust, for the right image, to avoid guilt, not like a real philanthropic instinct.

what would you say to them?

RB: Well, I think people do things for different reasons. When I am on my deathbed, I would want to feel that I have made a difference in someone else's life.

It may be selfish, but that's how I was raised.

If I am in a position to radically change someone else's life for the better, I think I should.

K: How old are you?

RB: I'm 56 years old.

CA: I mean, psychologist Eric Erikson said – and I'm a total layman on him – but during your 30s, people in their 40s are driven by a desire to grow, and that's where they find fulfillment.

In the 50's and 60's, the mode of activity shifts further towards the quest for wisdom and the quest for heritage.

So it looks like you're still in the growing phase, and you're still pushing ahead with some amazing new plans.

How much do you think about your legacy and what do you want your legacy to look like?

RB: I don't think we think much about Legacy.

I mean, I like to do that. As you know, my grandmother lived to be 101 years old. So I hope I can live another 30 or 40 years.

No, I just want to live life to the fullest.

You know, if you can make a difference for me, I hope you can make a difference for me too.

I think one of the good things at the moment is that Google's Sergey and Larry, for example, are good friends.

And thank God, there are two people who really care about the world and have this much wealth.

If they had that much wealth and didn't care about the world, it would be very worrying.

And we know they will make a big difference in the world.

And I think it's important for people in those positions to make a difference.

CA: Well, Richard, when I started in business I knew nothing about business and kind of thought that a businessman should be ruthless and that was the only way to be successful.

And indeed you inspired me. Looking at you, he thought he was successful. Maybe there is another way.

So I want to thank you for that inspiration and for coming to TED today. thank you.

Thank you very much.

(applause)

Today I want to talk to you about one of my favorite subjects, the neuroscience of sleep.

Now I hear -- (alarm clock) Oh, it worked!

A sound familiar to most of us is, of course, that of an alarm clock.

And that truly terrifying, terrifying sound disrupts the most important behavioral experience we have: sleep.

If you're an average human, you'll spend 36% of your life sleeping. So if you live to be 90, you've spent 32 years completely asleep.

What the last 32 years have taught us is that some sleep is important.

Despite this, most of us don't give sleep a second thought.

we throw it away.

We really only think about sleep.

So what I want to do today is change the way I look, think, and think about sleep.

And the journey I want to take you must start by going back in time.

"Enjoy the honey-rich dew of sleep."

Any idea who said that?

Shakespeare's Julius Caesar.

Yes, let me quote some more.

"Sleep, sweet sleep, soft nanny of nature, why did I frighten you?"

Shakespeare, again--I won't say--from a Scottish play.

(Laughter) Around the same time: “Sleep is the golden chain that binds health to our bodies.”

A highly prophetic work by another Elizabethan playwright, Thomas Dekker.

Jumping back 400 years, however, the sleep discourse shifts somewhat.

These are the words of Thomas Edison in the early 20th century. "Sleep is a criminal waste of time, a legacy from the cave age."

(Laughter.) And jumping into the 1980s, some of you may remember Margaret Thatcher was quoted as saying, "Sleep is for wimps."

And of course notorious, what was his name? -- Wall Street's infamous Gordon Gekko once said, "Money never sleeps."

What should we do about sleep in the 20th century?

Of course, we used Thomas Edison light bulbs to break into the night and occupy the darkness. In the course of this occupation, we have treated sleep almost as a disease.

We have treated it as an enemy.

Right now, at best, we put up with our need for sleep, and at worst, I think many of us probably think of sleep as a disease that needs some sort of treatment.

And our ignorance about sleep is really serious.

Why? Why do we abandon sleep in our thoughts?

Well, I guess it's because I don't do much while I'm sleeping.

you don't eat you don't drink

and you don't have sex

Well, most of us anyway.

So it is - sorry.

In fact, sleep is such an important part of our biology that neuroscientists are beginning to explain why sleep is so important.

Now let's move on to the brain.

Now here is the brain.

It was donated by social scientists who said they didn't know what it was or how to actually use it. So -- (laughter) I'm sorry.

So I borrowed it.

(Laughter) What I'm saying is that this doesn't shut down when you're asleep.

In fact, some areas of the brain are actually more active in the sleep state than in the wakeful state.

Another important thing about sleep is that sleep does not arise from a single structure in the brain, but is to some extent a property of networks.

If you turn the brain inside out -- I love this little spinal cord -- this is the hypothalamus, and just below that is a lot of interesting structures, especially the biological clock.

Your body clock tells you when it's a good time to be awake and when it's a good time to sleep. And what that structure is doing is interacting with other regions throughout the hypothalamus, the lateral hypothalamus, and the ventrolateral nucleus of the preoptic nucleus.

All of them combine to send a projection here to the brainstem.

The brainstem then protrudes forward, submerging the cortex. This cortex, the beautifully wrinkled part right here, is filled with neurotransmitters that keep us awake and essentially provide consciousness.

So sleep comes from a whole bunch of different interactions in the brain, basically sleep on and off as a result of different interactions here.

OK. So where do we need to go?

It's been said that sleep is complicated and takes 32 years of your life.

But what I haven't explained yet is what sleep is all about.

So why do we sleep?

And, of course, no one should be surprised that we as scientists do not have a consensus.

There are many different ideas as to why we sleep, and I'll outline three of them.

The first is like a restoration idea, which is somewhat intuitive.

Basically anything you burn during the day is restored, replaced and rebuilt during the night.

And indeed, the explanation goes back to Aristotle. That is, 2,300 years ago.

There are ebbs and flows.

In the brain, numerous genes have been shown to be turned on only during sleep, and it is now prevalent that they are associated with repair and metabolic pathways.

Therefore, there is sufficient evidence for the entire restoration hypothesis.

What about energy saving?

Again, it's probably intuitive.

I basically sleep to save calories.

However, calculating the sum doesn't really work.

If you compare people who slept through the night or stayed awake and didn't move much, the energy savings from sleep comes to about 110 calories per night.

This is equivalent to hot dog buns.

Now, hot dog buns are a small reward for a complex and demanding behavior like sleep.

Therefore, I am not very convinced by the idea of ​​saving energy.

But a third idea that I'm very drawn to is brain processing and memory consolidation.

What we do know is that depriving yourself of sleep after trying to learn a task destroys your ability to learn that task.

It's really greatly reduced.

Therefore, sleep and memory consolidation are also very important.

But it's more than just organizing and recalling memories.

What turns out to be really interesting is that a full night's sleep greatly enhances the human ability to come up with novel solutions to complex problems.

In fact, it's estimated that this will yield a 3x benefit.

A good night's sleep enhances our creativity.

And what seems to be happening now is that important neural and synaptic connections tend to be linked and strengthened in the brain, while less important connections fade away and become less important.

OK。

There were three explanations for why we sleep, but the important thing to understand is that the details vary and we could possibly be sleeping for multiple different reasons.

But sleep is not a luxury.

It's not something we can easily participate in.

I think sleep was once likened to upgrading from economy class to business class.

Not even an economy class to first class upgrade.

The important thing to understand is that you can't fly if you don't sleep.

Essentially, you'll never get there.

And the anomaly in much of our society these days is that we are hopelessly sleep deprived.

Now let's look at sleep deprivation.

Many sectors of society are sleep-deprived. Let's take a look at the sleep meter.

So we have good data to show that in the 1950s most of us were getting about 8 hours of sleep a night.

Lately, I've slept 1 1/2 to 2 hours less each night, down to 6 1/2 hours each night.

For teens, the situation is even worse.

They need nine hours to reach their full potential, but many of them only get five hours of sleep a night at school.

That's not enough.

If you think about other areas of society, the elderly, there is a slight decline in the ability to sleep on the same block as we age, and many of us also sleep less than 5 hours a night.

Handover duty.

Shift work is an anomaly, perhaps 20 percent of the working population, but their biological clocks don't shift to meet the demands of night shifts.

It's locked into the same light-dark cycle as us.

So when the poor old shift worker comes home desperately tired to sleep during the day, his internal clock is telling him, "Wake up. It's time to wake up."

So the quality of sleep you get as a night shift worker is usually very poor, again in the 5 hour range.

And of course, tens of millions of people suffer from jet lag.

So, are there people with jet lag?

Well, you are kind.

Well, thank you so much for keeping me awake, because that's what your brain wants.

One of the things the brain does is microsleep, or falling asleep involuntarily, and you basically have no control over it.

Now, microsleep is kind of embarrassing, but it can also be deadly.

It's estimated that 31 percent of drivers will fall asleep while driving at least once in their lifetime, a pretty good statistic in the United States. 100,000 accidents on highways are related to fatigue, loss of alertness, and falling asleep, with 100,000 occurring annually.

On another level of horror, we immerse ourselves in the tragic accident at Chernobyl, and indeed the tragically lost Space Shuttle Challenger.

And post-disaster studies have found that long shift work, loss of vigilance, and poor judgment due to fatigue are the major causes of these disasters.

Tiredness and sleep deprivation impair memory, decrease creativity, increase impulsivity, and generally impair judgment.

But, my friends, it's much worse than that.

(Laughter) When your brain is tired, it wants something to wake it up.

In other words, narcotics, stimulants.

Caffeine represents the stimulant of choice in many parts of the Western world.

Caffeine fuels most of your day, but a really tired brain needs nicotine as well.

Of course, these stimulants promote wakefulness, and of course, at 11:00 at night, your brain says: "Actually, I have to go to sleep soon.

What do you do when you're completely frustrated? ”

Of course, in that case, you will have to resort to alcohol.

Alcohol is very useful in the short term for one or two uses for mild sedation.

It can actually ease the transition to sleep.

But it should be noted that alcohol does not provide sleep.

It's a biological sleep mimic that calms you down.

Therefore, it actually adversely affects some of the neural processing that takes place during memory consolidation and memory retrieval.

So this is a short-term emergency measure, but just in case, don't become an alcoholic as a means to sleep each night.

Another association with sleep deprivation is weight gain.

If you get about 5 hours or less of sleep each night, you have a 50% chance of becoming obese.

What is the connection here?

Well, sleep deprivation seems to trigger the release of a hormone called ghrelin, which is the hunger hormone.

Ghrelin is released.

The brain says, "I need carbs," and craves carbs, especially sugar.

In other words, there is a link between fatigue and a predisposition to metabolic weight gain, namely stress.

A tired person is under extreme stress.

And one of the causes of stress, of course, is memory loss. That was just something I had just forgotten for a moment.

But stress is more than that.

So if you're seriously stressed, it's not that big of a deal, but persistent stress with sleep deprivation is.

Prolonged stress weakens the immune system.

So tired people tend to have higher overall infection rates, and there are some very good studies showing that shift workers have a higher incidence of cancer, for example.

As stress levels increase, glucose is thrown into circulation.

Glucose becomes a major part of the vascular system and is inherently glucose intolerant.

Therefore diabetes 2.

Stress raises blood pressure and increases cardiovascular disease.

So, sleep deprivation has more to do with it than just minor brain damage, and I think most people think it's the cause of their sleep deprivation.

So at this point in the story, it's a good time to think, "Overall, do you think I'm getting enough sleep?"

Let's raise our hands.

Who feels like they're getting enough sleep here?

oh. Well, it's pretty impressive.

good. More on hints later.

So, naturally, most of us ask the question, "How do I know if I'm getting enough sleep?"

Well, it's not rocket science.

If you need an alarm clock to get out of bed in the morning, take a long time to get up, need a lot of stimulants, are moody, easily irritable, or your co-workers tell you that you look tired and irritable, you may be sleep deprived.

Listen to those people. Listen to yourself.

What is your occupation?

Well, this is a little uncomfortable, but sleep for a dummy.

(Laughter) Make your bedroom a haven for sleep.

The first thing is to make it as dark as possible and to make it a little cooler.

In fact, reduce your light exposure at least 30 minutes before bed.

Light increases alertness and delays sleep.

What is the last thing most of us do before going to bed?

We stand in a very bright bathroom, look into the mirror and brush our teeth.

It's the worst thing we can do before bed.

Please turn off those mobile phones. Turn off those computers.

Turn off anything that excites your brain.

Try not to consume caffeine until late in the day. Ideally after lunch.

Well, I decided to reduce my light exposure before bed, but morning light exposure is very effective in aligning my body clock with the light-dark cycle.

So seek the morning light.

Basically, listen to yourself.

Please relax.

Do what you know will ease you into the honeyed dew of sleep.

OK。

Teenagers are lazy.

They have a biological tendency to go to bed late and wake up late, so give them a break.

We need 8 hours of sleep per night.

that's average.

And all you have to do is listen to your body.

Do you need that much or do you need more?

Simple like that.

Older people need less sleep.

The sleep requirements of older people do not decrease.

Basically, sleep becomes fragmented and less intense, but sleep requirements are not.

And the fourth myth is that early to bed and early to rise makes a person healthy, wealthy and smart.

Well, it's wrong on many levels.

(Laughter) There is absolutely no evidence that waking up early and going to bed early brings more wealth.

There is no difference in socioeconomic status.

In my experience, the only difference between morning owls and night owls is that early risers are terrifyingly self-righteous.

(Laughter) (Applause) Okay.

So, for the last few minutes, what I want to do is change gears and talk about a really new and groundbreaking area of ​​neuroscience that is the link to mental health, mental illness, and sleep disorders.

It has been known for 130 years that sleep disturbance is a constant occurrence in severe mental illness, but it has been largely ignored.

When people started thinking about this again in the 1970s, they said,

Antipsychotics are the cause of sleep disturbances," he said, ignoring the fact that sleep disturbances had been reported 100 years before antipsychotics.

what happened?

Several groups are studying what is going on with sleep disorders and symptoms such as depression, schizophrenia, and bipolar disorder.

We published a large study on schizophrenia last year, and the data were quite astonishing.

People with schizophrenia are often awake at night and sleep during the day.

The other group showed no 24-hour pattern at all and had their sleep completely disrupted.

Some also lacked the ability to regulate their sleep through light-dark cycles.

Every night they got up later and later.

what happened?

And the really exciting news is that mental illness and sleep are not simply linked, but physically linked in the brain.

The neural network that makes it easier to get normal sleep, the neural network that drives normal sleep, and the neural network that drives normal mental health overlap.

And what is the proof?

Now, genes that have been shown to be critically important for normal sleep production, when mutated or altered, predispose individuals to mental health problems.

And last year, we published a study showing that mutations in genes associated with schizophrenia interfere with sleep.

Thus, we have evidence for a true mechanistic overlap between these two key systems.

These studies have spawned other studies.

The first is that sleep disorders actually precede certain types of mental illness, showing that young people at high risk of developing bipolar disorder already have sleep disorders before they are clinically diagnosed with bipolar disorder.

Another piece of data was that sleep disturbances can actually exacerbate and even exacerbate psychiatric conditions.

My colleague Dan Freeman used a variety of medications that stabilized his sleep and reduced his level of paranoia by 50%.

So what do we get?

In these connections, we're getting some really exciting things.

From a neuroscience perspective, understanding these two systems is really starting to understand how both sleep and mental illness are generated and regulated in the brain.

The second area is that if sleep and sleep disruption can be used as early warning signals, we have a chance of entering that state.

Knowing that these people are vulnerable allows early intervention.

And the third, which I think is the most interesting, is that we can think of the sleep center in the brain as a new therapeutic target.

Stabilizing the sleep of vulnerable people can certainly make them healthier, but it can also alleviate some of the frightening symptoms of mental illness.

Now let me finish.

The first thing I started saying was, "Take your sleep seriously."

The way we think about sleep is very different from the pre-industrial era when we were mostly wrapped in duvets.

We used to intuitively understand the importance of sleep.

And this is not crystal-shaking nonsense.

This is a realistic response to health.

Good sleep improves focus, alertness, decision-making, creativity, social skills, and health.

Good sleep reduces mood swings, stress, anger levels, impulsivity, and tendency to drink or take drugs.

And finally, he said that understanding the neuroscience of sleep is actually informing thinking about some of the causes of mental illness, and indeed offering new ways to treat these incredibly debilitating conditions.

Fantasy author Jim Butcher said, "Sleep is God. Go to worship."

And all I can do is do the same for you.

Thank you for your attention.

Oh yeah, college was a mix of PhD-level pure mathematics and World Debating Championships, or as I like to say, "Hey guys, that's right."

Let me tell you, I couldn't be sexier than Spence in college.

A humble breakfast radio announcer from Sydney, Australia, is thrilled to be on the TED stage literally on the other side of the world.

And I want you to know that much of what you hear about Australians is true.

From an early age, we develop prodigious athletic talents.

On the battlefield, we are brave and noble warriors.

What you heard is true.

Australians, we don't mind a little alcohol, but sometimes we drink too much, which can lead to embarrassing social situations. (Laughter) This is my father's work Christmas party, December 1973.

I will be 5 years old soon. Frankly, I enjoy the day more than Santa does.

But I stand before you today, not as a breakfast radio host, not as a comedian, but as a mathematician who was, is, and always will be.

And anyone who's ever been bitten by a number bug knows that the quicker it bites, the deeper it stings.

It reminded me of my sophomore year at a beautiful little public school outside of Sydney called Bolonia Park. As lunch time approached, teacher Russell said to the class:

No plans. ”

It's a democratic schooling practice, and I'm all for democratic schooling, but we were only seven.

So some of the suggestions we made about what we wanted to do after lunch were a little unrealistic, but after a while, when someone made a particularly silly suggestion, Ms. Russell stroked them with that kind aphorism.

It's like trying to stick a square nail into a round hole. ”

Now I wasn't trying to be smart.

I wasn't trying to be funny.

I politely raised my hand and said in front of my 2nd grade classmates when Mr. Russell recognized me. "But sir, surely if the diagonal of the square is smaller than the diameter of the circle, the square peg will easily pass through the round hole."

(Laughter) "It's like putting toast through a basketball hoop, isn't it?"

And while most of my classmates were equally awkwardly silent, one of my friends sitting next to me, Steven, one of the coolest kids in the class, leaned over and hit me hard on the head.

(Laughter) Now, Steven was saying, 'Look, Adam, you're at a critical juncture in your life here, my friend.

You can continue to sit here with us.

You have to stop talking like that and go over there and sit with them. ”

I thought about it for nanoseconds.

I took one look at my life's roadmap and started running down the street labeled "Geek" as fast as my fat little asthmatic legs could handle.

I have loved mathematics since I was little.

I explained it to all my friends. Mathematics is beautiful.

It's natural. it is everywhere.

Numbers are musical notes that mark the cosmic symphony.

The great Descartes said exactly the same thing.

The universe is "written in mathematical language".

And today I want to introduce you to one of those notes. It's so beautiful, so grand, and I think it will amaze your heart.

Today we will talk about prime numbers.

Most people remember that 6 is not prime because it is 2 x 3.

7 is prime because it is 1 x 7, but it cannot be broken down into smaller chunks (so-called factors).

Here are some things you should know about prime numbers.

One is not prime.

Proof of that is indeed a great party trick that only works for certain parties.

(Laughter) And one more thing about primes, ultimately there is no greatest prime.

they last forever.

Thanks to the brilliant mathematician Euclid, we know that there are an infinite number of prime numbers.

Thousands of years ago he proved it to us.

But the third thing about primes is that mathematicians have always wondered what the largest prime number we know is.

Today we go in search of that giant prime.

Don't panic.

Of all the math you've ever learned, the math you didn't learn, was crammed in, forgot, didn't understand in the first place, this is all you need to know. When I say 2^5, I'm talking about 2 x 2 x 2 x 2 x 2, which is the product of all five small numbers of 2 next to each other.

So 2^5 is 2 x 2 = 4, 8, 16, 32.

If you have it, it will stay with me for the whole trip. have understood?

So 2^5, or 5 small 2's multiplied together.

(2 ^ 5) - 1 = 31。

31 is prime, and so is its fifth power.

And the vast amount of giant primes we've discovered so far is of the form 2 being prime and 1 being removed.

I won't go into detail about why. That would make most eyes bleed, but suffice it to say that many of the forms are fairly easy to test for superiority.

Testing for random odd numbers is very difficult.

But when you start looking for large primes, you find that just putting them in powers isn't enough.

(2 ^ 11) - 1 = 2,047, no need to explain that this is 23 x 89.

(Laughter) But (2^13) - 1, (2^17) - 1 (2^19) - 1 are all prime numbers.

After that, it will be thinned out considerably.

And one of the things I really like about the search for large primes is that some of the greatest mathematical minds of all time have worked on this search.

Leonhard Euler, the great Swiss mathematician.

In the 1700s other mathematicians said he was simply the master of all of us.

He was so respected that they put him on European currency at a time when it was a compliment.

(Laughter) Euler discovered the world's largest prime number at the time: (2 ^ 31) - 1.

Over 2 billion.

He proved it best with just a quill, ink, paper, and his mind.

I think it's big.

We know that (2^127) - 1 is prime.

It's sheer savagery.

Look at it here: It is 39 digits long and was proven prime in 1876 by a mathematician named Lucas.

Say it, L-Dog.

(Laughter) But one of the great things about finding large primes is not just finding primes.

Proving that another number isn't prime can be just as exciting.

Lucas showed again in 1876 that 1 of length (2^67) - 21 digits is not prime.

But I didn't know what the cause was.

I knew it was something like 6, but I didn't know that multiplying 2 x 3 would give you that huge number.

We didn't know that for about 40 years until Frank Nelson Cole came along.

And at a prestigious gathering of American mathematicians, he walked over to the blackboard, picked up a piece of chalk, and began writing down the powers of two: 2, 4, 8, 16 -- come join us, you know what happens -- 32, 64, 128, 256, 512, 1,024, 2,048.

I'm in geek heaven. I'll stop there for a moment.

Frank Nelson Cole didn't stop there.

He went on to calculate 2 to the 67th power.

He took one and wrote its number on the board.

A surge of excitement spread throughout the room.

Then I got even more excited when he wrote out these two big primes in standard multiplication form. And with an hour left in his talk, Frank Nelson Cole cracked it up.

He found the prime factors of (2^67) - 1.

The room went wild when Frank Nelson Cole sat down to deliver the only speech without words in the history of mathematics.

He later admitted it wasn't all that difficult.

I needed concentration. It required dedication.

By his estimate, it took "three years on Sundays."

But in mathematics, like many of the fields we've talked about here at TED, things are exploding in the computer age.

These are the largest prime numbers known to us, and as computers have become more prevalent and our computing power has increased, each prime has become smaller than the previous one.

This was the largest prime number we knew of in 1996, a very emotional year for me.

That was the year I quit college.

I was torn between math and media.

It was a difficult decision. I loved college.

The nine and a half years I spent with my art degree were the best of my life.

(Laughter) But then I realized what I was capable of.

Simply put, in a room full of randomly chosen people, I'm a math genius.

In a roomful of math PhDs, I'm as stupid as a hammerbox.

Mathematics is not my specialty.

It consists in telling mathematics stories.

And in the meantime, since I left college, these numbers have gotten higher and higher, each one dwindling the last one, but then came this guy, Dr. Curtis Cooper, who a few years ago held the record for the greatest prime of all time, but that record was taken by a rival university.

And Curtis Cooper took it back.

Not years ago, not months, not days ago.

In a wonderfully serendipitous moment, I had to send a new slide to TED to show what this guy did.

I still remember -- (applause) -- I still remember when that happened.

I was doing a breakfast radio show.

I took a look at Twitter. "Adam, have you seen the new largest prime number?" one tweeted.

I shivered -- (laughter) -- in another room, I contacted the women who produced my radio show and said, 'Hey guys, get the cover.

I'm not talking politics today.

Today we are not talking about sports.

They found another Mega Prime. ”

The girls just shook their heads and held my hand and let me do whatever they wanted.

Thanks to Curtis Cooper, we now know that the largest prime number we know is 2^57,885,161.

Don't forget to subtract 1.

This number is approximately 17.5 million digits long.

If you type it into your computer and save it as a text file, it's 22 megs.

For those who are not so enthusiastic, remember the Harry Potter novels.

This is the first Harry Potter novel.

These are all seven Harry Potter novels. Because she tended to goof around a bit near the end.

(Laughter.) As a book, that number would be half the length of a Harry Potter novel.

This is a slide of the first 1,000 digits of this prime number.

When TED started, if we had left the room at 11:00 on Tuesday and had typed one slide every second, it would have taken us five hours to display the numbers.

I wanted to, but I couldn't convince Bono.

That's it.

This number is 17500 slides long, and we know with as much certainty that the number is prime as we know that the number 7 is prime.

It fills me with almost sexual excitement.

And whose joke is it to say most?

(Laughter) I know what you're thinking. Adam, we are glad you are happy, but why should we care?

Let me give you just three reasons why this is beautiful.

First, as described, ask the computer, "Is that number prime?" Typing it in short form and testing for dominance with just six lines of code is a surprisingly easy question.

It has a surprisingly clear yes/no answer and all it takes is a staggering grunt.

Large prime numbers are a great way to test the speed and accuracy of computer chips.

But second, Curtis Cooper was looking for that monster prime, so he wasn't the only one looking.

My laptop at home was looking up four potential prime candidates for myself as part of a worldwide search for these dozens of numbers on a networked computer.

Finding this prime number is like people trying to figure out RNA sequences or search data from SETI and other astronomy projects.

We live in a time when some great progress happens not in labs or academic settings, but on laptops and desktops, simply in the palm of the hands of those who help explore.

But for me this is amazing. Because this is a metaphor for the times we live in, where the human mind and machines can conquer together.

I heard a lot about robots at this TED.

We've heard a lot about what they can and can't do.

Indeed, you can now download an app onto your smartphone that beats most grandmasters at chess.

you think it's cool

Here's a machine doing great things.

This is Cube Stormer II.

You can take a randomly shuffled Rubik's Cube.

Using the power of your smartphone, you can explore the cube and solve it in less than 5 seconds.

(Applause.) Some people are scared of that. it excites me.

How lucky are we to live in an age where minds and machines can work together?

I was asked last year in an interview in my capacity as an Australian small 'c' celebrity, "What were the highlights of 2012?"

People expected me to talk about my beloved Sydney Swans football team.

In a beautiful indigenous sport, Australian football, they have won a championship worthy of the Super Bowl.

i was there. It was the most moving and stimulating day.

It wasn't my 2012 highlight.

People thought it might have been an interview I did on the show.

He may have been a politician. It could have been a landmark event.

It could be the art book I read. No no no.

That could be what my two beautiful daughters did.

No, it wasn't. The highlight of 2012 was obviously the discovery of the Higgs boson.

Give up on elementary particles that inherit the mass of all other elementary particles.

(Applause.) And what's so amazing about this discovery is that 50 years ago Peter Higgs and his team considered one of the deepest questions of all. How come the things that make us up have no mass?

It obviously has mass. where did it come from?

And he hypothesized that this infinite and impossibly small field is pervasive throughout the universe, and that other particles gain mass from it as they pass through them and interact with them.

The rest of the scientific community said, "Great idea, Higsey.

I don't know if I can prove it.

It's out of our reach. ”

And within just 50 years, while he was sitting in the audience, he designed the greatest machine ever to prove this amazing idea born in the human mind.

That's what makes this prime so interesting to me.

I thought maybe it was there, so I went and found it.

That is the essence of being human.

That's what we're all for.

Or, as my friend Descartes says, we think, therefore we exist.

thank you.

(applause)

I am from Lebanon and I believe running can change the world.

I know what I just said is simply non-obvious.

As you know, the country of Lebanon was once ravaged by a long and bloody civil war.

To be honest, I don't understand why it's called a civil war when there is nothing in it.

With Syria to the north and Israel and Palestine to the south, our government remains divided and unstable to this day.

For years, the country has been divided between politics and religion.

But only one day a year, we are truly united and on that day a marathon is held.

I used to be a marathon runner.

Long distance running was not only good for my health, but it also helped me meditate and dream big.

So the longer I ran, the bigger my dream became.

Until one fateful morning when I was hit by a bus while training.

I almost died, went into a coma, spent two years in the hospital, and underwent 36 surgeries before I could walk again.

As soon as I woke up from my coma, I realized that I was no longer the same runner, and decided that if I couldn't run, I wanted to help others.

So I got out of my hospital bed and asked my husband to start taking notes. And a few months later, the marathon was born.

It may sound strange to organize a marathon as a reaction to an accident, but at the time I needed to dream big even when I was at my most vulnerable.

I needed something to take the pain away from, a goal I could look forward to.

I didn't want to feel sorry for myself or be pitied, so I thought that by organizing a marathon like this, I could give back to the community, build a bridge to the outside world, and invite runners to come and run under the umbrella of peace in Lebanon.

Organizing a marathon in Lebanon is very different than organizing a marathon in New York.

How do you introduce the concept of fleeing to a country that is always on the brink of war?

How do we ask people who used to fight and kill each other to band together and run next to each other?

More than that, how do you convince people to run 42.2 miles when you didn't even know the word "marathon"?

So I had to start from scratch.

For almost two years we traveled all over the country, even to remote villages.

I have personally met people from all walks of life: mayors, NGOs, schoolchildren, politicians, militias, mosques, church officials, presidents and even housewives.

I have learned one thing. If you do what you say, people will believe what you say.

Many people were touched by my personal story and shared theirs in return.

Honesty and transparency brought us together.

We spoke one common language with each other. It was human to human language.

Once that trust was built, everyone wanted to participate in the marathon to show the world what Lebanon and the Lebanese people really are and their desire to live in peace and harmony.

In October 2003, more than 6,000 different runners from 49 countries gathered at the start line with determination. When the gunshots rang out, it was a signal to change the mood and run in harmony.

The marathon has grown.

So were our political issues.

But whenever disaster strikes, Marathon finds a way to bring people together.

After the assassination of the prime minister in 2005 and the country's total stagnation, we organized the 5-kilometer United We Run campaign.

More than 60,000 people gathered at the starting line, all wearing white t-shirts with no political slogans.

That was the turning point for the marathon, and people started seeing it as a platform for peace and unity.

Between 2006 and 2009, our country of Lebanon went through a period of instability, followed by a series of invasions and assassinations that brought it closer to civil war.

The country was divided again, the parliament resigned, and there was no president or prime minister for a year.

But then there was the marathon.

(Applause.) Through the marathon, we learned that political problems can be overcome.

When the opposition decided to close part of the city center, we negotiated an alternative route.

Government protesters have become cheerleaders on the side.

They also hosted a juice station.

(Laughs) You know, the marathon just got really special.

It has earned the trust of both Lebanon and the international community.

Last November 2012, more than 33,000 runners from 85 countries gathered at the start line, but this time they were challenged by stormy and rainy weather.

Although the roads were flooded, people did not want to miss the opportunity to participate in such a National Day.

BMA expanded.

We include the young, the elderly, the disabled, the mentally handicapped, the blind, elite, amateur runners, and even mothers with babies.

Themes include running for the environment, for breast cancer, for love for Lebanon, for peace, or simply running.

The region's first annual women's and girls' race for empowerment, one of its kind in the region, took place just a few weeks ago with 4,512 women, including the First Lady, taking part, and it's just the beginning.

thank you.

(Applause.) The BMA has supported charities and volunteers who have helped rebuild Lebanon, raised funds for their cause, and encouraged others to donate.

The culture of giving and doing good has become contagious.

Stereotypes have been shattered.

Transformers and future leaders were born.

I believe that these are the foundations for future peace.

The BMA has become such a respected event in the region that government officials in regions such as Iraq, Egypt and Syria have asked the organization to help organize similar sporting events.

We are now one of the Middle East's largest running events, but most importantly, it is a platform of hope and cooperation in an ever-fragile and volatile part of the world.

From Boston to Beirut, we stand as one.

(Applause.) Ten years in Lebanon, from national marathons and national events to smaller regional races, we have seen people wanting to run for a better future.

After all, peace talks are not short-range.

It's rather a marathon.

thank you.

(applause)

Steve Ramirez: In my first year of graduate school, I found myself eating a lot of Ben & Cheese in my bedroom. Jerry is watching shitty TV and maybe listening to Taylor Swift.

I had just gone through a breakup.

(Laughter.) So, for a long time, I just replayed the memory of this person over and over again, just wishing I could get rid of that heartbreaking, instinctive 'ah' feeling.

Now, after all, being a neuroscientist, I knew that a person's memory, and the terrifying undercurrent of emotions that color that memory, is largely mediated by another brain system.

So I thought, what if I could go to the brain and edit the nauseating emotions while keeping the person's memory intact?

Then I realized that it might be a little lofty for now.

So what if you could go inside your brain and start by finding just one memory?

Is it possible to bring back those memories all at once, or tamper with the contents of those memories?

That being said, there is one person in the world right now who sincerely wishes not to see this lecture.

(Laughter) So there's a catch. There are pitfalls.

These ideas probably remind you of "Total Recall," "Eternal Sunshine of the Spotless Mind," or "Inception."

But the movie stars we work with are lab celebrities.

Xu Liu: Test the mouse.

(Laughter) As neuroscientists, we use mice in the lab to try to understand how memory works.

And today, we want to convince you that we can now actually activate memories in the brain at the speed of light.

To do this, just follow two simple steps.

First, find a memory in your brain, label it, and press a switch to activate it.

It's very simple.

(laughs) SR: Are you convinced?

So, it turns out that finding memories in the brain is not so easy.

XL: Yes. This is much more difficult than finding a needle in a haystack, for example. Because, at least, you know, a needle is still something you can physically put your finger on.

But memory is not.

Also, there are far more cells in the brain than there are straws in a typical haystack.

Yes, this job certainly feels daunting.

Luckily, we got help from the brain itself.

Basically, all we have to do is force the brain to form a memory. Then the brain will tell you which cells are involved in that particular memory.

SR: So what was going on in my brain while I was remembering my ex?

Ignoring human ethics completely for a moment, if you sliced ​​my brain right now, you would find a surprising number of brain areas active while recalling that memory.

One area of ​​the brain that is currently thought to be particularly active is called the hippocampus. The hippocampus has been involved in processing the kinds of memories we hold dear for decades, so it's also an ideal target to get inside the hippocampus to find and reactivate memories.

XL: If you zoom in on the hippocampus, you can of course see a lot of cells, but you can also find out which cells are involved in specific memories. Because whenever cells are active, such as when forming a memory, they also leave a trail that allows us to later learn that those cells have been active recently.

SR: In the same way that the lights in a building at night let you know someone is working there at any given time, in a very real sense, there are biological sensors within cells that turn on only when that cell is just working.

They are like biological windows that light up to let you know that cells are just doing their thing.

XL: So we cut out a piece of this sensor, attached it to a switch that controlled a cell, stuffed this switch into an artificial virus, and injected it into the brains of mice.

Therefore, whenever a memory is formed, this switch is also installed in the active cell of that memory.

SR: For example, after forming a fear memory, the hippocampus looks like this:

The blue ocean seen here is densely packed with brain cells, but the green brain cells, or green brain cells, are the ones that hold specific fear memories.

So you are looking at the crystallization of the momentary formation of terror.

You are actually looking at a cross-section of your memory now.

XL: Now for the switches we've been talking about, ideally they should be very fast.

It should not take minutes or even hours to work.

It has to work at brain speed in milliseconds.

SR: So what do you think, Mr. Xu?

For example, can drugs be used to activate or deactivate brain cells?

XL: No. Drugs are pretty nasty. They spread everywhere.

Also, it takes forever for them to act on cells.

Therefore, memory cannot be controlled in real time.

So Steve, why not zap your brain with electricity?

SR: So the electricity is pretty fast, but it probably won't hit the specific cells that hold the memories, and it'll probably burn out the brain.

XL: Oh. that's true. So, hmm, it certainly seems like we need to find a better way to influence the brain at the speed of light.

SR: So it just happens that light travels at the speed of light.

So you might be able to activate or deactivate memories just by using light -- XL: That's pretty fast.

SR: -- And since normally brain cells do not respond to light pulses, the cells that respond to light pulses are the cells that contain light-sensitive switches.

To do so, you must first trick your brain cells into reacting to the laser beam.

XL: Yes. Sounded right.

We're trying to hit the brain with a laser.

(laughter) SR: Optogenetics is the technology that makes that possible.

Optogenetics has provided this optical switch that can be used to turn brain cells on or off. The name of that switch is channelrhodopsin. Here you see it as a green dot attached to this brain cell.

Channelrhodopsins can be thought of as a kind of light-sensitive switch that can be artificially attached to brain cells. So you can activate or deactivate brain cells by simply clicking that switch. In this case, click the switch with a pulse of light.

XL: So we're going to put this light sensitive switch of channelrhodopsin on the sensor we've been talking about and inject this into the brain.

Therefore, whenever a memory is formed, the active cells of that particular memory have this light sensitive switch built in, and reversing the laser in this way can control these cells.

SR: So let's test all this now.

What we can do is put the mouse in the exact same box as this one and give it a very light foot shock to make it form a memory of fear of this box.

They find out that something bad happened here.

Now, in our system, only those cells that are active in the hippocampus in making this memory contain channelrhodopsin.

XL: When you're as small as a mouse, it feels like the whole world is trying to catch you.

Therefore, the best defense is to remain undetected.

Whenever rats are frightened, they exhibit a very typical behavior of staying in the corner of the box and not moving any part of their body. This posture is called a freeze.

So if the mouse remembers something bad happened in this box and puts it back in the same box, it basically shows a frozen state because it doesn't want any potential threats in this box to detect it.

SR: So you can think of freezing like you're walking down the street thinking about your errands and out of nowhere you run into an ex-girlfriend or ex-boyfriend and in that dreaded two seconds you start thinking, "What am I going to do? Shall I say hello?"

Shake hands with them? turn around and run?

Should I sit here and pretend I don't exist? ”

Temporary thoughts like this physically incapacitate you and temporarily give you the look of a deer in the headlights.

XL: But if you put the mouse in a completely new box, like the next box, the mouse won't be afraid of this box because there is no reason to be afraid of this new environment.

But what if we put a mouse in this new box and at the same time use a laser to activate the fear memory just like before?

Are you going to bring back the horror memories of the first box to this all-new environment?

SR: Okay. This is the million dollar experiment.

Now, when I recall that day, I remember that the Red Sox had just won. It was a green spring day and a perfect day to go up and down the river and then go to the North End for cannoli, #justsaying.

Xu and I, on the other hand, were in a completely windowless black room, with our eyes fixed on the computer screen, so we weren't making any sort of blink-like eye movement.

We were here watching this mouse trying to activate its memory for the first time using our technology.

XL: And this is what we saw.

The first time a mouse is placed in this box, it explores, smells, roams and thinks of its own errands. Because rats are by nature very curious animals.

They want to know what's going on inside this new box.

That's interesting.

But the moment I turned on the laser, as you can see, the mouse suddenly went into this freeze mode.

It stayed here, trying not to move any part of its body.

Obviously frozen.

In fact, this entirely new environment seems to have brought back memories of the horror of the first box.

While watching this, Steve and I were as shocked as the mouse itself.

(Laughter) So after the experiment was over, we both left the room without saying a word.

After a long, awkward period, Steve broke the silence.

SR: "Did that work?"

XL: "Yes," I said. "Sure, it worked!"

we are really excited about this.

And we published the results of the study in Nature.

Since our work was published, we have received many comments from the Internet.

Let's look at some of them.

[“OMGGGGGG finally…there’s going to be a lot more, virtual reality, neural manipulation, visual dream emulation…neural coding, ‘writing and rewriting memories’, mental illness.

Now, I happen to fully agree with the optimism of this first quote. Because, on a scale that rivals Morgan Freeman's voice, this happens to be one of the most evocative praises I've heard.

(Laughter) But as you can see, it's not the only opinion out there.

[“This is really scary...what if humans could do that easily in a few years?! Oh my God, are we doomed?”] XL: I think we can all agree that looking at the second result, well, probably not so positive.

But it's also a reminder that while we're still working with mice, it's probably a good idea to start thinking and discussing the possible ethical implications of memory control.

SR: Now, in the spirit of my third quote, I'd like to talk about a recent project we're working on in our lab called Initiation.

["They should make a movie about this. They plant ideas in people's minds so they can control it for their own self-interest. We're going to call it 'Inception.'"]

Could it even be turned into a false memory?

XL: So all memories are sophisticated and dynamic, but for simplicity let's imagine memories as movie clips.

What we've been talking about so far is basically that you can control the "play" button for this clip to play this video clip anytime, anywhere.

But is it possible that you can actually go inside your brain and edit this movie clip to make it different from the original?

Yes, I can.

It turns out that I basically just need to use the laser to reactivate the memory as before. But at the same time, presenting new information and allowing this new information to be incorporated into this old memory changes it.

It's like making a remix tape.

SR: So how do we do this?

Instead of finding fear memories in your brain, you can start by taking animals. Suppose you put an animal in a blue box like this blue box. Then find the brain cells that represent the blue box and trick the animal into responding to the light pulses exactly as described above.

The next day we can take the animals and put them in a red box that we have never experienced before.

You can reactivate the memory of the blue box by shining light on the brain.

So what happens if the animal is given a few light shocks to the paws while recalling the memory of the blue box?

So here we are trying to artificially associate the memory of the blue box with the impact of the foot itself.

We're just trying to connect the two.

So to test if we did, we take the animal out again and put it back in the blue box.

Again, I had just reactivated the blue box memory while the animal received a few mild shocks to the leg, but now the animal suddenly froze.

It's as if he remembers the slight shock of being in this environment, even though it didn't actually happen.

So, strictly speaking, false memories were formed due to false fear of an environment in which nothing bad actually happened.

XL: So, so far we're only talking about this light-controlled "on" switch.

In fact, there is also a light-controlled "off" switch, and you can easily imagine that you can turn off the memory anytime, anywhere by installing this light-controlled "off" switch.

So everything we've talked about today is based on the philosophical neuroscience principle that the mind, with its seemingly mysterious properties, is actually made up of physical things that we can manipulate.

SR: And for me personally, I see a world where I can reactivate any kind of memory as often as I want.

I also see a world where unnecessary memories can be erased.

I even think that editing memories has become a real world now. Because we live in a time when it is possible to take a question out of the sci-fi tree and root it in experimental reality.

XL: People in laboratories and other groups around the world are now using similar methods to activate or edit memories of all kinds, old or new, positive or negative, so that they can understand how memories work.

SR: For example, one group in our lab was able to find the brain cells that make up fear memories and convert them into pleasant memories.

That's exactly what I want to say about this kind of process editing.

Now, one man in the lab was even able to reactivate the memory of a female mouse in a male mouse. Rumor has it it's a fun experience.

XL: Indeed, we live in a very exciting moment when science has no arbitrary speed limits and is only limited by our own imagination.

SR: And finally, what are your thoughts on all this?

How can we advance this technology?

These questions should not be limited to the laboratory. So, while one goal of today's talk was to make everyone aware of what is possible in modern neuroscience, it's equally important to get everyone actively involved in this conversation.

So let's work together as a team on what this means and where we can and should go from here. Because I think Xu and I are all going to have some very big decisions to make.

thank you. XL: Thank you.

(applause)

You might want to take a closer look.

There is more to this picture than meets the eye.

Yes, this is an acrylic painting of a man, but it was not painted on canvas.

I applied it directly on my man.

What I do in art is if I want to skip the canvas entirely and paint a portrait of you, I paint it on you, physically.

That also means you'll probably need an earful of paint, as you'll need to paint your ears.

The people, clothes, chairs, walls, etc. in this scene are all covered with a mask of paint that mimics what's underneath. In this way, a 3D scene can be made to look like a 2D painting.

You can take pictures from any angle and still look 2D.

No Photoshop here.

This is a picture of one of my 3D paintings.

You may be wondering how I came up with the idea of ​​turning people into paintings.

However, originally it had nothing to do with people or paintings.

It was about shadows.

I was fascinated by the absence of light and wanted to find a way to give it materiality and fix it before it changed.

I came up with the idea of ​​drawing shadows.

I like that you can hide your own version in this shadow. I can barely see it until the light changes and suddenly my shadow comes to light.

I wanted to think of what else I could shadow, and it reminded me of my friend Barney.

But I didn't just want to draw shadows.

I also wanted to paint the highlights to create a mapping on his body in grayscale.

I had a very specific vision of what this was going to look like, and I tried to follow that closely when drawing him.

But something kept flashing in front of me.

I wasn't sure what I was looking at.

And the moment I took a step back, magic happened.

I made a picture of my friend.

I didn't expect that when I wanted to draw a shadow, I would pull out this whole other dimension, collapse it, take a picture, befriend him, and then bring him back into the picture.

I was so excited about what I discovered that I was a little confused, but I had just graduated from college with a degree in Political Science, and I had always dreamed of going to Washington, D.C., sitting down and working for the government.

(laughter) Why did this have to get in the way?

After I graduated, I went home, didn't go to the Capitol, went to my parents' basement, and made the difficult decision to make it my job to learn how to paint.

I didn't know where to start.

The last time I painted was at summer camp when I was 16. I didn't want to teach myself how to paint by imitating old masters or by stretching canvases and practicing on that side over and over. Because that was not what this project was for me.

It was about space and light.

My early canvases turned into things I didn't expect to be used as canvases, such as frying.

It's nearly impossible to get paint to stick to egg grease.

(Laughter) Even more difficult was getting the paint to adhere to the acid of the grapefruit.

It just erases my handwriting like invisible ink.

Put something down and it's gone in no time.

And if I wanted to paint people, I was a little embarrassed to bring them into my studio and show them my days in my basement painting on toast.

It seemed to me that it made more sense to practice by drawing to myself.

One of my favorite models has actually become a retired old man. Not only did he not mind getting paint on his ears by sitting still, he wasn't too shy about being taken out to very public places like the Metro for exhibits.

I really enjoyed this process.

I was teaching myself how to paint in all these different styles and wanted to see what else I could do with it.

Working with my collaborator Sheila Vand, I came up with the idea of ​​making paintings on more unusual surfaces. It was the milk.

We have a pool. I added milk.

Filled with Sheila. And started painting.

And the final image was always completely unexpected. I had a very specific picture of what it was going to be like so I could draw to it, but the moment Sheila went back to milk, everything changed.

Milk is always changing and instead of fighting it, we had to embrace it, see where it takes us, and supplement it to make it even better.

Sometimes when Sheila lays in the milk, all the paint on her arm comes off and it looks a little awkward, but our solution, okay, is to hide the arm.

One time she got so much milk in her hair that it smudged all the paint on her face.

Okay, hide your face.

And it turned out to be much more elegant than we could have imagined. However, this is basically the same solution that frustrated kids just hide in their pockets when they can't draw their hands.

When we started working on the milk project, and when I started working, I didn't expect to go from working at a desk chasing a dream in politics to stumbling over shadows and turning people into paintings and painting people in a pool of milk.

But again, I don't think it is unforeseeable that, as long as we look beyond what is already in the open, we can find strange things in the familiar, see what lies beneath the surface, what is hidden in the shadows, and recognize that there may be more to it than meets the eye.

thank you.

(applause)

I have a confession to make.

But before that, I want to make a confession.

Raise your hand if you've been relatively stress-free in the past year.

who?

What about moderate stress?

Who has experienced great stress?

yes. me too.

But that's not my confession.

Here is my confession: I am a health psychologist and my mission is to help people become happier and healthier.

However, I fear that what I have been teaching for the past ten years is doing more harm than good. It is related to stress.

I have been telling people for years that stress makes them sick.

It increases your risk of everything from colds to cardiovascular disease.

In short, I turned stress into my enemy.

But I changed my mind about stress. Today I would like to change your mind.

Let me start with the research that inspired me to rethink my entire approach to stress.

The study, which followed 30,000 US adults for eight years, began by asking people, "How much stress have you experienced in the past year?"

They also asked, "Do you think stress is bad for your health?"

And they used public death records to find out who died.

(Laughter) Okay.

Those who experienced a lot of stress in the previous year had a 43% increased risk of death.

But that only applies to people who believe that stress is harmful to their health.

(Laughter) People who experienced a lot of stress but didn't see it as harmful were less likely to die.

In fact, they had the lowest risk of death among study participants, even those who were less stressed.

The researchers estimated that 182,000 Americans died prematurely not because of stress, but because of the belief that stress is bad for them, during an eight-year period of mortality follow-up.

(Laughter.) More than 20,000 people die each year.

Now, if that estimate is correct, believing that stress is bad for you was the 15th leading cause of death in the United States last year, killing more people than skin cancer, HIV/AIDS, and homicide.

(Laughter) I can see why this study surprised me.

Here I have spent a lot of energy telling people that stress is bad for their health.

So this study made me wonder, "Can changing the way we think about stress make us healthier?"

And here science says yes.

When you change the way you think about stress, you change the way your body responds to stress.

To illustrate how this works, I would like you to pretend to be a participant in a study intended to stress you out.

It's called the social stress test.

When you enter the lab, you are asked to give a five-minute impromptu speech about your personal weaknesses to a panel of expert evaluators sitting in front of you. Bright lights and a camera are placed on your face to make sure you can feel the pressure. It's like this.

(Laughter) And raters are trained to give this discouraging non-verbal feedback.

(breathe out) (laughter) Once you're depressed enough, it's time for part two. It's a math test.

And without your knowledge, the experimenter is trained to harass you during the experiment.

We will all try this next time.

It will be fun.

for me.

have understood.

(Laughs) Everyone, please count backwards from 996 by 7.

Start with 996 and do this out loud as fast as you can.

go!

(Counting the number of spectators) Let's go faster. Please hurry.

it's too late

(counting the number of spectators) Stop. Stop it, stop it, stop it.

That person made a mistake.

I have to start over again.

(laughs) You're not very good at this, are you?

Yes, do you understand?

If you were actually in this study, you're probably feeling a little stressed.

Your heart is pounding, your breathing is rapid, and you may be sweating.

And we usually interpret these physical changes as signs that we're not coping with anxiety and pressure.

But what if instead you take them as a sign that your body is revitalized and ready to meet this challenge?

That's exactly what participants were told in a study conducted at Harvard University.

Before they took the social stress test, they were taught to reconsider whether their stress response was helpful.

That pounding heart is preparing you to take action.

If you're breathing faster, you're fine.

More oxygen is supplied to the brain.

And participants who learned to view their stress response as helpful to their performance felt less stressed, less anxious, and more confident. But the most interesting finding for me was how my physical stress response changed.

Now, in a typical stress response, your heart rate increases and your blood vessels constrict like this.

And this is one reason why chronic stress can be associated with cardiovascular disease.

It's not very healthy to be in this state all the time.

However, in this study, blood vessels remained relaxed in this manner if participants viewed their stress response as beneficial.

Their hearts were still pounding, but this is a much healthier cardiovascular profile.

It's actually a lot like what happens in moments of joy and courage.

In a lifetime of stressful experiences, this one biological change can be the difference between having a stress-induced heart attack at age 50 or living into your 90s.

And this is what the new science about stress has revealed: how we think about stress matters.

Therefore, my goals as a health psychologist have changed.

I don't want to relieve your stress anymore.

I want to make you stress-resistant.

And we intervened only a little.

If you had raised your hand and said you've been stressed a lot this past year, we could have saved your life. Because the next time your heart races with stress, you'll remember this story and think it was my body that helped me through this challenge.

And when you view stress that way, your body believes you to have a healthier stress response.

Well I need to redeem myself from the stress of being demonized for over a decade so I said I was going to step in again.

I would like to talk about one of the most underrated aspects of the stress response. The idea is as follows. "Stress makes people social."

To understand this aspect of stress, we need to talk about the hormone oxytocin. I know oxytocin is already as hyped as a hormone.

It's also given the cute nickname of the "cuddle hormone" because it's secreted when you hug someone.

But this is just a small part of what oxytocin is involved in.

Oxytocin is a neurohormone.

Fine tune your brain's social instincts.

It is a catalyst for taking action to strengthen intimate relationships.

Oxytocin makes us crave physical contact with friends and family.

Increases empathy.

It will even motivate you to help and support the people you care about.

Some say you should smoke oxytocin...

To become a more caring and compassionate person.

But here's where most people don't understand oxytocin.

It's a stress hormone.

The pituitary gland excretes this substance as part of the stress response.

It's as much a part of the stress response as the heart-pounding adrenaline.

And when oxytocin is released in response to stress, it motivates us to seek support.

Your biological stress response encourages you to share your feelings with someone instead of hoarding them.

Your stress response wants you to be sure to notice when someone else in your life is suffering and be able to support each other.

When life is hard, your stress response wants you to be surrounded by people who care about you.

So how does knowing this side of stress make you healthier?

Oxytocin doesn't just affect the brain.

It also acts on the body, where one of its main roles is to protect the cardiovascular system from the effects of stress.

It is a natural anti-inflammatory agent.

It also helps keep blood vessels relaxed during times of stress.

But my favorite effect on the body is actually on the heart.

The heart has receptors for this hormone, and oxytocin helps heart cells regenerate and heal stress-induced damage.

This stress hormone strengthens the heart.

And the cool thing is that all of these physical benefits of oxytocin are enhanced by social contact and social support.

So when you reach out to others under stress, either to ask for support or to help someone, you release more of this hormone, which makes your stress response healthier and actually helps you recover from stress faster.

It is surprising to me that the human stress response has a built-in mechanism for resilience, and that mechanism is human relationships.

Finally, I would like to talk about one more study.

This research could be life-saving, so listen up.

The study, which followed about 1,000 US adults, ranging in age from 34 to 93, began with the question, "How much stress have you experienced in the last year?"

They also asked, "How much time have you spent helping your friends, neighbors, and community?"

For the next five years, he used public records to find out who had died.

Let's start with the bad news. Every time you have a major stressful life experience, such as financial hardship or family crisis, your risk of death increases by 30%.

But I'm sure you're already expecting the word "but" by now, and that wasn't true for everyone.

People who spent time caring for others did not experience any increased stress-related mortality.

Compassion created resilience.

Therefore, it is a reminder that the negative health effects of stress are not inevitable.

How we think and act can change how we experience stress.

Choosing to view your stress response as helpful creates the biology of courage.

And choosing to connect with others under stress can create resilience.

Now, I wouldn't necessarily ask for more stressful experiences in my life, but this science has given me a whole new perspective on stress.

Stress gives us access to the mind.

A compassionate heart that finds joy and meaning in connecting with others, and yes, a throbbing physical heart that works hard to give you strength and energy.

And choosing to view stress this way not only improves it, but actually makes a pretty deep statement.

You say you can trust yourself to meet life's challenges.

And remember that you don't have to face them alone.

thank you.

(Applause) Chris Anderson: This is kind of amazing, what you're telling us.

It seems amazing to me that beliefs about stress can make such a big difference in a person's life expectancy.

How does that apply to advice such as, for example, if someone is making a lifestyle choice between a stressful job and a stress-free job, does it matter which one they go for?

In a way, wouldn't it be equally wise to tackle stressful work as long as you believe you can handle it?

KM: Well, and one thing we do know for sure is that it's healthier to seek meaning than to avoid discomfort.

So I would say the really best way to make decisions is to pursue what creates meaning in your life and trust yourself that you can handle the stress that follows.

CA: Thank you very much, Kelly. It's so cool.

(applause)

As a young man, I worked as an investigative journalist in the most enchanting regions of the world, spending six years of wild adventures in the tropics.

I was a young, reckless and stupid person.

That's why war happens.

But I have felt more alive since then than ever.

And when I got home, I found myself getting smaller and smaller until finally loading the dishwasher seemed like an interesting challenge.

And I found myself scratching at the wall of life, as if trying to find an exit to a larger space beyond.

I think I was environmentally bored.

Now, in a world of horns and fangs and fangs and claws, we have evolved through these rather difficult times.

And we still have the fear, courage and aggression needed to get through those times.

But in our comfortable, safe, and crowded land, we have few opportunities to exercise them without harming others.

And this was the kind of constraint I hit myself with.

Overcoming uncertainty and knowing what will happen next, that is almost the main purpose of the industrialized world, and having reached or nearly reached it, we have just encountered new unmet needs.

We have prioritized safety over experience. I have gained a lot by doing so, but I think I have also lost something.

Now, I'm not going to glorify evolutionary time.

I'm already past the lifespan of most hunter-gatherers, and it's not too difficult to predict the outcome of a deadly duel between me, myopic stumbling with a stone-tipped spear, and the enraged monstrous aurochs.

What I was looking for was not authentic.

I don't think it's a useful concept, or even an understandable one.

I just wanted a richer and more raw life than I could have in England, or in most parts of the developed world.

And it wasn't until I encountered an unfamiliar word that I began to know what I was looking for.

And the moment I found that word, I wanted to dedicate much of the rest of my life to it.

The term is "rewilding", and although the term rewilding is still new, it already has some definitions.

But there are two things that particularly fascinated me.

The first is the large-scale restoration of ecosystems.

One of the most exciting scientific discoveries of the last half century has been the discovery of extensive trophic cascades.

A trophic cascade is an ecological process that starts at the top of the food chain and rolls down to the bottom, a classic example of which happened in Yellowstone National Park in the United States when wolves were reintroduced in 1995.

Now, while we all know that wolves kill many different kinds of animals, perhaps less well-known is that wolves give life to many other animals.

I know it sounds strange, but follow me for a moment.

They hadn't been seen for 70 years until the wolf showed up.

With nothing to hunt for deer, deer numbers continued to swell in Yellowstone Park, and despite human efforts to eradicate them, the deer reduced much of the vegetation there to almost nothing and simply grazed.

But as soon as the wolves arrived, even though they were few in number, they began to have the most noticeable impact.

Of course, first they killed some deer, but that didn't matter.

More importantly, it fundamentally changed deer behavior.

The deer began to avoid certain areas of the park, especially those most prone to trapping, such as valleys and canyons, and soon those areas began to regenerate.

In some areas, tree height has increased fivefold in just six years.

The bare valley flanks soon became poplar, willow and cottonwood forests.

And as soon as that happened, the birds began to migrate.

The number of migratory songbirds began to increase significantly.

Beavers like to eat trees, so the number of beavers began to grow.

And beavers, like wolves, are ecosystem engineers.

They create niches for other species.

And the dams they built on the river provided habitat for otters, muskrats, ducks, fish, reptiles and amphibians.

Wolves killed the coyotes, and as a result rabbit and mouse numbers began to rise, which meant more hawks, weasels, foxes and badgers.

Crows and bald eagles came down to eat the carrion left by the wolves.

Bears also began to eat it and their numbers began to increase. Part of the reason is that many berries grow on the regenerating shrubs, and the bears have enhanced the wolf's influence by killing some of the deer fawns.

But here's where it gets really interesting.

Wolves changed the behavior of rivers.

They meander less.

Less erosion. Channel narrowed.

More ponds formed, more stream sections formed, all of which were perfect habitats for wildlife.

The river changed according to the wolf. The reason for this is that reforestation stabilizes levees, breaks them less frequently, and stabilizes river flows.

Similarly, removing deer from some locations and restoring vegetation on the valley side also stabilized the vegetation, resulting in less soil erosion.

As such, wolves in small numbers have not only changed the ecosystem of this vast expanse of land, Yellowstone National Park, but also its physical geography.

Southern Ocean whales have a similarly far-reaching impact.

One of the many rational excuses made by the Japanese government for killing whales was that "more fish and krill would give people more to eat."

Well, it's a stupid excuse, but in a way it makes sense, doesn't it? I think whales eat a lot of fish and krill, so obviously if you take the whales away there will be more fish and krill.

But the opposite happened.

If the whales are taken away, the krill population will plummet.

Why did that happen?

Now, it turns out that whales are extremely important to sustaining the entire ecosystem. One reason is that whales often feed in the deep ocean, then rise to the surface and produce what biologists politely call large dung plumes, or dung explosions across surface waters. That's because the light zone has enough light for photosynthesis to take place, and its large fertilizer plume stimulates the growth of phytoplankton (phytoplankton at the bottom of the food chain). , stimulates the growth of zooplankton that feed on fish, krill, and everything else.

Another thing that whales do as they leap up and down the water column is kick phytoplankton to the surface where they survive and continue to reproduce.

And interestingly, marine phytoplankton have been found to absorb carbon from the atmosphere. The more phytoplankton, the more carbon they absorb. and eventually filtered into the abyss, removing carbon from the atmospheric system.

When whales were reaching their historic populations, they probably were responsible for sequestering tens of millions of tons of carbon from the atmosphere each year.

When you look at it this way, you might think, wait a minute, wolves are changing the geography of Yellowstone National Park.

This is a whale that changes the composition of the atmosphere.

Perhaps we are beginning to see evidence beginning to accumulate at the ecosystem level to support James Lovelock's Gaia hypothesis, which sees the world as a coherent self-regulating organism.

The trophic cascade teaches us that the natural world is even more fascinating and complex than we think.

They say removing the megafauna leaves behind an ecosystem that is fundamentally different from the one that maintained the megafauna.

And, in my opinion, these are strong arguments for the reintroduction of lost species.

To me, rewilding means regaining lost plant and animal parts.

That means removing fences, blocking drainage ditches, banning commercial fishing in some large areas, but retreating in others.

There is no view of what the right ecosystem or the right species assemblage looks like.

We are not trying to create heather, meadows, rainforests, kelp orchards, coral reefs, etc.

Let nature decide, but nature is generally good at making decisions.

Now, I mentioned that there are two definitions of rewilding that are of interest to me.

Another is the rewilding of human life.

And I do not see this as a substitute for civilization.

We believe that we will enjoy the benefits of advanced technology as much as we do today, but at the same time, we believe that we will have access to a richer, wilder adventure life when we want it, because of the presence of wonderful re-wild habitats.

And that opportunity is developing faster than you might think.

In the United States, it is estimated that two-thirds of formerly forested land that has since been cleared is reforested, as loggers and farmers have withdrawn, especially from the eastern half of the country.

Another report suggests that 30 million hectares of land, the size of Europe's Poland, will be cleared by farmers between 2000 and 2030.

Now, in the face of such an opportunity, doesn't it seem a little unambitious to think only of bringing back wolves, lynx, bears, beavers, bison, wild boars, elk and all the other species that have already begun their rapid migration across Europe?

Perhaps we should also start thinking about the return of some of the lost megafauna.

What kind of giant animal do you think it is?

Well, except for Antarctica, every continent had one.

When Trafalgar Square in London was excavated, the river gravel there was found stuffed with the bones of hippos, rhinos, elephants, hyenas and lions.

Yes, ladies and gentlemen, there were lions in Trafalgar Square long before Nelson's Column was built.

All these species lived here during the last interglacial period, when temperatures were about the same as ours.

It's not primarily climate that has wiped out the world's megafauna.

Pressure from human hunting and habitat destruction.

Yet in our current ecosystem, we can still see the shadows of these great beasts.

Why are so many deciduous trees able to sprout from anywhere even if the trunk is broken?

How can it endure the loss of so much bark?

If understory trees are less sheared by the wind and carry less weight than larger canopy trees, why are they so much stronger and less likely to break?

elephant.

They are adapted to elephants.

In Europe, for example, they evolved to resist a huge beast, the straight-tusked elephant, elephas antiquus.

Although it was related to the Asian elephant, it was a temperate animal, a creature of the temperate forest.

It was much bigger than an Asian elephant.

But why do some of our common shrubs have thorns that seem over-engineered to prevent deer encroachment?

It probably evolved to resist being viewed by rhinoceros.

Isn't it amazing to see the shadows of these great beasts as you wander through parks, boulevards and leafy streets?

Paleoecology, the study of past ecosystems that is essential to understanding our own ecosystems, feels like a gateway into an enchanted kingdom.

And if you're really considering making land available on the scale I've been talking about, why not reintroduce some of the lost megafauna, or at least species that are closely related to animals that have gone extinct all over the world?

Why shouldn't the Serengeti be on our doorstep?

And perhaps this is the most important thing that rewilding has to offer us, and the most important thing that is missing from our lives: hope.

An ounce of hope equals a ton of despair when it comes to motivating people to love and protect the natural world.

What rewilding teaches us is that ecological change does not always have to go in one direction.

It gives us hope that a quiet spring may give way to a tumultuous summer.

thank you.

(applause)

This is Charlie Williams.

He was 94 when this photo was taken.

In the 1930s, Roosevelt put thousands of Americans back to work by building bridges, infrastructure, and tunnels, but he also did some interesting things. He hired hundreds of writers to scour America and tell the stories of ordinary Americans.

Poor sharecropper Charlie Williams isn't usually the subject of big interviews, but in reality Charlie was a slave until he was 22.

And the chronicled narrative of his life constitutes one of history's greatest gems, depicting the lived experience of a man full of former slaves.

Anna Deaver Smith famously said, "There is literature in each of us." Three generations later, I joined a project called StoryCorps. The project aimed to record the stories of ordinary Americans by setting up soundproof booths in public spaces.

The idea is very simple.

You walk into these booths, interview your grandmother or relative, leave with a copy of the interview, and the interview is sent to the Library of Congress.

This is basically how you create one conversation at a time into the National Oral History Archive.

And the question is, if you could only spend 45 minutes with your grandmother, who would you like to remember?

It's interesting that in our conversations with founder Dave Isay, we always talked about this as a bit of a disruptive project. Because, come to think of it, it's not about the story actually being told, it's about listening, and it's about questions you can ask, questions you might not get permission to on other days.

Here are some quick excerpts from the project.

[Jesus Meléndez recounting the final moments of the poet Pedro Pietri] Jesús Meléndez: When we took off and were ascending, before level, the horizon was 45,000 feet. So Pedro started moving away from us before we even leveled off. And the beauty of it is that I believe there is life after death.

You can tell by looking at Pedro.

[Danny Pelasa and wife Annie Pelasa, married 26 years] Danny Pelasa: You see, the truth is, I always feel guilty when I say "I love you" to you, and I say it often. I say this to remind you that no matter how stupid I am, it's coming from me and it's like listening to a beautiful song from an old broken radio, and that you are kind to keep the radio in your house.

(laughter) [Michael Wolmetz and his girlfriend Deborah Brachaerts] Michael Walmetz: So this is the ring my dad gave my mom, so I'll leave it there.

And he saved up his money and bought this and proposed to my mom with it, so I thought I'd give it to you so she could stay with me too.

So I'm going to share the mic with you now, Deborah.

where is the right finger?

Deborah Brakartz: (crying) MW: Deborah, will you marry me?

DB: Yes. of course. I love you.

(Kisses) MW: So, folks, this is how your mom and I got married in the booth at Grand Central Station, with your dad's ring.

My grandfather was a taxi driver for 40 years.

He used to pick people up here every day.

that seems correct.

Jake Burton: So I have to say that I didn't choose these samples to actually make you cry. Because they all make you cry.

The whole project is premised on this act of love that is listening itself.

And the movement to build organizations out of split-second conversations and listening is actually a lot of what my company, Local Projects, does in all of our efforts.

So, we are a media design company, working with various institutions to build media installations for museums and public spaces.

Our latest initiative is the Cleveland Museum of Art, where we created an initiative called Gallery One.

Gallery One is an interesting project that began with a massive $350 million expansion of the Cleveland Museum of Art. In fact, we introduced this work specifically to bring in new capacity, new audiences, as well as the growth of the museum itself.

MoMA Director Glenn Rowley said: "We want visitors to stop being visitors.

Visitors are temporary. We want the people who live here, the people who own the property. ”

So what we do is create a wide variety of ways for people to really work with the material within these galleries. So you can still have a traditional gallery experience, but you can also actually participate in individual works, see their original context, and interact with the works themselves, if you're interested.

For example, click on this individual lion's head and it will originate from 1300 BC.

Alternatively, you can see the actual bedroom in this separate piece. It will change the way you think about this kind of tempera painting.

This is one of my favorites because you can see the studio itself.

This is a bust of Rodin. Feel this wonderful factory of creativity.

And it makes you think about literally hundreds and thousands of years of human creativity and how each piece of art is part of that story.

This is Picasso, but of course it embodies much of the 20th century.

And the next interface I'm about to show you really leverages this creative lineage idea.

This is an algorithm that actually uses facial recognition to let you browse real museum collections.

I mean, this person is making different faces and actually pulling different objects out of the collection and pulling out exactly what she looks like.

And I can imagine that when people are performing within the museum itself, they can feel this emotional connection, the feeling that our faces are connected for thousands and tens of thousands of years.

It's an interface that actually allows you to draw and allows you to draw objects using the same shape.

So, more and more, we're looking for ways for people to actually write something within the museum itself and be creative while still seeing and understanding the creativity of others.

So on this wall, the collection wall, you can actually see all 3,000 works of art at the same time, and you can actually create individual walking tours of the museum and share them, or someone can tour with the museum director, or take a tour with your little cousin.

But while we're working on this effort in Cleveland, we've also been working behind the scenes on our biggest effort to date: building a 9/11 memorial and museum.

So we started creating the original master plan for the museum in 2006 as part of the Thinc Design team, then did all the media design for both the museum and the monument, then media production.

So the memorial will open in 2011 and the museum will open next year in 2014.

As you can see from these images, this place is very raw, almost archaeological.

And of course, the event itself is very recent, somewhere between history and current events, so it was a huge challenge to imagine how we would actually respond to a space like this, an event like this, and actually tell that story.

So we started a new way of thinking about building organizations through a project we launched in 2009 called Make History.

Thus, with an estimated one-third of the world witnessing 9/11 live and one-third of the world hearing about it within 24 hours, this unprecedented moment of global awareness is of the nature of just when it happened.

So we launched this to document stories from around the world, videos, photos, the history of characters, and the experiences of people on that day. In fact, this was a very big risk for the institution to take its first steps on this open platform.

But it was combined with this oral history booth, and it was the simplest thing we've ever made: locate yourself on a map.

Written in six languages, it allows you to tell your own story of what happened to you that day.

And this was clearly part of the landing gear when we started seeing the amazing images and stories coming in from all over the world. We really started to understand that there is an amazing symmetry between the event itself and how people tell the story of the event and how we ourselves need to tell that story.

This image in particular caught our attention at the time. Because it sums up the event very well.

This is a shot from the Brooklyn Battery Tunnel.

In fact, there are firefighters stuck in traffic. As a result, firefighters themselves carry over 70 pounds of equipment and run the 1.5 mile to the scene.

And then I got this wonderful email. "While looking through the thousands of photos on the site, I stumbled across a picture of my son.

It was an emotional shock, but I'm glad I found this photo," she wrote.

And made us realize what this institution needed to be to really tell that story.

If there are witnesses to history who visit the actual museum itself, it is not enough for historians and curators to speak objectively about such events in a third person.

So we started imagining museums, working with the museum's creative team and curators, thinking about what the first voices we hear inside the museum might actually be from other visitors.

So we created the idea of ​​opening a gallery called "We Remember".

We've only scratched the surface of that mockup here, but hopefully you'll get an idea of ​​what it's like to actually step into the moment and travel back in time.

(Video) Voice 1: I was in Honolulu, Hawaii. VOICE 2: I was in Cairo, Egypt.

Voice 3: The Champs Elysées in Paris. Voice 4: College, UC Berkeley.

VOICE 5: I was in Times Square. Voice 6: Sao Paulo, Brazil.

(multiple voices) VOICE 7: I think it was about eleven o'clock at night.

VOICE 8: I was driving to work at 5:45 in the morning local time.

VOICE 9: In fact, we were in a meeting when someone burst in and said, "Oh my God, a plane just crashed in the World Trade Center."

VOICE 10: Desperately trying to access the radio.

VOICE 11: I heard it on the radio -- VOICE 12: I heard it on the radio.

(multiple voices) Voice 13: I got a call from my dad. VOICE 14: I was awakened by the phone ringing.

My business partner told me to turn on the TV.

VOICE 15: So I turned on the TV.

Voice 16: All Italian channels were showing the same thing.

VOICE 17: Twin Towers. VOICE 18: Twin Towers.

JB: And from there you go into that open, cavernous space.

This is the so-called slurry wall.

This is the original excavated wall at the base of the World Trade Center, which withstood real pressure from the Hudson River for a full year after the event.

Therefore, we thought of bringing that sense of authenticity, the realism of the moment, into the actual exhibition itself.

And since we're telling the story of being inside the tower through the same audio collage, you're literally hearing people talking about seeing a plane enter the building or going down a flight of stairs.

And stepping into an exhibit that talks about revival, we actually project the entire experience of those who literally excavated on the pile directly into these twisted moments of steel.

And you can listen to oral history. Literally seeing thousands of experiences from that moment on by people who actually worked as a so-called bucket brigade.

And once we're done with our understanding and storytelling moments about 9/11, we bring the museum back to our story-telling moments, actually talking to individual visitors and asking them about their own experiences with 9/11.

And we ask them questions that really can't be answered—the kinds of questions that 9/11 itself caused us all to ask.

It raises questions like, "How can a democracy balance freedom and security?"

"How did 9/11 happen?"

"And how has the world changed after 9/11?"

And then we mix the oral histories that we've actually collected over the years with the interviews we've done with people like Donald Rumsfeld, Bill Clinton, Rudy Giuliani, and all these different players and different experiences and different reflections on 9/11.

And suddenly, the facility turns into a listening experience again.

So here's a short excerpt of a mockup I've put together from some of these voices, and it really feels like a retrospective poem for everyone about the event.

(Video) VOICE 1: 9/11 was not just a New York experience.

VOICE 2: It's what we shared and what brought us together.

VOICE 3: And when we saw it, we knew that it would help us that the people who were there that day, both those they knew and those they didn't know, immediately went to help.

VOICE 4: All the love and feelings that flowed out of our country really stayed with me forever.

VOICE 5: As I still pray and think of those who lost their lives, and those who gave their lives to help others, I am also reminded of the structure, the love, the compassion, the strength of this nation, and watched it come together in the midst of a terrible tragedy.

JB: So people come out of the museum, reflect on that experience, reflect on their own thoughts about it, and move into the space of the actual monument itself. Because they are back in school. We actually got into the memorial because it was after a few years of building the museum.

The monument's original designer, Michael Arad, had an image in mind of all the names appearing indiscriminately, almost randomly, a poetic reflection of the nature of the terrorist event itself. But it was a big challenge for families, for the Foundation, and of course for first responders. Negotiations then took place, and a solution was found to create ordering by so-called meaningful adjacency, rather than actually chronologically or alphabetically.

These are groupings of names themselves that appear to be indistinguishable, but are actually ordered. Together with Jer Thorp, we created an algorithm that takes a lot of data to actually connect all these different names themselves.

Here is an image of the actual algorithm itself with names scrambled for privacy, but you can see that these colored blocks are actually 4 different flights, 2 different towers and a first responder. You can actually see inside the different floors. And the green line is the interpersonal relationship requested by the family itself.

So when you go to the memorial you can actually see the overarching organization inside the individual pools themselves.

You can see how the geography of the incident is reflected inside the monument, and searching for an individual's name, in this case his employer, Cantor Fitzgerald, reveals how all those names, hundreds of names, are actually organized in the monument itself, with which you can navigate within the monument.

And more importantly, when you actually go to the site of the monument, you can see the connection between them.

You can see the relationship between the various names themselves.

So what is this group of undifferentiated, anonymous names, suddenly springing into reality as individual lives?

In this case, Harry Ramos, who was a head trader at an investment bank, stopped by to help Victor Wald on the 55th floor of the South Tower.

"I'm not leaving you," said Ramos, according to witnesses.

And Wald's widow requested that the two be listed side by side.

Three generations ago, you had to actually go out and capture stories for the common people.

Of course, today there is an unprecedented amount of stories being told to future generations for all of us.

And this is our hope, that there is poetry within each of our stories.

thank you very much.

(applause)

I remember my mother reading stories to me and my two older brothers when I was three or four. I remember raising my hand to feel the pages of the book and the picture they were discussing.

And my mother said, "Darling, remember you can't see, you can't feel pictures, you can't feel the printing of pages."

And I thought, 'But that's what I want to do.

i love stories. I want to read "

Little did I know that I would be part of a technological revolution that would make that dream a reality.

About 64 years ago, I was born prematurely at about 10 weeks and went blind as a result.

This condition is known as retrolental fibrosis and is currently very rare in the developed world.

Little did I know, in 1948, that I was born in the right place and at the right time, that I was in a country that could participate in a technological revolution, lying curled up in the humidified crib of a naive baby.

There are 37 million blind people on our planet, but those who have participated in technological change are mainly from North America, Europe, Japan and other developed regions of the world.

Computers have changed the lives of all of us in this room and around the world, but I think they have changed the lives of us blind people more than any other group.

So I would like to talk about computer-based adaptive technology and its interaction with the many volunteers who have helped me over the years to become who I am today.

It's volunteers, passionate inventors, interacting with technology, and stories that many other blind people can tell.

But let me talk a little bit about it today.

At the age of 5, I went to school and learned Braille.

It's an ingenious system of 6 dots perforated on paper that you can feel with your fingers.

In fact, I think they put my 6th grade report on it.

I don't know where Julian Moreau got that from.

(Laughter) I was pretty good at reading, but religion and listening to music required more effort.

(Laughter) When you leave the Opera House, you'll notice the elevator signs in Braille.

look for it. Have you noticed?

that's right. I'm always looking

(Laughter.) When I was in school, books were transcribed by transcribers, volunteers who dot-at-a-time so that I had a number of books to read. It's been done in this country since the late 19th century, mostly by women, and it was the only way I read.

When I was in high school, I got my first Philips reel-to-reel tape recorder. The tape recorder was my learning medium before computers.

I was able to have family and friends read the material and read it back as many times as I needed.

And it brought me in touch with volunteers and helpers.

For example, when I was in graduate school at Queen's University in Canada, the inmates at Collins Bay Jail agreed to help me.

I gave them a tape recorder and they read it out.

One of them said to me, "Ron, I'm not going anywhere right now."

(Laughter) But think about it. These people did not have access to the kind of education I had, but through their dedicated assistance, they helped me obtain my law graduate qualification.

Now, I went back to Monash University in Melbourne to become an academic, and for those 25 years the tape recorder was everything to me.

In fact, I had 18 miles of tape in my office in 1990.

Students, family and friends all read my material.

Mrs. Lois Dawley, whom I later came to call my surrogate mother, spent thousands of hours reading me tape recordings.

One of the reasons I agreed to give this talk today was in the hope that Lois would be here to introduce her to you and thank you publicly.

Unfortunately, due to her health condition, she could not come today.

But Lois, thank you from this podium.

(Applause.) When I first saw an Apple computer in 1984, I thought: I thought, "This one has a glass screen, and it's not very useful."

I was really wrong.

In 1987, the month my oldest son Gerald was born, I got my first blind computer. It's actually here.

can you see over there?

And what to call it, there is no screen.

(Laughter) It's a blind computer.

(Laughter) This is a Keynote Gold 84k, and 84k means it had 84 kilobytes of memory.

(Laughter) Don't laugh, it cost $4,000 at the time. (Laughter) I think my watch has more memory in it.

It was invented by Russell Smith, a passionate New Zealand inventor who wanted to help blind people.

Sadly, he died in a light plane crash in 2005, but his memory lives on in my heart.

For the first time ever, you can read back what you type.

I had a speech synthesizer.

I wrote my first co-authored labor law book in 1979 on a typewriter from memory.

This allowed me to read back what I wrote and enter the computer world, despite having 84k of memory.

In 1974, the great American inventor Ray Kurzweil set out to build a machine that could scan books and read them out in synthesized speech.

At the time, optical character recognition units typically only worked with one font, but by using a charge-coupled device flatbed scanner and a speech synthesizer, they developed a machine that could read any font.

His machine, about the size of a washing machine, was launched on January 13, 1976.

In March 1989, I was shocked when I first saw a Kurzweil on the market. In September 1989, the month the Associate Professorship at Monash University was announced, Kurzweil was available to law schools for their use.

For the first time, I was able to hold a book up to the scanner and read what I wanted to read.

I didn't have to be nice to people!

(Laughter) No more censorship.

For example, I was shy back then, and I'm really shy now, and I couldn't let anyone read sexually explicit material to me.

(Laughter) But you know, I can wake up a book in the middle of the night, and -- (Laughter) (Applause) Well, Kurzweil Reader is just a program on my laptop.

It has shrunk.

And now you don't have to wait to scan the latest novel into your talking book library.

You can keep up with your friends.

There are many people who have helped me in my life, and many whom I have yet to meet.

One is American inventor Ted Henter.

Ted was a motorcycle racer, but in 1978 he was in a car accident that left him blind. For anyone trying to ride a motorcycle, this is deadly.

He then turned to water skiing and became a champion disabled water skier.

But in 1989 he worked with Bill Joyce to develop a program that read what was on your computer screen from the net or from what was on your computer.

It's called JAWS (Job Access With Speech) and it looks something like this.

(JAWS speaks) Ron McCallum: Isn't it late?

(Laughs) Well, reading like that makes me sleepy.

I slowed down for you.

Please play at the speed I read.

can i play that?

(JAWS talks) (laughter) RM: You know, when you're grading a student's essay, you want to finish it pretty quickly.

(Laughter) (Applause) The technology that captivated me in 1987 is now in my iPhone and yours.

However, I think that reading a book using a machine is a very lonely task.

I grew up with family and friends reading to me, and I loved the warmth, breath, and intimacy of the person reading.

do you like being read?

And one of my most unforgettable memories was in 1999, near Manly Beach, where Mary read Harry Potter and the Sorcerer's Stone to me and my children.

Isn't that a great book?

I still love having someone nearby to read to me.

But I'm not giving up on technology. Because that technology allows us to live a wonderful life.

Of course, talking books for the blind predate technology like this.

After all, long-playing records were invented in the early 1930s and today record talking books onto CD using a digital access system known as DAISY.

But when I'm reading in synthetic voice, I love going home and reading racy novels in real voice.

Today, we disabled people still face barriers.

Many websites cannot be read using JAWS or other technologies.

Websites are often very visual, with lots of unlabeled charts and buttons. That is why the World Wide Web Consortium 3, known as W3C, has developed global standards for the Internet.

And we want every Internet user or Internet site owner to have their sites compatible so that even the blind have a level playing field.

There are other barriers posed by our law.

For example, Australia, like about a third of the world's countries, has copyright exceptions that allow books to be braille or read for the blind.

However, those books cannot be carried across borders.

For example, Spain has 100,000 books accessible in Spanish.

Argentina has 50,000 people.

No other Latin American country has more than a few thousand people.

However, it is not legal to ship books from Spain to Latin America.

We have hundreds of thousands of accessible books in the US, UK, Canada, Australia, etc., but we can't bring them to the 60 countries of the world where English is the first and second language.

And remember I talked about Harry Potter.

Well, you can't transport the book across borders, so you had to read separate editions in every English-speaking country. The UK, US, Canada, Australia and New Zealand all had to read Harry Potter separately.

That is why there will be an international conference in Morocco next month.

It is a cross-border treaty advocated by national groups and the World Federation of the Blind that if books are available with a copyright exception and the other country has a copyright exception, those books can be transported across borders, giving life to blind people who have no books to read, especially people in developing countries.

I hope that happens.

(Applause.) My life has been blessed with marriage, children, and certainly interesting work. A former Dean of Law School at the University of Sydney, he is currently a member of the United Nations Commission on the Rights of Persons with Disabilities in Geneva.

I was really a very lucky person.

What does the future hold?

Technology keeps getting better, but I still remember what my mom said 60 years ago. "Remember, you'll never be able to read print with your fingers."

I am very happy that the interaction of transcribers, volunteer readers and passionate inventors has made reading a dream come true for me and blind people around the world.

I would like to thank my researcher Hannah Martin for clicking the slides and my wife, Professor Mary Kroc, the light of my life, for picking me up.

I would also like to thank her.

I think I have to say goodbye.

take care. thank you very much.

(Applause.) Yay! (Applause.) Okay. have understood. have understood. have understood. have understood. (applause)

In short, malaria has claimed more lives than any other infectious disease in the long history of mankind.

It is transmitted by the bite of an infected mosquito and is perhaps our oldest scourge.

We may have had malaria since we evolved from apes.

And to this day, malaria still wreaks havoc on our species.

There are 300 million cases of infection each year, and more than 500,000 people die.

Now this really doesn't make sense.

We have known a cure for malaria since the 1600s.

It was then that Jesuit missionaries in Peru discovered the bark of the cinchona tree and discovered that the bark contained quinine, which is still an effective treatment for malaria today.

Therefore, we have known how to treat malaria for centuries.

We've known how to prevent malaria since 1897.

It was then that British Army Surgeon Ronald Ross discovered that it was mosquitoes that carried malaria, not bad air and miasma as previously thought.

Malaria should therefore be a relatively easy disease to treat, yet hundreds of thousands of people still die to this day from mosquito bites.

why is that?

This is a question that has personally intrigued me for a long time.

As the daughter of Indian immigrants, I grew up visiting my cousins ​​in India every summer, but since I had no immunity to the local malaria, they were allowed to sleep on the terrace and were made to sleep under this hot, sweaty mosquito net each night with a nice cool night breeze.

So I really hated mosquitoes.

But at the same time, I come from a Jain family and Jainism is a very extreme non-violent religion.

Jains do not eat meat.

You should not walk on grass, as walking on grass can inadvertently kill insects.

Certainly we should not swat mosquitoes.

So the terrifying power of this little insect was evident to me from an early age. And that was one of the reasons I spent five years as a journalist trying to understand why malaria has been such a terrible scourge for all of us for so long.

I think there are three main reasons for that.

These three reasons add up to the fourth reason, which is probably the biggest.

The first reason is certainly scientific.

The tiny parasite that causes malaria is perhaps one of the most complex and insidious pathogens known to man.

They spend half their lives in cold-blooded mosquitoes and the other half in warm-blooded humans.

Not only are the two environments completely different, but they are also completely hostile.

In other words, just like insects are constantly trying to fight parasites, so too is the human body constantly trying to fight parasites.

This little creature survived even under such siege, but not only did it survive, it thrived.

It has spread. There are more ways to evade attacks than we know.

For one, it's a shapeshifter.

Just like a caterpillar transforms into a butterfly, the malaria parasite transforms itself seven times in its life.

And each of those life stages not only looks quite different from each other, they have completely different physiology.

For example, let's say you come up with a great drug that works at a certain stage in the parasite's life cycle.

It may not affect other stages at all.

It can lurk undetected and unnoticed in our bodies for days, weeks, months, years, even decades.

So parasites are a huge scientific challenge to tackle, but so are parasite-carrying mosquitoes.

Only about a dozen mosquito species carry most of the world's malaria, and we know quite a bit about the types of water bodies they favor.

You might be wondering, then, if we should just avoid places where killer mosquitoes live. right?

We can avoid places where killer grizzly bears live, and we can avoid places where killer alligators live.

But let's say you live in the tropics and you were walking outside your cabin one day and left some footprints in the soft dirt around your house.

Or suppose it rains on your cow, or rains on your pig, and then it rains and fills its footprints with a little water.

that's it. It created the perfect habitat for malaria mosquitoes right outside our front door.

Therefore, it is not easy for us to escape these insects.

We're creating places they want to live in just by living our lives.

In other words, there are big scientific challenges, but there are also big economic challenges.

Malaria occurs in the poorest, most remote places on earth, and for good reason.

Poor people are more likely to get malaria.

If you're poor, you're more likely to live in shoddy housing on remote, poorly drained land.

These are places where mosquitoes breed.

They are less likely to have door screens or window screens.

With no electricity, it is less likely that all indoor activities will be possible with electricity, and more time will be spent outdoors.

Mosquito bites have become more common.

So poverty causes malaria, but what we now know is that malaria itself causes poverty.

First, the harvest season has the most serious impact. So when farmers have to go out to the fields to harvest their crops, they end up coming home with a fever.

But it also poses the risk of people dying from all sorts of other causes.

So this has happened historically.

We were able to rid society of malaria.

Everything else remains the same, so we still have bad food, bad water, bad hygiene and all the things that make people sick.

But getting rid of malaria alone reduces deaths from everything else.

And economist Jeff Sachs has really quantified what this means for society.

What that means is that the presence of malaria in a society reduces economic growth by 1.3% each year due to the disease alone.

In short, this poses a major economic challenge. Because if you come up with a great drug or a great vaccine. How do we get it to a place where there are no roads, no infrastructure, no electricity for refrigeration to keep things cool, no clinics, no clinicians to get it where it is needed?

Controlling malaria therefore presents a major economic challenge.

But in addition to scientific and economic challenges, there are also cultural challenges, and perhaps this is the part people don't want to talk about malaria.

And there is the paradox that the people with the most malaria in the world tend to be the least concerned about malaria.

This has been discovered many times by medical anthropologists.

They ask people in malarious areas of the world, "What do you think about malaria?"

And they don't say, "This is a deadly disease. We fear it."

They say 'malaria is a normal problem in life'.

And it certainly has been my personal experience.

When I told my relatives in India that I was writing a book about malaria, they looked at me like I was writing a book about warts or something.

For example, why write about such boring and mundane things? Look?

And it's really just simple risk awareness.

For example, a child in Malawi can get malaria 12 times by the time they are two years old, and if they survive, they will have malaria for the rest of their lives, but they are much less likely to die from it.

So, in her lived experience, malaria comes and goes.

And that is indeed the case with most malaria around the world.

Most of the world's malaria occurs and disappears spontaneously.

But malaria is so common that the small fraction of fatal cases add up to such a staggering number.

So I think people in malarious parts of the world need to think about malaria the way we think of colds and flu in the temperate world. right?

Colds and flu take a toll on our society and our own lives, but we think it's normal to catch colds and flu during cold and flu season, so we don't really take even the most basic precautions against it.

And this poses a major cultural challenge in domesticating malaria. If people think it's normal to get malaria, how do you get them to run to a doctor and get it diagnosed, get a prescription, get a prescription, take a pill, put on repellent, put a mosquito net inside?

This is a major cultural challenge in taming this disease.

So put it all together.

we are sick It is scientifically complex, economically difficult to address, and the least concerned with those most in a position to benefit.

And that becomes the bigger issue than anything else, which is, of course, a political issue.

How can we get political leaders to do something about these issues?

The answer, historically, is no.

Throughout history most malaria societies have simply lived with the disease.

Therefore, the main attacks against malaria come from outside the malaria community, those who are not bound by these rather paralyzed politics.

But I think this creates a ton of other kinds of difficulties.

The first joint attacks against malaria began in the 1950s.

It was the brainchild of the US State Department.

And the initiative was well aware of the economic challenges.

They knew they needed to focus on tools that were cheap and easy to use, so they focused on DDT.

They understood the cultural challenges.

Indeed, their rather patronizing view was that people at risk of malaria should not be asked to do anything.

Everything should be done to them and for them.

However, they greatly underestimated the scientific challenge.

They trusted their tools so much that they stopped studying malaria.

So when those tools started failing and public opinion started going against them, they didn't have the scientific expertise to figure out what to do.

The whole campaign collapsed and malaria raged again, but it was even worse than before as it was trapped in the hardest-to-reach places in its hardest-to-control form.

One WHO official at the time actually called the entire campaign "one of the biggest mistakes public health has ever made."

The latest efforts to control malaria began in the late 1990s.

Likewise, it is primarily directed and funded by outside the malaria community.

The effort now has a good understanding of the scientific challenges.

They do a lot of research on malaria.

And they also understand the economic challenges.

They focus on tools that are very cheap and very easy to use.

But now I think the dilemma is a cultural challenge.

The highlight of our current efforts is mosquito nets.

It has been treated with an insecticide.

It is distributed by millions of people worldwide for malaria.

And if you think about mosquito nets, it's a kind of surgical intervention.

It is of no value to families with malaria, other than to help prevent malaria.

Yet we ask people to use this net every night.

They have to sleep under it every night.

That's the only way it works.

And even if the net keeps the wind out, even if they have to get up in the middle of the night to go to the bathroom, even if they have to move all the furniture to set this up, even if they live in a round hut where it's hard to put up a square net, they have to.

If you're battling a deadly disease, it's no big deal.

So these are minor inconveniences.

But malaria patients don't think of malaria that way.

So for them the calculation should be something completely different.

For example, a group of well-meaning Kenyans came to us in the temperate world and said, 'You are suffering from common colds and flus.

We designed this great, easy-to-use and inexpensive tool. We offer it for free.

It's called a face mask and you only need to wear it every day to school and to work during the cold and flu season. ”

Would you like to?

And what did the people of the malaria world think when they first received those nets?

In fact, studies show that only 20 percent of the nets initially distributed were actually used.

And even that is probably overrated. Because the same people who distributed the nets returned and asked the recipients, "Oh, did you use the nets that I gave you?"

It's like Aunt Jane asking, "Did you use the vase I gave you for Christmas?"

So it's probably an overestimation.

But it is not an insurmountable problem.

We can do more education and persuade these people to use the net.

And that is what is happening now.

We are investing more time and money into workshops, trainings, musicals, plays, school assemblies, etc. to convince people to use the nets we have provided.

and it might work.

But it takes time. It takes money.

I need resources. You need infrastructure.

A cheap and easy to use mosquito net includes everything you never thought possible.

Thus, while it is difficult to attack malaria from within malaria-endemic societies, it is equally difficult to attack malaria from outside those societies.

We end up imposing our priorities on the people of the malaria world.

That's exactly what we did in the 1950s, and the effort backfired.

My point today is that when we distribute tools that we design that don't necessarily make sense for people's lives, we risk making the same mistakes again.

It's not that malaria is invulnerable. I think so. But what if we followed the priorities of people living with malaria to beat the disease?

Let's take the example of England and America.

Malaria has existed in those countries for hundreds of years, but it wasn't because we attacked it that we eliminated it completely. did not do it.

We attacked bad roads, bad houses, bad drainage, power shortages and rural poverty.

We have attacked the malaria prevalent lifestyle and in doing so have slowly eliminated it.

Attacking the malarial way of life now, this is something - these are things that people care about today.

And while attacking the malarial way of life is neither quick nor cheap nor easy, I believe it is the only permanent way forward.

Thank you very much.

(applause)

What I always think about is the theme of this session: Simplicity.

And mostly I say it's a simple idea, but in the best sense of the word.

I'm trying to figure out two very simple things. It's how you live and how you die.

That's all I try to do all day.

And I also try to eat, have snacks, yell at my kids, and do all the normal things to keep my feet on the ground.

So I was lucky to be born into a very dreamy child.

Her sister was busy torturing her parents, and her parents were busy torturing her.

I was lucky enough to be completely ignored. This is great, I actually want to tell you.

So I could totally fantasize my life.

And in 1967, at a very good time, I dreamed of finally getting into New York University. There I met a man trying to blow up the math building at New York University.

And I used to write terrible poems and knit sweaters for him.

And feminists hate us, and the whole thing sucked from start to finish.

But I kept writing bad poetry, and he didn't blow up the math building, but went to Cuba.

But I was from Riverdale and had more money than him, so I gave him the money.

(Laughter) It was good to help the cause.

But then he came back, things happened, and I decided I really hated my writing. It was terrible, terrible, purple prose.

And so I decided to tell. But I wanted to tell a story, and I wanted to tell my story.

So I decided to start painting. How hard would that be?

So what happened was that I started out as an editorial illustrator out of complete ignorance.

and started a studio.

Well, Thibor actually started a studio called M&Co.

And the premise of M&Co was, "We don't know anything, but that's okay, we'll try anyway."

And the truth is, knowing too much can get in the way, so it's better to know nothing.

So the studio's premise was that there are no boundaries, there are no fears.

And I, and my full-time job, was getting the best job on the planet, daydreaming, and actually coming up with ridiculous ideas. Luckily, there were enough people there, it was a team, a collective, and I wasn't the only one with crazy ideas.

But the point is, I was there as myself, as a dreamer.

So some things, I mean, M&Co's long history and obviously we needed to make some money too, so we decided to create a series of products.

And some of the watches out there try to be beautiful and humorous, maybe they don't, but they hopefully succeed.

It was very important to us to talk about the content, to break the normal expectations and to bring humor and surprise, grace and humanity into the work.

It's a very high level, very impersonal time in design and we wanted to say that it's not the packaging or the wrapping that counts, but the content.

You really have to be a journalist, you have to be an inventor, and most importantly you have to be imaginative.

So the good news is, I have a dog and I don't know if I believe in luck, but I don't know what. It's a very complicated question, but I know you purr your dog's tail 7 times before you leave.

So every time he finds a suitcase in the house, he runs to the other room because everybody, you see, always leaves, always whacking this wonderful dog's tail.

But the reason I can go back and forth from working for children and from working for adults to children and vice versa is because, you know, I'm immature, and in a way it's true.

I really don't understand. In other words, I didn't understand. I don't want to brag, but I didn't understand 95 percent of what was said at this conference.

But I'm taking pictures beautiful notes, and got some great onions from Murray Gell-Mann's talks.

There is also a beautiful page of scribbles from Jonathan Woodham's talks.

So good things come out of the lack of understanding -- (laughter) -- I paint it and it will be reflected in my work.

So I'm open to the possibility of discovering new things, things I don't know.

So writing for kids seems easy, and it really is.

One story usually needs to be condensed to 32 pages.

And all you have to do is really edit what you want to say.

And hopefully you don't speak in a way that disrespects children, and you don't read it once and you can't bear to read it anymore.

So, if possible, I would like to write books that are useful for both children and adults.

But this painting reflects that I don't think of children differently than I think of adults.

I try to use the same kind of imagination, the same kind of quirkiness, the same kind of love of language.

Well, I have a lot of nice looking friends.

This is Andrew Guts. He walked in through the door and I said, "You! Sit over there." You know, I take a lot of pictures.

And the Bertoia chair in the back is my favorite chair.

So you can pack everything you like.

I hope that the dialogue between adults and children happens on different levels and develops different kinds of humor.

And the book is just a diary of my life.

I don't like plots.

I don't understand the plot.

I can't stand the idea of ​​starting at the beginning, beginning, middle, ending. My life is so random and confusing that it really scares me, but I enjoy it.

Anyway, we are in Venice and this is our room. And I had a dream that I was looking out the window in this wonderful green dress and it was really beautiful.

So we could put that into this alphabet story and hopefully move on to something else.

The letter C contained other things.

I was also lucky enough to meet a man sitting on my bed. However, I gave him my hair here and he had no hair.

Well, he has some hair, but hey, he used to have hair.

And with him, I was able to do some really great projects.

I work for the New Yorker, and I also draw the cover. 9/11 happened. It was the complete and complete end of the world as we know it.

And Rick and I were on our way to a party in the Bronx, and someone said Bronxistan, someone said Ferreristan, and we came up with this New Yorker cover, and we got it—we didn't know what we were doing.

We weren't trying to be funny, we weren't trying to be funny, we were actually trying to be funny, but that's not true.

I was hoping it would be funny, but I didn't know it would be a cover. And the moment it happened, I didn't know that image would be so amazing for so many people.

And that was one of those moments where really--I don't know, people started laughing at what was going on.

And from Fattusi to Taxistan, from Fashtunk, Botoxia, Pashmina, Kryntunisia, we could occupy the city and make fun of this completely foreigner, who, what is going on here?

Who are these people? What are these tribes?

And David Remnick was really great at this, but there was one problem. He didn't like Alzheimer's because he thought it was an insult to people with Alzheimer's.

But we said, "David, who would know that?"

it's not. ”

(Laughter.) So it stayed that way, and you know, that was a good thing.

In life you never know what's going to happen, and that's kind of the beauty of it.

And we were on Cape Cod, which was obviously a great place of inspiration, and I picked up this book, The Elements of Style, at a yard sale.

And I didn't use it -- and I never used it at school. Because I was too busy writing poetry to slip out of school and sit in a cafe, I don't know what it was.

But I picked it up, started reading, and thought the book was great.

I said people should know about this book.

(Laughter) So I decided it needed some lifts and needed some illustrations.

And basically, I called the White Estate and convinced the White Estate. And, wow, Polish Jews, you know, like the main WASP family, intersected. I want to do something here with this book.

And they said yes and left me completely alone. It was so wonderful and wonderful.

And I basically made 56 paintings using the examples they gave as a reference.

So this, I don't know if you can read this.

“Well, Susan, you are in a terrible mess.”

And when dealing with grammar, which is, you know, incredibly dry. White wrote a very nice and quirky piece, actually wrote Strunk too, but when you get to the rules there are a lot of grammatical issues. "Do you mind if I ask you a question?

May I ask you a question? ”

"I would, could, should, or would, should, could."

And "would" is the subject of Coco Chanel's lover, "Should" is the subject of Edith Sitwell, and "could" is the subject of August Sander.

"He noticed a large stain in the center of the rug."

(Laughter.) So there's a low-key British murder mystery theme that I really love.

And, "Let's be clear and vague. Please rant as much as we can understand."

E.B. White wrote us some rules. It can paralyze you and make him hate you for the rest of the time, or you can ignore him (which I do), or you can do whatever you want, eat a sandwich.

So what I did while painting was I started singing. Because I really love singing and I think music is the highest form of all arts.

So I wrote 9 songs with this text to the wonderful composer Nico Muhly and we performed this wonderful evening. He wrote music for both amateurs and professionals.

I played clanking teacups and slinkies in the main reading room of the New York Public Library, where it must be very, very quiet, but it was an amazing event. I would like to play more if possible.

who knows? When I was asked to write a column for the New York Times Select editorial page, they said, "Do whatever you want."

So, for the past year, I've been writing a monthly column called The Uncertainty Principle. I don't know who Heisenberg is, but now I know I can throw it. It's the uncertainty principle.

I don't have much time, so I'll skim through a few columns and maybe edit them.

Basically, I had a lot of fun. Because I said, "How much space do you have?"

And they said, "Look, this is the Internet."

And I said, "Yes, but how much space do you have?"

And they said, "No limit, no limit."

OK. So, although I was very timid at first, I will start.

"How can I tell you everything that's on my mind?

Impossible to start. sufficient. No, let's start with the unlucky dodo. ”

And talk about the dodo, and how the dodo became extinct, and then talk about Spinoza.

"When the last dodo was dying, Spinoza was looking for a rational explanation for everything called eudaimonia.

And he died surrounded by his loved ones, and I know he also had chicken soup for his last meal. ”

I happen to know it as a fact.

And he died, and Spinoza was no more. extinction.

Then there is no stuffed Spinoza, but there is stuffed Pavlov's dog. I visited him at the Sanitary Museum in St. Petersburg, Russia.

And he stands in this fantastically dilapidated palace with a horrific electrical box on his butt.

"And I think it must have been a very, very dark day when the Bolsheviks arrived.

Perhaps there was some laughter among them, but Stalin was a more paranoid man than my father. ”

(Laughter.) You don't know either.

"And decided that the people at his top must be exterminated."

I think that's what I came up with, which is good.

So this is just a small graph, you know. Because this graph would go on forever about all the people he killed.

So I was shot, beaten in the head, and thrown out.

"Nabokov's family fled Russia. How could young Nabokov, sitting innocently and elegantly in a red chair, leafing through books and butterflies, imagine such a banishment, such a loss?"

And I want to tell you that this is a map.

"My beautiful mother's family also fled Russia.

Too many pogroms.

Leaving huts, wild blueberry forests, geese and slush rivers, they made their way to Palestine and then America. ”

And my mother drew this map of the United States for me. That's my DNA here. Because the person I grew up with didn't stand for facts.

Facts were actually banished from our home.

So when you see Texas, you know, Texas and California are under Canada and South Carolina is above North Carolina, this is the house I grew up in, okay?

So it's a miracle that I am here today.

But in reality this is not the case. That's really great.

But then she said Tel Aviv and Lenin, where they were from, and said, "Sorry, the rest is unknown, thank you."

But in her dictionary, "I'm sorry, I don't know the rest, thank you" is "I'm sorry, I don't know the rest, please go to hell."

(Laughter.) By "February impossibility," I mean February is a really miserable month in New York, and to me that image reminds me of really bad things.

Well, it's not that bad.

I received a box in the mail, it was wrapped in newspaper and the newspaper had a picture of a man and he was dead.

And I say: "I hope he really isn't dead. Just laying in the snow and having some fresh fun, but the caption says he's dead."

And indeed he was. I think he died, I don't know, maybe not.

"And this woman crouches in agony not about the man, but about all the sad events. It happens a lot in February."

There is comfort.

This man is angry because someone threw an onion all over the stairs. Basically, you know, I think onions are the theme here.

And he says, "It is impossible not to lie.

It's February now and it's impossible not to lie."

And I spend so much time wondering how far we are telling the truth.

What are we really and what story are we really telling?

How can we know who we are?

How can we really know that these sentences that come out of our mouths are real stories, real sentences?

Or is it a bogus sentence that we think we should say?

I'll do it right away.

Bertrand Russell Quote: “All labor, all dedication, all inspiration, all human genius noonday brilliance of all ages is destined to perish.

Now, my friends, if it's true, and if it's true, what does it all mean? ”

It's a complicated question.

So I talk to my friends and go to theaters where they sing Russian songs.

What do you know?

No, I don't have time.

I recorded my aunt. I recorded my aunt singing a song in Russian.

Is it?

(music) Okay. My aunt swam in the sea every day until she was about 85 years old.

So this is a song about how miserable everyone is because we are from Russia.

(Laughter) I visited Kitty Carlisle Hart and she was 96. When he brought me the book The Elements of Style, he said he would cherish it.

Then I said - oh, she was talking about Moss Hart, and I said, 'When you met him, you knew it was him.

And she said, "I knew it was him."

(Laughter) So I should have kept the book, but it was a really great moment.

And she was dating George Gershwin, so get out.

Gershwin died at the age of 38.

He is buried in the same cemetery as my husband.

I don't want to talk about it now.

Let me tell you, what makes this cemetery cake even more remarkable is the nearby Baricini family mausoleum.

I think the Baricini family should open a shop there and sell chocolate.

(laughs) And I want to do it for them.

Then I visited Louise Bourgeois. She's still working too, but seeing her sink was really cool. and left the place.

Then I take a picture of a sofa on the street and draw a picture.

And Lolita, the woman who lives on our street.

Then go have some tea.

And then Aunt Francis died, and before she died, she tried to pay for her bagels with packets of Sweet'N Low.

(Laughter) And in case you were wondering, it turns out that Hy Meilowitz, the father of Rick Meilowitz, a dry-cleaning salesman from the Bronx, won a Charlie Chaplin look-alike contest in 1931.

It's actually high.

And I look at the beautiful bowl of fruit and the dress I sewed for my friend.

And it says ``Ich habe genug'' in Bach's cantata, but I thought it meant ``I can't take it anymore.

It means "enough is enough". And it is absolutely true.

I happen to be alive, discussion is over. thank you.

(applause)

Here are some of the latest and most nefarious works of cybercriminals.

Basically, don't download the viruses I introduce.

I'm sure some of you are wondering what it's like to be a cybersecurity specialist, so I'd like to give you a quick overview of my career so far.

That's a pretty accurate description.

This is what someone who specializes in malware and hacking looks like.

Computer viruses and Trojans are now designed to do everything from stealing data to webcam surveillance to stealing billions of dollars.

Some malicious code now targets power, utilities, and infrastructure.

Here's a quick rundown of what malicious code can look like today.

Currently, 8 new users are joining the Internet every second.

Today we will see 250,000 new computer viruses.

30,000 new websites will be infected.

And to break the myth here, many people believe that they get computer viruses because they visit porn sites.

right? In fact, statistically speaking, you are safe if you only visit porn sites.

By the way, people usually write it down. (Laughter) In fact, about 80% of these infected small business websites.

What does today's cybercriminal look like?

Now, many of you probably have an image of a speckled teenager sitting in a basement hacking for notoriety.

But in reality, today's cybercriminals are surprisingly professional and organized.

In fact, they advertise their products.

You can go online to buy hacking services and take your business competitors offline.

Check out this I found.

(Video) Man: So you're here for one reason. The reason is business competitors, rivals, haters, or any other reason or who needs to be let down.

Well you, my friend, you've come to the right place.

If you want to let your business competitors down, you can.

If you want to take your rivals offline, you will.

Beyond that, we offer short to long-term DDOS services or planned attacks from $5/hour for small personal websites to $10-$50/hour.

James Lyne: Well, I actually paid one of the cybercriminals to attack my website.

When I tried to make it an expense at the company, it became a little troublesome.

Turns out it's not cool.

But despite this, the number of products and services available to cybercriminals today is staggering.

For example, this testing platform allows cybercriminals to test the quality of viruses before releasing them to the world.

You just have to pay a small fee to upload it and make sure everything is fine.

But there is more.

Cybercriminals now rely on crime packs with business intelligence reporting dashboards to manage the distribution of malicious code.

This is the Black Hole Exploit Pack, the market leader in malware distribution, accounting for nearly a third of malware distribution in the last few quarters.

Includes technical installation guide, video setup routine, and technical support.

Email cybercriminals and they will tell you how to set up illegal hacking servers.

So let's show you what malicious code looks like today.

There are two systems here. The attacker was made to look Matrix-ish and scary. Another is the victim. You may recognize them from home or work.

Normally these would be on different sides of the globe or the internet, but I put them side by side because it makes things more interesting.

Well, there are many ways to get infected.

You may have come into contact with some of them too.

You may have received an email saying, "Hi, I'm a banker from Nigeria. I love your face and would like to donate $53 billion."

Alternatively, funnycats.exe is rumored to have been very successful in China's recent campaign against the United States.

Now there are many ways to get infected.

I would like to introduce some of my favorites.

This is a small USB key.

So how do you get a USB key to use within your company?

Well, it would be nice to try to look really cute.

Oh wow.

Or, in my case, awkward and pathetic.

So imagine the following scenario: I walked into one of your companies very awkwardly and pathetically with a copy of my resume.

Having covered it with coffee, I asked the receptionist to plug in this USB key and print a new one.

Now let's take a look at my victim's computer.

What you do here is connect the USB key.

After a few seconds, your computer will start having problems automatically, which is usually a bad sign.

Of course, this happens very quickly, usually within a few seconds, but I've slowed it down a bit so you can see the attack actually happening.

Malware is otherwise very boring.

Now the malicious code is written out, and after a few seconds you can see that the left side shows interesting new text on the attacker's screen.

If you hover your mouse cursor over it, this is the so-called Command Prompt, which you can use to move around your computer.

We have access to your documents and data.

You can turn on your webcam.

It can be very embarrassing.

Alternatively, to really prove the point, you can launch a program like my personal favorite, Windows Calculator.

Isn't it amazing how much control an attacker can gain with such a simple operation?

Let me explain how most malware is distributed today.

What I'm trying to do is open a website I wrote.

It's a terrible website. It has really bad graphics.

There is a comment section here where you can submit your comments to the website.

Many of you have probably used something similar to this before.

Unfortunately, when this was implemented, the developers were a little drunk and forgot all the secure coding practices they had learned.

So let's imagine an attacker called Evil Hacker for its comedic value only inserts something a little more nasty.

This is a script.

This is the code that is interpreted on the web page.

So I sent this post, opened a web browser on the victim's computer and browsed to my website www.incrediblyhacked.com.

Note that you will be redirected after a few seconds.

The website address at the top turns out to be microshaft.com, but hitting one of these exploit packs crashes the browser and launches a fake antivirus.

This is a virus masquerading as antivirus software that scans through your system. See what you see here.

A very serious alert is generated.

Ah, a child pornography proxy server.

Really should clean it up.

What's really insulting about this is that it not only gives the attacker access to your data, but once the scan is finished, it tells you that you need to register your product to get rid of the fake virus.

Now, I liked it better when it was virus free.

(Laughter) People are paying cybercriminals to run viruses now, which I think is totally weird.

Anyway, let me change the pace a little.

Note here that tracking 250,000 pieces of malware in a day is a huge challenge, and that number only increases in direct proportion to the length of my stress line.

So I'd like to briefly talk about a group of hackers we've tracked for a year and actually found. This is unusual in our work.

Well, this was a cross-industry collaboration between people at Facebook, independent researchers, and people at Sophos.

Here are some documents that cybercriminals have uploaded to cloud services like Dropbox and SkyDrive that many of you are using.

You can see that there is a section of source code at the top.

It sends a daily text message to cybercriminals telling them how much they earned that day, sort of like a cybercrime claims report.

If you look closely, you'll notice a row of Russian phone numbers.

This is obviously interesting. Because it gives you a way to find cybercriminals.

It is this bit "leded:leded" that is highlighted in red in other sections of the source code below.

This is a username like the one used on Twitter.

So let's take this a little further.

There are some other interesting creations uploaded by cybercriminals.

A lot of people here use their smartphones to take pictures of the conference and post them.

An interesting feature of many modern smartphones is that when you take a picture, it embeds GPS data about where the picture was taken.

In fact, I spend a lot of time on internet dating sites these days, apparently for research purposes. I noticed that about 60% of profile pictures on internet dating sites include the GPS coordinates of where the picture was taken. I'm a little scared because I can't give out my home address to a stranger, but I'm happy to share my GPS coordinates to plus or minus 15 meters.

And our cybercriminals were doing the same.

Here is a picture that applies to St. Petersburg.

Then we introduce some incredibly advanced hacking tools.

we used google.

Using your email address, phone number and GPS data, you will see an ad for a BMW for sale by one of the cybercriminals on the left and an ad for a Sphynx kitten for sale on the other.

One of them was more typical for me.

Search a little more and you'll find cybercriminals.

Please try to imagine. These are hardy cybercriminals who share little information.

Imagine what you can find out about each person in this room.

Search the profile some more and you'll find pictures of the office.

They were working on the 3rd floor.

You can also see some photos from his business associates, and he has a penchant for certain images.

It turns out that he is a member of the Federation of Adult Webmasters of Russia.

However, this is where our investigation begins to stall.

Cybercriminals lock down their profiles very well.

And here is the biggest social media and mobile device lesson for all of us right now.

Even when we are doing the right thing, our security can be breached by friends, family and colleagues.

This is MobSoft, one of the companies owned by this cyber criminal gang. What's interesting about MobSoft is that 50% of the owners of this company have posted job ads, and this job ad matched one of the phone numbers in the previous code.

This woman is Maria, and Maria is the wife of a cybercriminal.

And it's like she went into the social media settings and clicked every possible option to make herself really, really insecure.

By the end of our investigation, we also had photos of the cybercriminal and an out-of-office office Christmas party. You can read the full 27-page report at this link.

Yes, it turns out that cybercriminals are actually throwing Christmas parties.

Now, you're probably wondering what happened to these guys.

More on this later.

Finally, I'd like to move on to a little demo. This technique is wonderfully simple and basic, but it's interesting because it reveals just how much information we put out, and it makes sense because it applies to us, the TED audience.

This is usually when people desperately try to put their phones in airplane mode and start kind of dragging them in their pockets.

Many people are familiar with the concept of scanning for wireless networks.

Do this every time you take out your iPhone or Blackberry and connect it to something like TEDAttendees.

But what you might not know is that even when you're not actively using wireless, it's also sending you a list of previously connected networks.

So I did some scanning.

Compared to cybercriminals, I was relatively contained. Cybercriminals are less of a concern in law. Here you can see my mobile device.

have understood? You should now see a list of wireless networks.

TED attendee, Hyatt LB. where do you think i am

I think PrettyFlyForAWifi is a great name for my home network.

Sophos\_Visitors, SANSEMEA, the company I work with.

Loganwifi, located in Boston. Hilton London.

CIA surveillance van.

We called it that at the conference because we thought it would surprise people. This is a lot of fun.

This is how nerds party.

Now let's make this a little more interesting.

Let's talk about you

23% have recently visited Starbucks and used the wireless network.

Things get even more interesting.

46 percent of you can link to the Corporate XYZ employee network.

It's not an exact science, but it's pretty accurate.

761 of you were able to pinpoint a recent hotel somewhere on the planet.

234 of you, I know where you live.

Your wireless network name is so unique that I was able to determine it using publicly available data on the internet without hacking or clever tricks.

And I should also mention that some of you are using your own name, for example, "James Line's iPhone".

And 2 percent of you are prone to extremely profane language.

So the question is, how much are we sacrificing convenience, privacy, and security when we adopt these new applications, mobile devices, and play with shiny new toys?

The next time you install something, look at your settings and ask yourself, "Is this information you want to share?"

Could someone exploit it? ”

You also need to think carefully about how you will develop your future talent pool.

Technology is changing at an alarming rate, and 250,000 pieces of malware won't stay the same for long.

A very disturbing trend is that while many people leaving school today are tech-savvy and know how to use technology, fewer and fewer follow feeder subjects to learn how that technology works under the hood.

The UK has seen a 60% reduction since 2003, with similar statistics around the world.

Legal issues in this area also need to be considered.

The cybercriminals I spoke to, despite stealing millions of dollars, haven't actually been caught yet, and probably won't at this point.

Despite the conventions on cybercrime, most laws are based on national law in their enforcement, even though the internet is by definition borderless and international.

This is a very difficult area from a legal point of view, as countries do not agree.

But my biggest question is this: Look, you're leaving here and you're going to see some amazing stories in the news.

You're about to read about malware that does some incredibly terrifying and terrifying things.

But 99% of the time it works because people neglect the basics.

So my question is: Go online and discover these simple best practices to find out how to update and patch your computer.

Get a secure password.

Always use a different password for each online site or service.

Find these resources. apply them.

The Internet is a wonderful resource for business, political expression, arts and learning.

Help me and the security community make life more difficult for cybercriminals.

thank you.

(applause)

Do you think it is possible to control someone's attention?

And what about predicting human behavior?

I think those are interesting ideas.

To me, it's the perfect psychic, but it's actually kind of a wicked way of approaching it.

But for the last 20 years, I have studied human behavior through the rather unconventional method of making money.

When we think of misdirection, we think of something as looking sideways, but in reality what is in front of us is often the hardest to see and is what we see blindly every day.

For example, how many people still have mobile phones?

wonderful. Please double check.

Please check if you still have it.

I was shopping before.

(laughs) You've seen it several times today, and I have a question for you.

Haven't seen it in person yet, but remember the icon in the bottom right corner?

Take them out and check them out to see how accurate they were.

how was it?

Close them when you're done.

All phones have something in common.

No matter how you organize your icons, you'll still see a clock in the foreground.

So without looking at your phone, what time was it?

Did you just look at your watch?

Interesting idea.

close your eyes.

I just heard that there are pickpockets in the room and I know you're asking me to, but please close your eyes.

Well, you were looking at me for about 30 seconds.

Close your eyes, what am I wearing?

Take your best guess.

What color is my shirt? What color is my tie?

Now open your eyes.

Hands up, were you right?

Interesting.

Some of us seem to be a little more sensitive than others.

However, I have a different theory about that attentional model.

They have a featured flashy model, Posner's featured Trinity model.

For me, I like to think very simply, like a surveillance system.

It's like having all these fancy sensors and a little guard in your brain.

For me, I like to call him Frank.

So Frank is sitting at his desk.

He has a lot of cool information, high-tech gadgets, cameras, little cellphones in front of him that he can pick up and listen to with his ears, all his senses, all his perceptions.

But attention is what directs your perception, which is what controls your reality.

If you don't pay attention to something, you can't recognize it.

But ironically, you can focus on something without being aware of it.

For example, the cocktail effect: you're at a party and you're conversing with someone and you recognize your own name without realizing you're listening.

Now, in my job, I have to use techniques that exploit this to get your attention as a limited resource.

So if you could control how you use your attention, if you could steal your attention with a distraction.

Now, instead of throwing it aside like misdirection, my focus instead is on Frank, playing with Frank in my head, my security guard, so that I can go inward for a moment instead of focusing on the feeling outside.

So when you say access your memory, what is it?

what happened now? Do you have a wallet?

Do you have American Express in your wallet?

And when I do, your Frank turns around.

he accesses the file He has to rewind the tape.

The interesting thing is that you can't rewind the tape while processing new data.

This sounds like a good theory, but I can talk for a long time and say a lot, and some of it may be true, but I think it's better to show it live here.

When I get off, I'm going to do some shopping.

Just stay still.

Hello how are you? nice to see you.

great job on stage.

It's a nice watch, but it doesn't come off very well.

do you have a ring too?

good. I'm just doing an inventory. you are like a buffet.

There are so many great things I don't know where to start.

Hello how are you? I'm glad to meet you.

Hello sir, could you please stand? right where you are.

Since you are married, follow the instructions carefully.

Nice to meet you, teacher.

I don't have much in my pocket. is there anything here?

I hope so. sit down. Here you go. I'm fine.

Hello teacher, how are you?

Nice to meet you, sir. you have a ring and a watch

do you have a wallet? Joe: No.

AR: Well, we'll look for it. Come over here, Joe.

Let's give Joe a round of applause. Come on, Joe. Let's play games.

(Applause) AR: Excuse me.

I don't think you need this clicker anymore.

thank you very much. I am grateful.

Come on stage, Joe. Now let's play a little game.

Do you have anything in your front pocket?

AR: Money! ok, let's try it.

Can you stand right over here?

Looking back, see, if I give you anything that belongs to me, this is just what I have, a poker chip.

Please reach out for me

This is a task that you should concentrate on.

Do you have money in your front pocket?

J: Yes. AR: Good.

I don't put my hand in your pocket. I am not ready to make such a promise.

I had a hole in a man's pocket once and it was pretty traumatic for me.

I wanted his wallet and he gave me his number.

big misunderstanding.

Can you feel the poker chips in your hand?

J: Yes.

J: Yes. AR: Good.

open your hands thank you very much.

If I have the chance, I will cheat.

make it harder for me use your hands

Grab my wrist, but squeeze it tight.

Have you seen it go? Joe: No.

AR: No, not here. open your hands

It's on your shoulder while we focus on the hand.

Please take off your clothes.

Let's try again.

Extend your hand flat. Please open it.

Raise your hand a little higher, but look closer.

If you do it slowly, it will ride on your shoulders.

(laughter) Joe, we'll keep doing this until you get it.

You'll get it eventually. i believe you.

I'm back on my shoulders.

You were focused on your hands and distracted.

I couldn't take off your watch while you were watching.

I still had something in my pocket.

Do you remember what it was?

J: Money.

AR: Check your pockets. Do you still have it?

(laughs) Oh, yes. Put away.

We are just shopping.

I will push it into my hand.

It's surprisingly clear.

It looks a lot like the watch I was wearing.

(Laughter) (Applause) J: That's very good. AR: Oh, thank you.

(Applause.) But that's just the beginning. Let's try it a little differently.

Please put your hands together. Place your other hand on top.

If you're looking at this little token, you can clearly see that it's a small target like a red herring.

If you look at it from such a close distance, it seems to disappear.

It's not like I'm back on my shoulders.

It falls out of the air and quickly returns to your hand.

Have you seen it go?

Yeah, that's interesting. I have a little boy in my house. He is a union member and works there all day.

If you do it slowly, it will go quickly and land in your pocket.

Do not put your hands in your pockets. That's another show.

(squeaking) That's pretty weird. They have shots for that.

can i show you Rather strange. is this yours?

I don't know how it works. I'll send it over there.

I need help with this.

walk here for me

don't run away I had something in my pants pocket.

I was checking mine. I didn't find everything, but I noticed something here.

Can I feel the atmosphere outside for a moment?

Here I have noticed this. is this yours?

I have no idea. It's shrimp.

J: Yes. Save it for later.

AR: You've entertained all of these people in a better way than you think.

I would love to give this lovely watch as a gift.

(laughs) I hope it suits his taste.

There are a few others, but you need a little cash.

There are several others. These are all yours. And a big round of applause from all your friends.

(Applause) Thank you, Joe.

(Applause) (End of applause) So, I asked you the same question before, but this time you don't have to close your eyes.

what am i wearing

Audience: Oh!

(Laughter) (Hesitant applause) (End of applause) Attention is a powerful thing.

As I said earlier, it shapes your reality.

So I would like to pose that question to you.

If you could control someone's attention, what would you do with it?

thank you.

(applause)

So robot.

Robots can be programmed to perform the same task millions of times with minimal error, which is very difficult for us, right?

And it's very impressive to see them at work.

please look.

You can watch it for hours.

no?

The less impressive thing is that this can happen when you take these robots out of an unmeasured factory where the environment is not fully known like here and perform even simple tasks that don't require a lot of precision.

That means you don't need a lot of precision to open the door.

(Laughs) Or if there was a small error in the measurements, I would miss the valve and that's it. (Laughter) Most of the time there is no way to recover.

Why?

Over the years, robots have been designed for speed and precision, and this is reflected in their very specific architecture.

Take a robotic arm for example, it is a set of very well-defined rigid links and motors, so-called actuators, that move the links around their joints.

This robot architecture requires full measurement of the environment and every movement of the robot's joints must be perfectly programmed. A small error can cause a very large disturbance, so something can be damaged, or if something is more difficult, the robot.

Now let's talk a little bit about them.

And don't think about the brains of these robots or how carefully we program them, but rather focus on their bodies.

There is clearly something wrong with this. Because what makes robots accurate and powerful is also tremendously dangerous and helpless in the real world, as their bodies cannot deform or adapt well to interact with the real world.

So consider the opposite approach. Be softer than everyone around you.

Well, you may think that you can't really do anything if your body is soft, maybe.

Well, nature tells us the opposite.

For example, at the bottom of the ocean, under thousands of pounds of hydrostatic pressure, perfectly soft animals can move and interact with objects much harder than themselves.

He carries around this palm shell thanks to the flexibility of his tentacles, which act as feet and hands.

And apparently octopuses can open bottles too.

Pretty impressive, isn't it?

But obviously this is realized not only by the brain of this animal, but also by the body, and is a clear example, perhaps the clearest example, of embodied intelligence, the kind of intelligence that all living things possess.

we all have it.

Our body, its shape, materials and structure play a fundamental role in performing physical work. Because we adapt to our environment and can thrive in many situations without much planning or calculation beforehand.

So why not embed some of this embodied intelligence into robotic machines, freeing them from reliance on excessive computation and sensing tasks?

To do so, we can follow nature's strategy. Because nature, along with evolution, has done a very good job in designing machines for interaction with the environment.

And it is easy to notice that in nature soft materials are used frequently and hard materials sparingly.

And that's what's going on in this new field of robotics called "soft robotics," whose main goal isn't to build ultra-precise machines just because we already have them, but to enable robots to face and go to unexpected situations in the real world.

And what makes a robot soft is, firstly, its flexible body is made of a material or structure that can undergo very large deformations, thus eliminating the need for rigid links, and secondly, it uses what is called distributed actuation to move them, so the shape of this highly deformable body must be continuously controlled, which has the effect of having many links and joints, but no rigid structure at all.

We can therefore imagine that building a soft robot is a very different process than a rigid one, where links, gears and screws must be combined in a strictly defined way.

Soft robots, in most cases, just build actuators from scratch, but mold flexible materials into shapes that respond to specific inputs.

For example, here you can deform structures that have fairly complex shapes, considering doing the same with rigid links and joints. We only use one input here, such as air pressure.

Now let's look at some cool examples of soft robots.

This is a little cutie developed at Harvard University. You walk thanks to pressure waves applied along your body. Also, because of its flexibility, it can crawl under a low bridge and continue walking, then continue walking in a slightly different way.

It's a very preliminary prototype, but we've also built a more robust version with a power supply that can actually be sent out around the world and face real-world interactions like cars passing over it...

and keep working.

cute.

(Laughter) Or there are robotic fish that swim like real fish swim in water, simply because they have soft tails that use static air pressure to disperse actuation.

It's from MIT and of course has a robotic octopus.

This was in fact one of the first projects developed in this new field of soft robotics.

You can see the artificial tentacles here, but they actually built a whole machine with a few tentacles that you just throw into the water. And you can see that it kind of moves and can explore the ocean floor in a different way than rigid robots do.

However, this is very important for delicate environments such as coral reefs.

Let's go back to the ground.

Here you can see the view from a growing robot developed by a colleague at Stanford University.

You can see that the camera is fixed on the top.

A feature of this robot is that it uses air pressure to grow from the tip while the rest of the body remains in firm contact with the environment.

And because this one is inspired by plants rather than animals, and grows through materials in a similar way, it can face a wide variety of situations.

However, I am a biomedical engineer and probably my favorite application is in the medical field. For example, it is very difficult to imagine a closer interaction with the human body than actually entering the body to perform a minimally invasive procedure.

And here, robots are very helpful for surgeons. This is because robots must enter the body using small holes and straight instruments, these instruments must interact with very delicate structures in highly uncertain environments, and this must be done safely.

Also, to bring the camera inside the body, it can be very difficult to bring the surgeon's eyes into the surgical field when using a rigid stick like a traditional endoscope.

I collaborated with a previous research group in Europe to develop this soft camera robot for surgery. This is very different from a classical endoscope, allowing movement thanks to the flexibility of the module, which can bend in any direction and even extend.

This was actually used by surgeons to see from different perspectives what they were doing with other instruments without worrying too much about what they were touching around them.

And here we see a soft robot in action. And it just goes inside.

This is a body simulator, not a real human body.

It goes round and round.

You have light because normally there is not that much light in the body.

we hope.

(Laughter) But in some cases, surgery is done with a single needle. Stanford University is currently working on developing highly flexible needles, much like tiny soft robots that are mechanically designed to use tissue interaction to navigate within solid organs.

This makes it possible to reach a variety of targets, such as tumors deep within solid organs, using a single insertion point.

You can also maneuver around structures you want to avoid on the way to your goal.

So obviously these are very exciting times for robotics.

This poses a new and very challenging problem for the robotics community as our robots have to deal with soft structures and indeed we are just beginning to learn how to control and attach sensors to these very flexible structures.

But, of course, we're not even close to what nature has found in millions of years of evolution.

But one thing I do know for sure. Robots will become softer, safer and help people.

thank you.

(applause)

This is our life with bees and this is our life without them.

Bees are the most important pollinators of fruits and vegetables, flowers, and crops such as alfalfa hay that livestock feed on.

More than a third of global crop production depends on bee pollination.

But ironically, bees don't intentionally pollinate our food.

They are out because they need to eat.

Bees get all the protein they need in their diet from pollen and all the carbohydrates from nectar.

They are flower-eating animals, basically moving from flower to flower on shopping trips to the local flower market, while ultimately providing this valuable pollination service.

In areas of the world that are bee-free or planted with unattractive cultivars, people are paid to do manual pollination.

These people are using paintbrushes to transfer pollen from flower to flower.

Now, this business of hand-pollination is actually not that uncommon.

Tomato growers often use hand-held vibrators to pollinate tomato flowers.

Well, this is a tomato tickle. (Laughter) This is because the pollen in the tomato flower is held tightly in the male part of the flower, the anther, and the only way to release this pollen is to vibrate it.

So, bumblebees are one of the few bees in the world that can grab and vibrate flowers, and they do this by vibrating their flight muscles at frequencies similar to the C of musical notes.

There they vibrate the flowers, sonicate them, and expel the pollen in an efficient noise. The pollen then gathers in the bee's fluffy body, and the bee takes it home as food.

Tomato growers now set up bumblebee colonies in their greenhouses to pollinate their tomatoes, because natural pollination is much more efficient and yields higher quality tomatoes.

So there is another, perhaps more personal, reason to care about bees.

There are over 20,000 species of bees in the world, and they are truly beautiful.

These bees spend most of their lives hidden underground or in hollow stems, but few of these beautiful species have evolved such highly social behaviors as bees.

Today, bees tend to be charismatic representatives of more than 19,900 other species. Because there is something about bees that draws people into their world.

Since recorded history, mankind has been fascinated by bees, whose primary purpose was to harvest honey, an amazing natural sweetener.

I was completely drawn into the world of bees.

I was 18 and bored. I picked up a book about bees at the library and read all night long.

I never thought about insects living in complex societies.

It was like the best science fiction come true.

And even stranger, there were beekeepers who loved their bees like family. When I put the book down, I knew I had to see this with my own eyes.

So I started working for a commercial beekeeper with 2,000 hives in New Mexico.

And I was hooked forever.

Bees can be thought of as superorganisms, colonies being organisms, made up of 40,000-50,000 individual bee organisms.

There is no central authority in this society now.

no one is in charge

All of their collective social behavior is amazing: how they make collective decisions, how they assign and divide jobs, and how they communicate where flowers are.

One of my personal favorites, and something I've studied over the years, is their healthcare system.

So bees have social medicine.

Therefore, in my laboratory, I am researching how honeybees maintain their health.

For example, we study hygiene, and some bees can find sick individuals and remove them from the hive or colony, thereby keeping the colony healthy.

And most recently, he's been studying resins that bees collect from plants.

There, bees fly to some plants to scrape the very sticky resin off the leaves and bring it back to the hive, where it adheres to the hive structure we call propolis.

We have discovered that propolis is a natural antiseptic.

It's a natural antibiotic.

It kills bacteria, molds and other bacteria within the colony, thus enhancing colony health and social immunity.

Mankind has known about the power of propolis since biblical times.

We've been collecting propolis from bee colonies for human medicine, but we didn't know how good it would be for bees.

Therefore, honeybees have amazing natural defenses that have kept them healthy and prosperous for over 50 million years.

So seven years ago, when bee colonies were first reported in the United States dying en masse, it was clear that something was really, really wrong.

We know in our collective conscience that we cannot afford to lose bees in a very primitive way.

what happened?

Bees die due to multiple interactions. I will explain each cause.

The bottom line is that bee deaths reflect a flowerless landscape and a dysfunctional food system.

I got the best data on bees, so I'll use that as an example.

In fact, bees in the United States have continued to decline since World War II.

The number of hives under management in the United States today has halved since 1945.

The number of beehives is thought to have been reduced to about 2 million.

The reason is that after World War II we changed the way we farmed.

We stopped planting cover crops.

We stopped planting clover and alfalfa, natural fertilizers that fix nitrogen in the soil, and started using synthetic fertilizers instead.

Clover and alfalfa are nutritious plants for bees.

After World War II, he started using herbicides to kill weeds on his farm.

Many of these weeds are flowering plants that bees need to survive.

And we started growing monocultures of larger and larger crops.

Now we are talking about food deserts, urban locations, areas without grocery stores.

The very farms that once fed bees are now agricultural food deserts, dominated by one or two plant species such as corn and soybeans.

Since World War II, we have systematically eliminated many of the flowering plants that bees need to survive.

And these monocultures extend to bee-friendly crops like almonds.

Fifty years ago, beekeepers brought several colonies, or hives of bees, into almond orchards for pollination. Also, almond flower pollen was very rich in protein. It's really good for bees.

At present, the scale of the almond monoculture would require transporting most of our country's bees, over 1.5 million beehives, across the country to pollinate this single crop.

Almond orchards become vast, flowerless landscapes after flowering, so they must be trucked in and trucked out semi-loaded.

As bees continue to go extinct over the last 50 years, we are planting more crops that need them.

Crop production that requires bee pollination has increased by 300%.

Then there are pesticides.

After World War II, we started using pesticides on a large scale, but we needed them because of monocultures, which the pests of the crop rejoiced.

Recently, researchers at Pennsylvania State University began looking for pesticide residues in the large amounts of pollen that bees bring back for food, and found that every batch of pollen collected by the bees contained at least six detectable pesticides. This includes all kinds of pesticides, herbicides and fungicides, as well as inert and unlabeled ingredients that are part of pesticide formulations that may be more toxic than the active ingredients.

This little bee holds up a big mirror.

How long does it take to contaminate a human?

One of these classes of pesticides, neonicotinoids, is currently making headlines around the world.

You've probably heard of it.

This is a new kind of insecticide.

As they move through the plant, leaf-eating insects that are pests of the crop will bite the plant, ingest a lethal dose and die.

When one of these, called neonics, is applied at high concentrations, such as in this ground application, enough of the compound can migrate through the plant and into the pollen and nectar, causing bees to ingest, in this case, high doses of this neurotoxin, causing convulsions and death.

In most agricultural environments, on most farms, only the seeds are coated with pesticides, so smaller concentrations migrate through the plant and into pollen and nectar. If the bees ingest doses lower than this, nothing will happen or they may become drunk, disoriented and unable to return home.

And above all, bees have their own diseases and parasites.

This is the bee's biggest enemy.

It's called the varroa destructor.

It's a perfect name.

It is this large blood-sucking parasite that weakens the bee's immune system and allows the virus to spread.

Let's put this all together.

I don't know what it feels like for a bee to have a large blood-sucking parasite running over it. We also don't know what it feels like for a bee to be infected with a virus. But I know how it feels when you have a virus or the flu, and I know how difficult it can be to go to the grocery store to get enough nutrition.

But what if you live in a food desert?

And what if you had to travel long distances to get to the grocery store and finally let your weakened body out and ingested so much of the pesticides and neurotoxins in your food that you can't go home?

This is what multiple interacting causes of death mean.

And it's not just our bees.

All of our beautiful wild bees are at risk, including the bumblebees that pollinate our tomatoes.

These bees are backing up our bees.

They offer pollination insurance with our bees.

We need all bees.

So what shall we do?

What are you going to do with this big bee nuisance we made?

There seems to be hope. You have hope.

Each of you can help bees in two direct and easy ways.

Plant bee-friendly flowers and do not contaminate this flower or bee food with pesticides.

Therefore, go to the Internet, search for flowers native to your area and plant them.

Plant it in a pot by your front door.

Plant it in your front yard, lawn or boulevard.

Campaign to plant them in public gardens, community spaces and meadows.

Secure your farmland.

You want beautiful, diverse flowers that bloom throughout the growing season, from spring to fall.

Roadside flower seeds need to be planted not only for bees, but also for migratory butterflies, birds and other wildlife.

And you need to think carefully about putting cover crops back in to nourish the soil and bees.

And we need to diversify our farms.

We need to plant rows of flowering crop borders and hedgerows to destroy the agricultural food desert and begin to fix the dysfunctional food system we have created.

So perhaps this might seem like a very small solution to a big, big problem, just planting flowers, but if bees can get enough nutrition, so can we through bee pollination services.

And when bees get access to good nutrition, they can better utilize the natural defense they have depended on for millions of years: healthcare.

To me, the beauty of helping bees in this way is that each of us needs to act a little more like a bee society, an insect society. It is here that our individual actions can contribute to grand solutions, emergent fortunes, far greater than the mere sum of our individual actions.

So let the small act of planting flowers and keeping them pesticide-free become engines of large-scale change.

On behalf of the bees, I would like to thank you.

(Applause) Chris Anderson: Thank you. Just a quick question.

Are the latest numbers on bee mortality a sign that the situation is bottoming out?

What is your hope/depression level about this?

Maria Spivak: Yes.

At least in the United States, an average of 30 percent of all beehives are lost each winter.

About 20 years ago we were 15% in the red.

So it's becoming unstable.

CA: It's not 30 percent per year, so -- MS: Yes, 30 percent per year.

CA: 30 percent per year. MS: But beekeepers can split their colonies so they can keep the same numbers and recoup some of the losses.

We are at a tipping point of sorts.

We can't afford to lose more people.

We really need to thank all the beekeepers. plant flowers

K: Thank you.

(applause)

Eric Berlow: I'm an ecologist, Sean is a physicist, and we both study complex networks.

And when we met a few years ago, we had given each other a short TED Talk on the ecology of war and realized that we were connected by ideas we had shared even before we met.

And we wondered if there were thousands of other talks, especially TEDx talks, taking place around the world.

How are they connected and what is that global conversation like?

So here's a little bit about how Sean did it.

Sean Gorrey: That's right. So we collected 24,000 TEDx talks from 147 countries and around the world, listened to these talks, and hoped to discover the underlying mathematical structure of the ideas behind them.

And we wanted to do that to see how they were connected to each other.

So, of course, you're going to need a lot of data when doing this sort of thing.

So the data that you have is this wonderful thing that is YouTube, and you can basically pull all the public information from YouTube, all the comments, all the views, who is watching, where they are watching, what they are saying in the comments, and so on.

But you can also use speech-to-text translation to get the entire transcript. This works even for people with funny accents like me.

So we can take their records and actually do some very nice things.

A computer can read natural language processing algorithms line by line and extract key concepts from them.

We then take these key concepts to form the mathematical structure of our ideas.

And we call it memeomeme.

And the meme-ohm, very simply, is the underlying mathematics of an idea, with which we can do some very interesting analysis. I would like to share it with you now.

Each idea has its own memeomeme, each idea is unique, but of course ideas borrow and sometimes steal from each other and certainly build on each other. Through mathematical considerations, you can get meme omemes from one talk and compare them with meme omemes from all other talks. And if there are similarities between the two, you can create a link and represent it as a graph. Just like Eric and I are connected.

That's the theory, that's great.

Let's see how it works in practice.

So what we're getting here now is a global footprint of all the TEDx talks of the last four years that have exploded around the world, from New York to the corner of old New Zealand.

What we've done in this is we've started to analyze these top 25 percent and see where they connect and where they connect with each other.

Cameron Russell talks about the image and beauty that leads to Europe.

An even bigger conversation is emerging about Israel and Palestine, which extends outward from the Middle East.

And then you get something a little more expansive, like big data with a truly global footprint, reminiscent of conversations happening everywhere.

This puts us at the limit of what we can actually do with geographic projections, but fortunately, computer technology allows us to jump into multidimensional space.

So when you take network projection and apply a physics engine to it, similar stories collide, different stories scatter, and you're left with something very beautiful.

EB: So what I want to point out here is that every node is a talk, linked if they share similar ideas, and it comes from machine reading the entire talk transcript, and all the topics that pop up after that don't come from tags or keywords.

They emerge from a network structure of interconnected ideas. keep going.

SG: That's right. So I was in a bit of a rush, but he's going to slow me down.

We group education related to storytelling in a triangle next to social media.

Of course, right next to medical care is the human brain, which you guessed it, but also video games, and these two spaces are interconnected, so they're adjacent in a way.

But one cluster that is particularly important to me is the environment.

I'd like to zoom in on it and see if I can get a little more resolution.

Now, if we apply the physics engine again, we can see that one conversation is actually made up of many smaller conversations.

This structure begins to emerge where we see the kind of fractal behavior of words and languages ​​used to describe things that are important to us around the world.

So the food economy and local food is at the top, along with greenhouse gases, solar heat and nuclear waste.

What you get here are a variety of small conversations, each interconnected through shared ideas and language to create a broader notion of the environment.

And of course you can zoom in from here to see what young people are watching.

And they are looking at energy technology and nuclear fusion.

This is their kind of resonance for conversations about the environment.

Broken down by gender, we find that women are not only strongly sympathetic to the food economy, but also hopeful and optimistic.

There are many things you can do here. I'll leave the next part to Eric.

EB: Well, I mean, just to point out here, a simple tag search on YouTube doesn't give you that perspective.

Now let's zoom out from the environment to the entire global conversation and see all the conversations together.

Often when faced with this amount of content, we do a few things to simplify the content.

You might say, "What is your most popular talk?"

And some float to the surface.

There is a story about gratitude.

One more thing about personal health and nutrition.

And of course there has to be something about porn, right?

So we might say, "Thank you, that was last year."

What's trending now? What are we talking about now?

And we can see that the emerging and top trending topic is around digital privacy.

This is great. It simplifies things.

But the creative content is just buried at the bottom.

And i hate it. How can you possibly bring something really creative and interesting to the surface?

To do that, we can go back to the idea network structure.

Remember, it's the network structure that's giving rise to these new topics. Is there a talk that takes two subjects like cities and genetics and creatively bridges these two disparate fields?

That, in essence, this kind of creative remixing is one of the hallmarks of innovation.

Well, this is by Jessica Green on the microbial ecology of buildings.

You are literally defining a new field.

Then you can go back to those topics and ask them what the conversation is about.

In the Cities Cluster, one of the most central was a talk by Mitch Joachim on Green Cities. In the genetics cluster, Craig Venter gave a lecture on synthetic biology.

These are talks that link many talks within a specialty.

Conversely, we can ask what is a broad and synthetic consultation of different kinds of fields.

To obtain this, we used a measure of ecological diversity.

It's like Stephen Pinker's lecture on the history of violence, but very comprehensive.

And, of course, there are some very unique talks that seem to be in their own special places like the stratosphere, which we call the Colleen Flanagan Index.

For those of you who don't know Colleen, she's an artist. I asked her: “So what does the stratosphere of our idea space look like?”

And apparently it smells like bacon.

I don't know.

So we use these network motifs to find talks that are unique, talks that creatively integrate many different disciplines, talks that are thematically central, and talks that really creatively bridge different disciplines.

have understood? We would never have found people who were obsessed with current trends.

And all of this comes from the architecture of complexity, the pattern of how things are connected.

SG: Exactly.

We find ourselves in a very complex world and have used algorithms to filter it so that we can navigate through it.

And while these algorithms are convenient in a way, they are also very narrow, and we can do more than that because we can understand that their complexity is not random.

It has a mathematical structure, and we can use that mathematical structure to explore some sort of world of ideas, see what's being said, see what's not being said, and be a little more human, hopefully a little smarter.

thank you.

(applause)

When my dad and I started a company to 3D print human tissues and organs, some people initially thought we were a little crazy.

But since then, both our lab and others around the world have made great strides.

This situation has led to the question, "If we can grow human body parts, can we also grow animal products such as meat and leather?"

When someone first suggested this to me, I frankly thought it was kind of crazy, but I quickly learned that it wasn't all that crazy after all.

What's crazy is what we're doing today.

I'm sure 30 years from now, when we look back on today and how we raise and slaughter billions of animals to make burgers and handbags, we'll find this wasteful and truly insane.

Did you know that today we maintain herds of 60 billion animals worldwide to provide us with meat, dairy, eggs and leather products?

And in the coming decades, as the world's population expands to 10 billion people, the number of animals will need to nearly double to 100 billion.

But maintaining this swarm does a lot of damage to the planet.

Animals are not just raw materials.

They are living creatures and already our livestock are one of the largest users of land, fresh water and one of the largest producers of greenhouse gases causing climate change.

In addition, having so many animals in close proximity creates breeding grounds for disease and opportunities for harm and abuse.

Clearly, we cannot continue on this path that endangers the environment, public health and food security.

There is also another way. At its core, animal products are simply aggregates of tissues, and today we breed and raise very complex animals just to make products of relatively simple tissues.

What if, instead of starting with a complex, sentient animal, what if we started with what tissues are made of: cells, the basic units of life?

This is biofabrication, where the cells themselves can be used to grow biological products such as tissues and organs.

Biofabrication techniques are already being used in medicine to grow advanced body parts such as ears, trachea, skin, blood vessels, and bones, which have been successfully implanted into patients.

And biofabrication can go beyond medicine to become a new humane, sustainable and scalable industry.

And we should start by rethinking leather.

I will focus on leather because it is so widely used.

It's beautiful and has been part of our history for a long time.

Growing hides is technically easier than growing other animal products such as meat.

It primarily uses one type of cell and is primarily two-dimensional.

There is also less polarization between consumers and regulators.

Until biofabrication is better understood, at least initially, it is clear that more people are willing to wear new materials than are willing to eat new foods, no matter how delicious they may be.

In this sense, leather is the gateway material and the beginning of the mainstream biofabrication industry.

Success here will bring us closer to other consumer bio-products such as meat.

Well, how do you do it?

Growing leather begins by taking cells from an animal by a simple biopsy.

Animals can be cows, lambs, or something more exotic.

This process is harmless and the cow Daisy can live a happy life.

The skin cells are then isolated and grown in cell culture medium.

This requires millions of cells, which scale to billions.

It then induces these cells to produce collagen in the same way that nature does.

This collagen is between cells.

It is a natural connective tissue.

This is the extracellular matrix, but in leather it is the main component.

What we then do is take the cells and their collagen, spread them out to form sheets, layer these thin sheets like filo pastry to form a thicker sheet, and let it ripen.

And finally, we use this multi-layered skin and go through a tanning process that takes less time and uses far fewer chemicals to make leather.

We are therefore very much looking forward to showing the first batch of cultured leathers straight out of the lab for the first time.

This is genuine genuine leather that has not been used at animal sacrifices.

Because it's made from the same cells, it has all the characteristics of leather and, better yet, no shedding, no scratches, no bites, no waste.

This leather can be grown into shapes such as purses, handbags, and car seats.

It's not limited to irregular shapes like cows and alligators.

And because we make this material and grow this leather from scratch, we can control its properties in a very interesting way.

This leather is only 7 tissue layers thick and as you can see it is almost transparent.

And this leather is thick with 21 layers and is quite opaque.

Conventional leather does not allow such fine control.

And this leather can also be tailored for other desirable qualities such as softness, breathability, durability, elasticity and even patterns.

We can imitate nature, but in some ways we can also improve it.

This type of leather can do the same as today's leather, but perhaps more if you have the imagination.

What will the future of animal products look like?

It doesn't have to look like this. In fact, this is the state of the art today.

Rather, it is possible that it is close to this.

Already, we have been manufacturing with cell cultures for thousands of years, starting with products such as wine, beer and yogurt.

And when it comes to food, our cultures have evolved and are now cooked in beautiful aseptic facilities like this one.

A brewery is essentially a bioreactor.

This is where the cell culture takes place.

Imagine if instead of brewing beer at this facility, they were brewing hides and meats.

Tour the facility, learn how leather and meat are cultivated, see the process from start to finish, and imagine tasting it.

It's clean, open, and educational, in contrast to the hidden, guarded, and secluded factories where leather and meat are produced today.

Perhaps biofabrication is the natural evolution of manufacturing for mankind.

It is environmentally responsible, efficient and humane.

It allows us to be creative.

We can design new materials, new products, and new equipment.

We need to move beyond simply killing animals for resources to something more civilized and evolved.

Perhaps we are ready for something more cultural, literally and figuratively.

thank you.

(applause)

There is no question that democracy is in trouble, partly because of the deep dilemmas into which it is built.

It is becoming increasingly irrelevant to the kinds of decisions we face in relation to a global pandemic, a problem that transcends borders. HIV is a transnational problem. Markets and immigration, beyond borders. Terrorism, war, and now all are transnational issues.

Indeed, we live in a 21st-century world of interdependence and brutal interdependence problems, and when we look to politics and democracy for solutions, we are confronted with a 400-year-old political system—autonomous sovereign nation-states with separate jurisdictions and territories from each other, each claiming it can solve the problems of its own people.

The 21st century, the world of transnational problems and challenges, the world of 17th century political institutions.

In that dilemma lies the central question of democracy.

And like many others, I have pondered what can be done about this problem, this asymmetry between the challenges of the 21st century and outdated and increasingly dysfunctional political institutions like the nation-state.

And my suggestion is to change the subject and stop talking about nations and bordering states and start talking about cities.

Because when we talk about cities, you realize that we are talking about the political system from which civilizations and cultures were born.

We are talking about the cradle of democracy.

We are talking about a place where we come together to create democracy and at the same time a public arena to protest against those who want to take away our freedom.

Come up with some great names. Bastille Square, Zuccotti Park, Tahrir Square, Taksim Square, or yes, Beijing's Tiananmen Square, which is headlined today in Istanbul.

(Applause.) These are the public spaces where we present ourselves as citizens, as participants, as people who have the right to write their own stories.

Cities are not only the oldest institutions, but also the most enduring.

If you think about it, Constantinople and Istanbul are much older than Turkey.

Alexandria is much older than Egypt.

Rome is much older than Italy.

Cities stand the test of time.

They are the places where we were born, raised, educated, worked, married, prayed, played, aged and eventually died.

they are at home

It is very different from the abstracted nation-state.

We pay taxes, we vote sometimes, and we watch the men and women we choose rule more or less without us.

Not so in the homes we know as towns and cities where we live.

Moreover, today more than half of the world's population lives in cities.

In developed countries it is about 78%.

Today, more than 3 out of 4 people live in urban facilities, urban locations.

In other words, the city is the place of activity.

The city is who we are. Aristotle said that in the ancient world man was a political animal.

We say we are city animals.

We are an urban race that lives in cities.

So, back to the dilemma, if the dilemma is that traditional political nation-states cannot rule the world and respond to the global challenges we face, such as climate change, then perhaps it is time for mayors to rule the world and for mayors and citizens, and the people they represent, to tackle global governance.

When I said if the mayor were to rule the world, when I first thought of the word, I wondered if, in fact, they already ruled.

There are many international, intercity and transnational institutions and networks of cities already under the horizon, quite quietly, working together to address climate change, security, migration, and all of these difficult and interdependent problems that face us.

They have strange names: UCLG, United Cities and Local Government. ICLEI, International Council on Regional Environmental Affairs.

The list goes on. Asian Citynet. City Protocol is a new organization from Barcelona that uses the web to share best practices between countries.

Then there are the ones that we know a little better, the US Conference of Mayors, the Mexico Conference of Mayors, the European Conference of Mayors.

It's the mayor that this is happening.

So the question is, how can we build a world in which mayors and the citizens they represent play a more important role?

To understand that, you have to understand why cities are special and why mayors are so different from prime ministers and presidents. Because my assumption is that mayors and prime ministers are at opposite ends of the political spectrum.

To be prime minister or president, you have to have an ideology, you have to have a metanarrative, you have to have a theory about how things work, you have to belong to a political party.

In general, independents are not elected to public office.

But the mayor does the opposite.

Mayors are realists and problem solvers.

Their job is to get things done, and if they can't, they'll lose their jobs.

Philadelphia Mayor Nutter said that here in Philadelphia, we will never escape the paralysis, inaction and inaction that is happening in Washington.

why? Because we have to fill holes, we have to run trains, we have to get our children to school.

That's what we have to do, and to do that, deep American pragmatism is important and results must be achieved.

The capitals of the world, Washington, Beijing and Paris, are never realists, but a real mayor must be one.

They must get things done, set aside ideology, religion and ethnicity to unite their cities.

We saw this decades ago when Teddy Kollek, the great mayor of Jerusalem in the 80s and 90s, was one day besieged in his office by religious leaders, Christian prelates, rabbis and imams of all backgrounds.

They were arguing with each other about access to the Holy Land.

And the quarrel went on and on, until Kolech listened and listened, and finally said, "Gentlemen, stop preaching. I will fix the sewers."

(Laughter) That's the mayor's job.

They fix sewers and run trains.

There is no left or right way to do it.

Boris Johnson of London calls himself the Anarcho-Conservative Party.

It's a strange word, but in a way he is.

he is a libertarian he is an anarchist

He bikes to work, but he's also kind of conservative.

Bloomberg of New York, who was a Democrat, then a Republican, and finally an independent, said the party label only got in the way.

Luzhkov, who served as mayor of Moscow for 20 years, helped found Putin and the Unity Party, but in practice refused to define a party and eventually lost his job under Putin, who in fact wanted more loyal party followers, not under Brezhnev or under Gorbachev.

So the mayor is a realist and a problem solver.

they get things done.

But the second thing about mayors is that they are what I like to call homeboys, or homeboys, including women mayors.

they are from the neighborhood.

they are part of the neighborhood. they are known

Ed Koch was walking around New York City saying, "How are you doing?"

Imagine Prime Minister David Cameron walking around the UK asking, "How are you?" He will not like that answer.

Or Putin. Or you can be a national leader.

He could ask that because he knew the New Yorkers and they knew him.

Mayors are usually from the place they govern.

It's pretty hard to be mayor while being a carpetbagger.

You can run for Senate from another state, but it's hard to do as mayor.

As a result, mayors, city council members, and local governments are much more trusted than national government officials, and this is the third characteristic of a mayor.

In the United States, we know a pathetic figure of 18 percent of Americans supporting Congress and its actions.

And even a relatively popular president like Obama has a presidency figure of about 40, 45, and sometimes 50 percent at best.

The Supreme Court is significantly lower than it used to be.

But when asked, "Do you trust your councilor, do you trust your mayor?"

That rate jumps to 70, 75, and even 80 percent. Because they are from the neighborhood and the people they work with are their neighbors. Because, like Mayor Booker of Newark, the mayor is more likely to get out of his car on the way to work, walk into a burning building and drag people out—which is exactly what happened to Mayor Booker—or step in because he witnessed a street robbery on the way to work.

No head of state is authorized or in a position to do so by its security details.

That's the difference, and that difference has to do with the character of the city itself. Cities are highly multicultural, open, participatory, democratic and capable of working together.

China and the United States, when countries face each other, they face each other like this.

When cities interact, they interact as follows:

China and the US are locked in all sorts of anger, resentment and competition for number one, despite a recent meta-conference in California.

We heard more about who will be number one.

Cities don't worry about number one.

They have to cooperate, and they do.

For example, they are working together on climate change.

Organizations like C40, like the ICLEI I mentioned, have been working together for years before Copenhagen.

Four or five years ago, 184 nations met in Copenhagen to explain to each other why their sovereignty did not allow them to address the grave and grave danger of climate change, and the mayor of Copenhagen had invited 200 mayors to attend.

They came, they stayed, they found ways to work together inter-city and through inter-city organizations, and they continue to find ways.

80% of carbon emissions come from cities. This means that cities are well positioned to solve most of their carbon problems, regardless of whether member states have agreements with each other.

and they are doing it.

Los Angeles cleaned up its port, which accounted for 40 percent of its carbon footprint, resulting in the removal of approximately 20 percent of the carbon dioxide.

New York has a program to upgrade old buildings, make them better insulated in the winter, energy tight in the summer, and air conditioning leak tight. It's having an impact.

In Bogota, where Mayor Mox was mayor, he was able to implement an energy-saving transportation system, allowing overground buses to run virtually like subways and highway buses with corridors.

The ability for people to move across towns has reduced unemployment and has had a significant impact on the climate and many other things.

Along with developing skyscrapers and notable public housing, Singapore has also developed park islands. If you go there, you will find that most of it is green space and parkland.

Cities are doing this, but not one by one.

they are doing it together.

They share what they do and create change by sharing best practices.

Bike sharing, as many of you have heard, originated in Latin America 20-30 years ago.

It is currently deployed in hundreds of cities around the world.

Pedestrian zones, congestion fees, emission limits in cities like those of California, there is much that cities can do even if opaque and stubborn states refuse to act.

So what is the conclusion here?

The bottom line is that politically we still live in a world of borders, a world of borders, a world of walls, a world where states refuse to work together.

However, we know that the reality that we experience every day is a world without borders, disease without borders, doctors without borders, disease without borders, Doctors without borders, economy and technology without borders, education without borders, terrorism and war without borders.

That is the reality of the world, and unless we globalize democracy or find a way to democratize globalization, we will not only risk not being able to address all of these transnational issues, but we will be at greater risk of being trapped in the old nation-state box, unable to address global issues democratically, and losing democracy itself.

So what do we do?

i'll tell you The road to global democracy does not go through states.

Run through the city.

Democracy was born in ancient Polis.

I believe that it will be reborn as a global cosmopolis.

On our journey from Polis to Cosmopolis we can rediscover the power of democracy on a global level.

We can create a Union of Cities, not a failed League of Nations, a Union of Cities, not a UN or non-UN, but a World Union of Cities.

We can create a global council of mayors.

that's an idea. It's in my vision of the world to come, but it's also on the tables of Seoul, Korea, Amsterdam, Hamburg, and New York City Hall.

Mayors are exploring ideas on how a global council of mayors could be organized in practice. i love that idea. Because the Mayor's Council is the Citizen's Council, and the Citizen's Council is ours, yours and mine.

If there are citizens without borders, I think the citizens of TED are demonstrating the promise of becoming citizens without borders.

I am ready to reach out and embrace a new global democracy to restore our democracy.

And the only question is, are you?

Thank you very much to all the people of the nation.

(Applause.) Thank you. (applause)

I want to talk about a lawsuit I worked on involving a man named Steve Titus.

Titus was the restaurant manager.

He is 31 years old, lives in Seattle, Washington, is engaged to Gretchen, is about to get married, and she was his lifelong love.

And one night the couple went out to eat at a romantic restaurant.

They were on their way home when they were stopped by a police officer.

You know, Titus' car looked like the one the man who raped a female hitchhiker was driving in the evening, and Titus looked like the rapist.

Police then took a photo of Titus, added it to the photo lineup, and later showed it to the victim, who pointed to the photo of Titus.

"That's the closest," she said.

Police and prosecutors proceeded with the trial, and when Steve Titus was put on trial for rape, the rape victim took the stand and said, "I'm pretty sure it's the man."

And Titus was found guilty.

He claimed his innocence, his family screamed at the jury, his fiancé collapsed to the floor crying, and Titus was taken to prison.

So what do you do at this point?

what would you do?

Titus lost all faith in the legal system, but he still had an idea.

He called a local newspaper and attracted the attention of an investigative journalist who, in fact, found the real rapist, the man who eventually confessed to this rape, the man believed to have committed 50 rapes in the area, and when this information was passed on to the judge, the judge released Titus.

And really, this case should have ended there.

It should have been over.

Titus must have thought this was a terrible year, a year of accusations and trials, but it was over.

It didn't end there.

Titus was very spicy.

He has lost his job. he couldn't get it back.

he lost his fiancée.

She could not bear his persistent anger.

Having lost all his savings, he decided to file a lawsuit against the police and those he felt were responsible for his suffering.

And that's when I really started working on the case, trying to figure out how the victim went from 'that person is the closest' to 'it's definitely him'.

Well, Titus was preoccupied with civil lawsuits.

He spent every waking moment thinking about it, and a few days before his court day, he woke up in the morning and died of a stress-induced heart attack after crouching in pain.

he was 35 years old.

That's why, being a psychologist, I was asked to work on the Titus case.

I study memory. I have studied memory for decades.

And if I met someone on the plane - this was on the way to Scotland - if I met someone on the plane and they asked each other, "What are you doing? What are you doing?"

And when I say "I study memory," they usually want to tell me that they have trouble remembering names, or have relatives with Alzheimer's or some kind of memory problem, but when people forget, I have to say I'm not studying.

I study the opposite: when they remember, when they remember something that didn't happen, or when they remember something different from what it really was.

I am researching false memories.

Unfortunately, Steve Titus wasn't the only one to be convicted based on someone's false memory.

A US project collected information on 300 innocent people and 300 defendants who were convicted of crimes they didn't commit.

They spent 10, 20, 30 years in prison for these crimes, but now DNA tests prove they are actually innocent.

And when I analyzed those incidents, three-quarters of them were due to memory impairment, memory impairment of witnesses.

Well, why?

Like the jury that convicted innocent people and the jury that convicted Titus, many believe that memory acts like a recording device.

Simply record the information and you can recall it and play it back as you answer questions or identify images.

But decades of research in psychology show that this is not true.

Our memory is constructive.

they are reconstructive.

Memories work a little like Wikipedia pages. You can go in there and change it, but others can change it as well.

I first started studying this constructive memory process in the 1970s.

I conducted an experiment where people were shown simulated crimes and accidents and asked what they remembered.

In one study, people were shown a simulated accident and asked how fast the cars would go when they collided.

And we asked others how fast the cars were going when they collided.

And if we asked the leading 'smashed' question, the eyewitness said the car was going faster, and that leading 'smashed' question made people more likely to answer that they saw broken glass at the scene of the accident when no glass was broken at all.

Another study showed a simulated accident in which a car drove through an intersection with a stop sign, but when asked a question that suggested it was a stop sign, many witnesses said they remembered seeing a stop sign at the intersection instead of a stop sign.

And you might think that these are filmed events, not particularly stressful.

Would you make the same mistake during a really stressful event?

A study we published just a few months ago answered this question. Because what was unusual about this study was that we had people go through a very stressful experience.

The subjects of the study were US servicemen undergoing harrowing training to teach them what would happen if they were captured as prisoners of war.

And as part of this training exercise, these soldiers are interrogated in an aggressive, hostile, and physically abusive manner for 30 minutes, after which they must identify the person conducting the interrogation.

And when you give them suggestive information that suggests they are someone else, many of them misidentify the interrogator and often identify someone who bears little resemblance to the real interrogator.

These studies show that misinforming people about experiences they may have had can distort, contaminate, or alter their memories.

In the real world, misinformation is everywhere.

We get misinformation not only when we are interrogated in a leading way, but when we speak to other witnesses who may consciously or inadvertently provide us with false information, or when we see media coverage of some event we may have experienced, all of which provide opportunities for this kind of memory contamination.

In the 1990s, more extreme types of memory impairment began to occur.

Some patients enter treatment for one problem, such as depression or an eating disorder, and exit treatment for another.

Extreme memories of horrific atrocities, sometimes in satanic rituals, sometimes with very strange and anomalous elements.

One woman has undergone psychotherapy because she believed she had endured years of ritual abuse in which she was forced to impregnate her and had her baby cut out of her belly.

However, there was no physical scar or physical evidence to support her story.

And when I started looking into these cases, I wondered where this strange memory came from.

And what I have discovered is that most of these situations involve some particular form of psychotherapy.

So I asked if some of the things that go on in this psychotherapy, such as imaginative training, dream interpretation, or sometimes hypnosis, or sometimes exposure to misinformation, have led these patients to produce very strange and improbable memories.

And I designed some experiments to study the processes used in this psychotherapy. Then we will be able to study the development of these very rich false memories.

One of the first studies we did used suggestion. This is the psychotherapy-inspired method we have seen in these cases. Using this kind of suggestion, I planted false memories of getting lost in the mall as a kid of five or six.

you were scared you were crying

Eventually you were rescued by the elderly and reunited with your family.

And we succeeded in implanting this memory in the minds of about a quarter of the subjects.

And you might think it's not particularly stressful.

But we and other investigators have planted rich false memories of far more unusual and far more stressful events.

So, in a Tennessee study, researchers planted false memories of nearly drowning as children and having to be rescued by lifeguards.

And in a study done in Canada, researchers successfully implanted false memories of something terrible as a child, like being attacked by a ferocious animal, in about half the subjects.

In a study conducted in Italy, researchers implanted false memories of witnessing demonic possession as a child.

I would like to add that while it may appear that we are traumatizing these experimental subjects in the name of science, our research has undergone a thorough evaluation by a research ethics board that has determined that the momentary discomfort some of these subjects may experience in these studies outweighs the importance of this issue in understanding memory processes and memory abuse occurring in some parts of the world.

Now, surprisingly, when I published this book and started speaking out against this particular brand of psychotherapy, it created some pretty bad problems for me. Mainly hostility from repressed memory therapists who felt attacked and the patients they affected.

When I was invited to speak, sometimes armed guards would come and try to hype up a letter-writing campaign to get me fired.

But perhaps worst of all was my suspicion that the woman was innocent of the alleged abuse by her adult daughter.

She accused her mother of sexual abuse based on repressed memories.

And the accusing daughter actually allowed her story to be filmed and released in public.

I was skeptical of this story, so I started researching and eventually found information that convinced me that this mother was innocent.

I published a tell-all book about the case, and a short time later the accusing daughter filed a lawsuit.

She sued me for defamation and invasion of privacy, even though I never mentioned her name.

And after nearly five years of dealing with this nasty and uncomfortable lawsuit, I finally got it over and I could get back to work in earnest.

But in the process, I joined a disturbing trend in America where scientists are being prosecuted for speaking out on issues of great public controversy.

When I got back to work, I asked this question. If I plant false memories in your mind, will it affect me?

Does it affect your subsequent thoughts or subsequent actions?

Our initial study implanted false memories as children that eating certain foods, such as boiled eggs, dill pickles, and strawberry ice cream, made them sick.

And it turns out that instilling this false memory makes people want less of that food at outdoor picnics.

False memories are not necessarily bad or unpleasant.

Instilling warm, fuzzy memories of healthy foods like asparagus will make people want to eat more asparagus.

What these studies show is that false memories can be implanted and have behavioral effects long after the memories are established.

Well, in addition to this ability to plant memories and control behavior, some significant ethical questions obviously arise, such as when this mind technology should be used.

And should its use be banned?

A therapist cannot ethically plant false memories in a patient's mind, even if it helps the patient, but there is nothing stopping parents from trying this on their overweight or obese teens.

And when I proposed this publicly, there was another outcry.

"She is. She argues that parents lie to their children."

Hello Santa Claus. (Laughter) So, the other way around this, would you rather have a child with obesity, diabetes, a shorter life span and all the other problems that come with it, or a child with even the slightest bit of false memory?

I know what I will choose for my child.

But I'm different from most people, probably because of my job.

Most people cherish their memories and know that they represent their identity, who they are and where they come from.

And I appreciate it. I feel so too.

But I know from my work how much fiction is already there.

If I've learned anything from these decades of working on these issues, it's this. Just because someone said something and said it with confidence, stated it in detail, expressed emotion when saying it, doesn't mean it actually happened.

We cannot reliably distinguish between true and false memories.

Independent corroboration is required.

Findings like this have made me more tolerant of the memory mistakes my friends and family make on a daily basis.

A discovery like this may have saved Steve Titus, who was robbed of his entire future by false memories.

But in the meantime, we all have to keep in mind that memory is as fragile as freedom, and it is better to keep it in mind.

thank you. thank you.

thank you. (Thank you for applause. (applause)

There is an old saying that finding a black cat in a dark room is very difficult, especially if the cat is not there.

I think this is a particularly apt description of science and how science works. Walking around in a dark room, bumping into things, trying to figure out what this is, what that is, sightings of cats somewhere, may not be reliable, may be reliable, etc.

Now I realize that this is not how most people think about science.

Science is a very methodical mechanism for understanding the world, getting facts, getting data, it's rule-based, and scientists use what's called the scientific method, and they've been doing this for about 14 generations. We are commonly told that the scientific method is a set of rules for extracting rigorous and cold facts from data.

I would like to say that this is not the case.

There is a scientific method, but what really happens is this. (laughter) [scientific method vs. fart] And it's kind of like that happening.

[...in the dark] (laughter) So what's the difference between the way I believe science is pursued and the way science seems to be perceived?

This difference, in a way, first became apparent to me when I was a professor at Columbia University, while also doing my dual role of running a neuroscience lab trying to figure out how the brain works.

We do this by studying the sense of smell and smell. In the lab, collaborating with graduate students and postdocs to come up with great experiments to understand how this sense of smell works and how the brain works is a very fun and engaging job and exciting. Frankly, it's kind of exhilarating.

But at the same time, I have to say that it's my responsibility to teach a large course on the brain to undergraduates, it's a big subject, it takes a lot of time to structure it, and it's very challenging and very interesting, but not that exhilarating.

So what was the difference?

Well, the course I taught and now teaches is called Cellular and Molecular Neuroscience - I. (Laughter) Twenty-five lectures full of all sorts of facts, using a huge book called Principles of Neuroscience by three famous neuroscientists.

The book has 1,414 pages and weighs 7.5 pounds.

From one point of view, this is the weight of two normal human brains.

(Laughter) So, by the end of this course, I started to realize that maybe the students were starting to understand the idea that they should know all there is to know about the brain.

That's obviously not true.

And they must also have the idea that a scientist's job is to collect data, collect facts, and paste them into these thick books.

And not really.

When I go to meetings, I never get together with my colleagues at the bar after the day to have a few beers and talk about what we know.

We talk about what we don't know.

We discuss what we still have to do and what is very important to do in the lab.

Indeed, I think Marie Curie was most apt for this. He says that one never notices what has been done, only what should be done.

It should be said that this was in a letter she wrote to her brother after receiving her second graduate degree.

I must point out that this is one of my favorite photographs of Madame Curie of all time. Because I'm pretty sure that glow behind her isn't a photo effect. (Laughs) That's the real deal.

Indeed, to this day, her papers are kept in a lead-lined concrete room in the basement of the Française Library, and if you're a scholar and want to access these notebooks, you'll have to wear a full radiation protective suit, so it's a pretty daunting task.

Nonetheless, I think this is what we left off the course and out of interaction with the public as scientists, something that remains to be done.

This is refreshing and funny.

It's ignorance, so to speak.

It was missing.

So I thought, for example, maybe I should finally teach a course on ignorance, which is my specialty.

So I started teaching this course on ignorance and I found it very interesting and I would like to say please visit the website.

You can find all kinds of information there. Wide open.

And it's been a very interesting time for me to meet other scientists who come in and discuss things they don't know.

Of course, I use this word "ignorance" at least partly because it is deliberately provocative. Ignorance has many bad meanings, and I clearly don't mean that.

So I don't mean stupidity, I don't mean indifference to facts or reasons or data.

It seems to me that the ignorant are clearly not enlightened, unaware, uninformed, and often hold elected offices, except in today's brethren.

That may be another story.

Means another kind of ignorance.

What I mean is a kind of ignorance that is not disdainful, a kind of ignorance that comes from a gap in our common knowledge, something that should not be known or is not yet well known or unpredictable, the kind of ignorance that is perhaps best summed up in the statement of James Clerk Maxwell, the greatest physicist between Newton and Einstein. A joke against all true advances in science. ”

I think it's a great idea to be thoroughly conscious of ignorance.

It is about such ignorance that I wish to speak today, but of course the first thing that must be clarified is what to do with all these facts.

So it's true that science is accumulating at an alarming rate.

We all have a sense that science, as many people call it, is a pile of facts, an accumulation model of science that seems impregnable or impossible.

How can we know all this?

And indeed, the scientific literature is growing at an alarming rate.

In 2006, 1.3 million articles were published.

With an annual growth rate of about 2.5 percent, more than 1.5 million articles were published last year.

Divide this by the number of minutes in a year, and you get 3 new papers published every minute.

It's been 10 minutes since I came here, and I've already lost 3 documents.

I really have to get out of here. I have to go read.

So what do we do about this? Well, actually what scientists are doing about it is kind of a controlled disregard, if you will.

In a way we are not worried about it.

Facts matter. To be a scientist you have to know a lot of things. that's true.

But knowing a lot does not make you a scientist.

To become a lawyer, accountant, electrician, or carpenter, you need to know a lot.

But in science it is not important to know a lot.

Knowing more helps you become more ignorant.

So, knowledge is the big subject, but ignorance is the bigger subject.

This makes me think a little bit about some of the scientific models we tend to use, but I would like to avoid abusing some of them.

One of them, the well-known one, is that scientists patiently put the pieces of the puzzle together to uncover some grand plan.

This is clearly not true. First, when it comes to puzzles, the manufacturer guarantees they have a solution.

We make no such guarantees.

In fact, many people may not be familiar with the manufacturer.

(Laughter) So I don't think the puzzle model works.

Another popular model is that science is as busy unraveling things as it is unraveling the skin of an onion.

So peel off the skin one by one and remove the layers of the onion to get to the root core of the truth.

I doubt it will work either.

The other, kind of popular idea, is the idea of ​​an iceberg. This means that we see only the tip of the iceberg, but beneath it lies the bulk of the iceberg.

But all these models are based on the idea of ​​a mass of facts that can be completed in some way.

I think we could chip away at this iceberg and figure out what it is, or these days we could just wait for the iceberg to melt, but somehow it is possible to get to the whole iceberg. right?

Or make it manageable. But I don't think so.

I think what actually happens in science is a model closer to the magic well. No matter how many buckets you take out, you always get another bucket of water. A particular favorite of mine is Bucket, which includes that effect and all, revealing the ripples in the pond.

So if we think of knowledge as a ripple that continues to spread over a pond, the important thing to recognize is that our ignorance, and the surroundings of this knowledge, also grow with it.

Therefore knowledge breeds ignorance.

I thought George Bernard Shaw said this very well.

This was actually part of the toast he threw to celebrate Einstein at a dinner celebrating his achievements, in which he argued that science only raises more questions than it answers. [“Science is always wrong. Unless you make 10 more, the problem will never go away.”] Moreover, it is also a kind of job security.

After all, he was kind of emulating the philosopher Immanuel Kant, who came up with the idea of ​​question propagation 100 years ago, that every answer begets more questions.

I love the term "question propagation," the idea of ​​questions propagating into the world.

So I don't think the model we want to adopt is to start in ignorance and gather some facts to gain knowledge.

Actually the opposite is true.

What are we going to do with this knowledge?

What is this set of facts used for?

We use it to create better ignorance, to create better ignorance.

Because, as you know, there is low-quality ignorance and high-quality ignorance. Not all are equal.

Scientists argue about this all the time.

Also called bull session.

These are sometimes called grant proposals.

But nonetheless, that's what the discussion is about.

that's ignorance. that's what we don't know.

That makes for good questions.

So how should we think about these questions?

Here's a graph that often appears on happy hour posters in various science schools.

This graph asks the relationship between what you know and how much you know about it.

So what you know can of course go from nothing to everything, and how much you know about it can vary from a little to a lot.

Now let's put the points on the graph. Some are undergraduates.

I don't know much about them, but they are very interested.

They are interested in almost everything.

Now, if you look at master's students who have gone a little further in their education, you can see that they have a little more knowledge, but it's somewhat narrower.

And when you finally get your PhD, you find that you know an enormous amount about almost nothing. (Laughter) What really bothers me is the trend line going through it. Because, of course, when you go below the zero axis, you enter negative territory.

Unfortunately, there are people like me out there.

The important thing here is that all of this can be changed.

This entire view can be changed simply by changing the x-axis label.

So instead of asking how much do you know about it, you can say, "What can I ask about it?"

Sure, as a scientist we need to know a lot, but the purpose of knowing a lot is not just to know a lot. It makes you a nerd, doesn't it?

Knowing a lot means being able to ask a lot of questions and formulating thoughtful and interesting questions. Because that's the real job.

Let's briefly discuss some of these types of questions.

I'm a neuroscientist, how do you come up with questions in neuroscience?

Because it's not always that simple.

For example, what does the brain do?

Well, one of the functions of the brain is to move us.

We walk around on two legs.

It seems somehow simple.

I mean, almost everyone over 10 months old walks around on two legs, right?

So it may not be very interesting.

So you might want to choose something a little more complicated instead.

What about visual kei?

That's the visual system.

In short, we love visual systems. We do all kinds of cool things.

In fact, over 12,000 neuroscientists study the visual system, from the retina to the visual cortex, trying to understand the general principles of how the brain works, not just the visual system.

But the point here is that our technology is really good at replicating what the visual system does.

TV, film, animation, photography, pattern recognition, and more.

In some cases, they behave differently than our visual system, and yet we are very good at making technology behave like our visual system.

Somehow, in 100 years of robotics, we have never seen a robot walk on two legs. Because it is not so easy for a robot to walk on two legs.

In the 100-year history of robotics, no robot is available that can move more than a few steps in either direction.

Ask them to climb an incline and they will fall.

Turn around and they will fall. That's a serious problem.

So what is the hardest thing for the brain?

what should we study?

It must be bipedal, or a motor system.

Since I study olfaction, I will give an example from my own lab. A particularly stinky question of my own.

But this is a diagram of five molecules and a kind of chemical notation.

These are just old molecules, but when you smell them through the two tiny holes in front of your face, they leave a unique impression of the rose in your mind.

If there is a real rose there, the molecule becomes the molecule, but even if the rose is not there, the memory of the molecule remains.

How can we turn molecules into perception?

What process does it take?

Here's another example. Two very simple molecules. This is also this kind of chemical notation.

It might be helpful to visualize it like this. Gray circles are carbon atoms, white circles are hydrogen atoms, and red circles are oxygen atoms.

Now, the only difference between these two molecules is that they have one carbon atom and two small hydrogen atoms attached to it, but one of them, heptyl acetate, has a distinct pear flavor, while hexyl acetate is unmistakably banana.

It seems to me that there are two really interesting questions here.

One is how such a simple little molecule can create perceptions as distinct as pears and bananas in the brain.

And second, how on earth can you tell the difference between two molecules that differ by a single carbon atom?

So this is amazing to me, clearly the best chemical detector on the planet.

And you don't even think about it, do you?

This is my favorite quote that brings us back to the concepts of ignorance and doubt.

I quote because I don't think dead people should be left out of the conversation.

By the way, I think it's also important to realize that the conversation has been going on for a while.

So, the great quantum physicist and philosopher Erwin Schrödinger pointed out how we must "put up with ignorance indefinitely."

And I think it is to continue this ignorance that we must learn how to do so.

This is difficult. This is not such an easy business.

I think it has to do with our education system. So let me say a few words about ignorance and education. Because I think that's the really important point.

First, let's be honest: in the age of Google and Wikipedia, the business model of universities, and perhaps secondary schools, simply has to change.

We can no longer sell facts for a living.

They are available at the click of a mouse. Or, if you'd like, you can ask the upcoming wall where the thing that tells us all this is hidden.

So what do we have to do? We must give our students a taste of what is outside the boundaries, what is around them, what is outside the facts, what is just outside the facts.

How do we do that?

One problem, of course, is testing.

We have a very efficient education system right now, but in some pretty bad ways, it's very efficient.

By second grade, all children, girls and boys, are interested in science.

They like to take things apart. they are curious.

they like to look things up. They go to the science museum.

they like to play they are sophomores.

they are interested

By 11th or 12th grade, however, less than 10 percent of students are interested in science, let alone want to pursue it as a career.

So we have this amazingly efficient system for getting science out of everyone's minds.

Is this what we want?

I believe this stems from what my fellow teachers call the "Binge Eating Method".

Look. You can imagine what it is.

We just shove tons of facts down their throats over here, then they spit it out over here in exams and everyone goes home without any added intellectual weight.

It is probably impossible to continue this.

What should I do? Well, I must say that geneticists have an interesting maxim.

Geneticists always say, "You get what you screen for."

And that's a warning.

So we always get what we screen for. Also, some of the screening targets are included in the test method.

Well, we hear a lot about testing and evaluation, but when you test, you have to think carefully about whether you're evaluating or you're culling, you're excluding people, you're making some cuts.

There is one rating. We hear a lot about evaluation in the educational literature these days, but evaluation is really feedback and an opportunity for trial and error.

With this kind of feedback comes the opportunity to work longer term.

It's not like weeding. Usually when people talk about evaluations, student evaluations, teacher evaluations, school evaluations, program evaluations, I have to say that they are really talking about weeding.

And that's bad. Because then you get what you choose, which is what we've gotten so far.

So what you want is a test that says, "What is x?"

The answer is "I don't know because no one knows" or "What is the question?" Even better.

Or, "Look, I'll look it up, ask someone, call me, I'll look it up."

Because that's what we want in people and that's how we value them.

And perhaps for advanced classes, it might be, "Here's the answer. What's the next question?"

I especially like that.

Finally, I would like to end by quoting William Butler Yeats. “Education is not about filling a bucket, it is about lighting a fire,” he said.

That's why I say let's play the game.

thank you.

(Applause.) Thank you. (applause)

We take a quick trip through 20th century cognitive history. Because our minds have changed dramatically during the 20th century.

As we all know, the cars people were driving in 1900 have changed thanks to better roads and technology.

And our hearts changed too.

We have gone from being faced with a concrete world and analyzing it primarily in terms of how it benefits us, to being faced with a very complex world, a world where we have to develop new habits of mind, new habits of mind.

These include representing a concrete world through taxonomies, introducing abstractions for logical coherence, and taking hypotheses seriously, i.e. thinking about what could have happened instead of the status quo.

Now, this dramatic change has been brought to my attention by a huge I.Q. It has increased over time and this was really big.

So it's more than just answering a few more I.Q questions correctly. test.

There are far more precise questions about I.Q. Each subsequent generation is tested retroactively to the time of its invention.

In fact, if you were to score people 100 years ago by modern standards, their average I.Q would be 100. 70's.

If you scored us against their criteria, our I.Q would be average. of 130.

Now, this raised all sorts of questions.

Were our immediate ancestors on the verge of mental retardation?

Because 70 is usually a score for mental retardation.

Or are we on the verge of gifting everyone?

Because 130 is the limit line of talent.

Here I will try to discuss a third option that is far more enlightening than either of them. To put this into perspective, let's imagine that Martians descended to Earth and discovered a devastated civilization.

And this Martian was an archaeologist who discovered the score people used to shoot, the target score.

And when we first looked at 1865, we found that people only put one bullet into the target every minute.

And in 1898 they found that they could hit a target with about five bullets per minute.

Then, around 1918, they fired 100 bullets into the target.

And at first, the archaeologist will be perplexed.

"These tests," they would say, "are designed to see how dexterous people are, how sharp their eyesight is, and whether they can control weapons."

How did these performances escalate to such an extent?

Of course, we already know the answer.

If the Martian observes the battlefield, he will find that people had only muskets during the Civil War, rapid-fire rifles during the Spanish-American War, and machine guns during World War I.

And, in other words, it was the equipment in the hands of the average soldier that was to blame, not the sharp eye or firmness of the hand.

Now, what we have to imagine is the mind cannon we have worn for that hundred years. Again, another thinker who helps us here is Luria.

Luria observed people on the eve of the age of science and found them reluctant to categorize the concrete world.

They wanted to break it up into pieces so they could use it.

He was reluctant to deduce hypotheses or speculate about what might happen, and eventually found them poor at dealing with abstractions and using logic in those abstractions.

Here's a sample of some of his interviews.

He spoke with a chieftain in the Russian countryside.

Like people in 1900, they had only four years of schooling.

Then he asked the man what crows and fish had in common.

The man then said, "Nothing at all.

As you know, I can eat fish. Crows cannot eat.

Crows can peck fish.

A fish can do nothing to a crow. ”

Then Lyria said, "But aren't they both animals?"

And he said, "Of course not.

One is fish.

Another is birds. ”

And he was, in effect, interested in what he could do with those tangible objects.

Then Luria went to another and said, "There are no camels in Germany.

Hamburg is a city of Germany.

Are there camels in Hamburg? ”

The man then said, "Well, if it's big enough, there should be a camel there."

And Lyria said, "But what do my words mean?"

And he said, "Well, this may be a small village, and there may be no room for a camel."

In other words, he didn't want to treat this as a concrete problem, and he was so used to having camels in his village that he simply couldn't hypothesize to ask himself what would happen if Germany didn't have camels.

A third interview was conducted with someone about the North Pole.

Lyria said, "It always snows at the North Pole.

Where it is always snowing, the bear is pure white.

What color are bears in the North Pole?"

He replied, "Those things should be settled by testimony.

If a wise man came from the North Pole and said that bears are white, I might believe him, but all the bears I have seen are brown bears. ”

Once again, you see, this person refused to analyze it beyond the concrete world and through everyday experience, and the color of the bear was important to him: he had to hunt the bear.

They had no intention of getting involved in this.

One of them said to Luria, "How can you solve something that isn't a real problem?"

None of these problems are real.

How can we deal with them? ”

So, how much difference does taking these three categories, the taxonomy, the use of abstraction-based logic, and the seriousness of hypotheses make in the real world beyond the test room?

And let me show you some illustrations.

First, almost all of us today have high school diplomas.

That means the length of education goes from 4-8 years to 12 years, and 52 percent of Americans actually have some form of tertiary education.

Not only are we more educated now, but much of that education is scientific, and you can't do science without classifying the world.

You can't do science without formulating hypotheses.

Science cannot be done without logical coherence.

And the situation changed when I became an elementary school student.

A 1910 survey of tests administered by the state of Ohio to 14-year-olds found that they were all for specific information of social value.

It was like, what were the capitals of the 44 or 45 states that existed at the time?

I looked at the exams conducted by the State of Ohio in 1990 and they were all about abstraction.

It was like why the largest city in a state is rarely the state capital.

And since the state legislatures are ruled by the provinces, and they disliked big cities, they should have put the capital in the county seat instead of in the big city.

They put it in Albany, not New York.

They put it in Harrisburg, not Philadelphia.

etc.

In other words, the policy of education has changed.

We educate people to take hypotheses seriously, use abstractions, and connect them logically.

What about employment?

In 1900, 3% of Americans had jobs that required cognitive skills.

Only 3 percent were lawyers, doctors and teachers.

Today, 35 percent of Americans hold not only their primary occupations, such as lawyers, doctors, scientists, and lecturers, but also numerous subprofessional occupations, such as engineers and computer programmers.

All occupations today require cognitive function.

And in the modern world, employment can only be met by becoming much more flexible cognitively.

And it's not just that more people are working in cognitively demanding jobs.

Profession upgraded.

Compare that to modern general practitioners and specialists who have had years of scientific training, even though doctors in 1900 really had very little ingenuity.

Compare Bankers in 1900. He really needed a good accountant and needed to know who he could trust in his community regarding his mortgage repayments.

Well, the merchant bankers who brought the world to their knees may have been morally negligent, but they were cognitively astute.

They were far more than the bankers of 1900.

They had to consider computerized forecasts of the housing market.

Complex CDOs needed to be squared to lump the liabilities together and make it look like the liabilities were actually profitable assets.

Lawsuits had to be prepared to give rating agencies AAA ratings, often effectively bribing the rating agencies.

And of course they had to get people to accept these so-called assets and pay them money, even though they are in a very vulnerable position.

Or take the farmer today.

I believe that today's farmer is very different from the farmer of 1900.

In other words, it's not just that occupations that require cognitive skills have become popular.

In addition, the increasing sophistication of jobs such as lawyers and doctors have placed demands on our cognitive abilities.

But I talked about education and employment.

Some of the mental habits we've cultivated over the last century have paid off in unexpected areas.

I am primarily a moral philosopher.

I'm simply on vacation studying psychology, and my general interest is in moral debates.

Over the past century, moral debates have escalated in developed countries like the United States as we take hypotheses seriously, take universality seriously, and look for logical connections.

When I came home from college in 1955 during the time of Martin Luther King, many people at the time came home and started arguing with their parents and grandparents.

My father was born in 1885 and was mildly racially prejudiced.

As an Irishman, he hated the English so much that he didn't have much feeling for others.

(Laughter.) But he had a sense that black people were inferior.

And when we say to our parents and grandparents, "What if you woke up in the morning and it was all black?"

They said that's the stupidest thing you've ever said.

Do you know someone who wakes up in the morning and turns black? (laughs)?

In other words, they were fixed in specific customs and attitudes they had inherited.

They don't take hypotheses seriously, and without hypotheses it's very difficult to get moral arguments off the ground.

Imagine you were in Iran and all your relatives had collateral damage even though they had done nothing wrong.

what do you think about that?

And when someone from an older generation says, "Our government will take care of us, and it's up to their government to take care of them," they won't take that hypothesis seriously.

Or a Muslim father whose daughter was raped feels obligated to kill her for honor.

Yes, he treats his conventions as if they were sticks and stones and rocks that he inherited, and logically he can never move them.

They are just inherited conventions.

Today we will say something like, Imagine you are unconscious and sodomized.

can you be killed?

And he will say, "That's not in the Qur'an."

That's not my principle.

Well, you universalize your principles today.

State them as abstractions and use logic against them.

If there's a principle that people shouldn't suffer unless they're guilty of something, then we have to make exceptions to keep black people out, right?

I have to say that I can't just suffer from the darkness of my skin.

Black people must be dirty in some way.

And we can say, can't we bring up the empirical evidence, and how can all black people be considered contaminated when St. Augustine is black and Thomas Sowell is black?

And because it doesn't treat moral principles as concrete entities, it keeps moral arguments on track.

We treat them as universal in order to be consistent with our logic.

So how did all this come from I.Q? test?

That's how I first started researching cognitive history.

If you look at the I.Q, you'll see that when tested, it yielded the greatest gains in certain areas.

Wechsler's similarity subtest is about classification, and we did very well on that classification subtest.

I.Q has other parts too. A test battery for using logic in abstractions.

Some of you may have taken Raven's progression, but this is all about analogies.

And by 1900 people were able to make simple analogies.

So, to them, cats are like wildcats.

What kind of animal is a dog?

They will say wolves.

By 1960, however, people were able to attack Raven at a higher level.

What comes after two circles, two squares followed by a triangle?

You could call it a half circle.

A semicircle is half a circle, just as a triangle is half a square.

By 2010, college graduates, if you were to say two circles followed by a half circle, two 16s in a row, they would say 8 because 8 is half of 16.

That is, they have strayed too far from the concrete world to ignore even the appearance of the symbols involved in the question.

Now, I have to say one thing that is very disappointing.

Progress has not been made on all fronts.

One of the ways we want to deal with the sophisticated modern world is through politics. Unfortunately, you can have humane moral principles, you can classify, you can use abstract logic, but if you are ignorant of history and other countries, you cannot do politics.

We find that American youth tend to read less historical, literary, and foreign material, and are ahistorical in nature.

They live in the current bubble.

They don't know the Korean War from the Vietnam War.

They don't know who America's allies were in WWII.

Think how different America would be if every American knew that this was the fifth time Western troops had gone to Afghanistan to clean up their homes, and knew exactly what had happened the last four times.

(Laughter.) And they almost just walked away, not a trace in the sand.

Or imagine how different things would have been if most Americans had known that we had been tricked into joining four of the last six wars.

As you know, the Spanish didn't sink the battleship Maine, the Lusitania wasn't an innocent ship but was loaded with ammunition, and the North Vietnamese didn't attack the 7th Fleet. Of course, Saddam Hussein hated al-Qaeda and had nothing to do with it, yet the regime convinced 45 percent of the population that they were comrades-in-arms that he would hang one on the nearest streetlight.

But I don't want to end up with pessimistic thoughts.

The twentieth century, as we now realize, showed that ordinary people had enormous cognitive leeway, and the aristocrats were convinced that ordinary people could never make it and never share their mindsets and cognitive capacities.

When Lord Curzon once saw people bathing in the North Sea, he said, "Why didn't anyone tell me what white bodies the lower classes had?"

It looks like a reptile.

Well, Dickens was right, but he was wrong. [Corrected by Rudyard Kipling] [Kipling] said, "The Colonel's wife and Judy O'Grady are sisters under the skin."

(applause)

So I'm talking about trust. We begin by reminding people of the standard views people hold about trust.

I think these things are so commonplace that they have become a cliché in our society.

And I think there are three.

One claim, which is very widely believed, is that trust is greatly diminished.

The second is purpose. should be trusted more.

And the third is the challenge of rebuilding trust.

I think that the claim, the purpose, and the problem are all misunderstood.

So what I'm going to tell you today is another story about arguments, goals and challenges, and I think we can make pretty good decisions on this issue.

First claim: Why do people think trust has declined?

And I don't know the answer, even with serious consideration based on my own evidence.

I suspect that some activities and organizations have seen a decrease and others have seen an increase.

I don't understand the overview.

But, of course, we can look at polls, and polls are likely the source of the belief that trust is declining.

If you actually look at polls over time, there isn't much evidence for that.

In other words, people who were distrusted 20 years ago, mostly journalists and politicians, are still distrusted today.

And people who were highly trusted 20 years ago — judges and nurses — are still highly trusted.

The rest of us are somewhere in between, and by the way, the average person walking down the street is pretty much exactly in the middle.

But is it good evidence?

Opinion is, of course, recorded in polls.

What else can you record?

That is, they are looking at the general attitudes people report when asked a specific question.

do you trust politicians? Do you trust your teacher?

Now, if someone asks you, "Do you trust the greengrocer?"

Do you trust your fishmonger?

Do you trust elementary school teachers? ”

You probably start by asking, "What do you do?"

And that would be a perfectly sensible reaction.

And when you understand the answer, you might say, "Well, I trust some of them and I don't trust others."

That's perfectly reasonable.

So in real life, we try to place trust in a differentiated way.

We do not assume that any particular type of official, position, or type of person will receive a uniform level of trust in any given case.

For example, I might say that I certainly trust an elementary school teacher I know to teach the reception class to read and write, but I would never trust him to drive the school minibus.

After all, maybe I know she wasn't a good driver.

I may trust my most talkative friend to keep the conversation going, but I may not be able to keep a secret.

Simple.

So if we have evidence of how trust is distinguished in our everyday lives, why do we abandon all such intelligence when we think about trust more abstractly?

I think polls are a very bad guide to the level of trust that actually exists because they try to obliterate the right decisions to place trust in.

Then what about purpose?

The goal is to gain more trust.

Well, frankly, I think that's a stupid goal.

That's not what I aim for.

I aim to give more trust to the trustworthy, but not to the untrustworthy.

In fact, I actively aim to discredit the untrustworthy.

And I think, for example, of those who entrusted their savings to Mr. Madoff, who deserves the very name, and then fled with them. And I think of them and yes, I trust them too much.

Gaining more trust is not a wise goal in this life.

Setting trust wisely and denying it wisely is a good aim.

Well, once you've said that, saying "yes, I understand" isn't about trust, it's about being trustworthy in the first place.

It determines how trustworthy people are in certain respects.

And I think we need to look at three things to judge.

Are they capable? are they honest? Are they reliable?

And if the person proves to be competent, trustworthy, and honest in the relevant matter, then that person is trustworthy and therefore gives good reason to trust him.

But on the other hand, if they are unreliable, they may be unreliable.

I have competent and honest friends, but they are so forgetful that I don't trust them to post letters.

I have friends who are very confident that they can do certain things, but I have found that they overestimate their abilities.

And I am very happy to say that I don't think there are many friends who are competent and trustworthy but who are very unfaithful.

(Laughter) If so, I haven't noticed it yet.

But what we want is credibility before trust.

Trust is the answer.

Reliability is something we have to judge.

And of course it's hard.

Over the last few decades, we have strived to create a system of accountability for all kinds of institutions, experts, officials, etc. to make it easier to judge their credibility.

Many of these systems are counterproductive.

they don't work as expected.

I remember talking to my midwife and saying, 'Well, the problem is that the paperwork takes longer than it takes to have a baby.'

And throughout our public life, our organizational life, we see the problem that the systems of accountability that are meant to ensure credibility and evidence of credibility are actually doing the opposite.

As we say, requiring people who have to do a difficult job, such as midwives, to tick a box is a distraction.

You can also give your own example there.

That's about it.

I think the goal is to be more trustworthy, but it's different when we're trying to be trustworthy and tell others about our credibility, versus when we're trying to determine if other people, officials, politicians are trustworthy.

It is not easy. It's a judgment and simple reactions, attitudes can't do enough here.

The third is tasks.

I think the task of rebuilding trust would also turn things around.

It suggests that you and I need to rebuild trust.

Well, we can do it ourselves.

A little bit of trust can be regained.

Two people can work together to build trust.

But after all, trust is peculiar in that it is given by others.

You cannot reconstruct what has been given to you by others.

You have to give them a reason to give them confidence.

So I think it has to be someone you can trust.

And that's because, of course, you can't fool everyone all the time, usually.

However, you must also provide available evidence that you are trustworthy.

how do you do that

It is done very effectively every day, everywhere, by ordinary people, by officials, by organizations.

Let me give you a simple commercial example.

The store where I bought the socks says I can return them, but doesn't ask me any questions.

They bring it back and give me money or give me the color socks I wanted.

That's amazing. I trust them because they are defenseless against me.

I think there is a big lesson there.

If you leave yourself vulnerable to the other person, it's a very good sign that you are trusted and confident in what you say.

So at the end of the day, I don't think it's that hard to see what we're going for.

It is a relationship in which people can be trusted and can determine how and when the other can be trusted.

So the lesson of all this is that we don't have to think about trust, but about what is trustworthy and how you provide people with good, useful, and simple evidence that you are trustworthy, let alone about trustworthy attitudes that are detected or falsely detected by polls.

thank you.

(applause)

There's an age-old and universal notion that words have power, spells exist, and if you can pronounce the right words, you're good to go. -- See, an avalanche is coming and the hobbits will all be wiped out, right?

This is a very attractive idea. Because we, like the Sorcerer's Apprentice or the world's greatest computer programmer, are very lazy.

This idea has garnered us a lot of support.

We love the idea that words, when pronounced, are just information, but in the real world they evoke physical actions that help us do our jobs.

Of course, with so many programmable computers and robots, this is easy to imagine.

How many of you know what I'm talking about?

Please raise your right hand.

How many people don't know what I'm talking about?

Please raise your left hand.

That's wonderful. It was too easy.

Your computer is very insecure, isn't it?

Now, the problem is that this is a different kind of spell.

This is a computer program made up of 0's and 1's.

You can pronounce it on your computer. do something like this.

The important thing is that it can be written in a high-level language.

A computer magician can write this.

You can compile to 0 and 1 and pronounce them on your computer.

And that's what makes computers so powerful, it's a compilable high-level language.

So my point here is that you don't need a computer to actually do magic.

In fact, what you can do at the molecular level is that if you encode information, i.e. encode a spell or program as a molecule, physics can actually interpret that information directly to run the program.

That's what happens with proteins.

When this amino acid sequence is pronounced as atoms, these small letters stick together.

It collapses into a three-dimensional shape and turns into a nanomachine that actually cuts DNA.

The interesting thing is that changing the order changes the three-dimensional folding method.

Instead, you get a DNA stapler.

These are the kinds of molecular programs that we want to be able to create.

The problem is that we don't know the protein machine code and we don't have a compiler for proteins.

So I joined a growing group of people trying to create molecular spells with DNA.

We use DNA because it's cheaper, easier to work with, and we understand it better. In fact, I understand it so well that I think I could actually write a programming language for DNA and use a molecular compiler.

So I think we can do that.

One of my first questions when doing this was, "How can arbitrary shapes and patterns be created from DNA?"

I decided to use a kind of DNA origami. It takes a long strand of DNA and folds it into any shape or pattern.

So here is the shape.

In fact, I used to spend about a year coding at home in my underwear, like Linus [Torvalds] in the picture.

This program takes shape and spits out 250 DNA sequences.

These short DNA sequences are what fold the long strands into the shape we want to make.

So you send an email containing these sequences to a company, and they pronounce the sequences with a DNA synthesizer (a machine the size of a copier).

Then they take your email and replace every character in that email with 30 atomic clusters. One for each letter in DNA: A, T, C, G.

They tie them in the correct order and send them back via FedEx.

That means 250 of these will arrive in the mail in small tubes.

Mix these together, add a little bit of salt water, and then add this long thread I was talking about that you stole from the virus.

And what happens is you heat this whole thing up to a boil.

When cooled to room temperature, those short strands behave like this: Each strand joins the long strand at one point, then the other half joins the long strand at a distance, bringing the two parts of the long strand close together.

So the net effect of all those 250 strands is to fold the long strands into the desired shape.

Get closer to that shape.

Do this in a test tube.

A single drop of water contains 50 billion of these substances.

A microscope allows you to observe them on the surface.

The cool thing is that you can change the sequence to change the spell and just change the sequence of staples to create molecules like this:

And you know, he likes hanging out with his friends.

Many of them are actually pretty good.

Change the spell again, change the sequence again, and you get a very nice 130 nanometer triangle.

Run it again and you can get any pattern.

So you can draw North and South American patterns or the letters "DNA" on the rectangle.

That is DNA origami. That's one way.

There are many ways to use DNA to cast molecular spells.

What we really want to do eventually is learn how to program self-assembly so that we can build anything, right?

We want to be able to build technical artifacts that could possibly serve the world.

We want to learn how to build biological artifacts such as humans, whales and trees.

And if we could reach that level of complexity and be so good at programming molecules, it would be truly magical.

thank you very much.

(applause)

For the longest time in my life, I felt like I was living two different lives.

There are lives that everyone sees, and lives that only I see.

And in life for everyone to see, I am a friend, a son, a brother, a stand-up comedian, and a teenager.

That's the life everyone sees.

If you asked my friends and family to describe me, I would say yes.

And that's a big part of me. that's me

And if you asked me to describe myself, I'd probably say some of the same things.

And while I don't think I'm lying, I'm not completely telling the truth either. Because the truth is, that's the life everyone else sees.

Who am I, who am I really, in a life that only I see, is someone who is struggling with depression.

I have been doing it every day for the last six years of my life.

Now, for those who have never experienced depression, or are not familiar with what depression means, this may come as a surprise. Because there is a very common misconception that depression is just sad when something in life goes wrong, when you break up with your girlfriend, when you lose someone you love, when you don't get the job you wanted.

But it's sad. It's natural.

It's a natural human emotion.

Real depression is not being sad when something goes wrong in your life.

Real depression is feeling sad when everything in life is going well.

That's real depression and I suffer from it too.

To be honest, it's hard for me to stand here and say that.

It's hard for me to talk about, and it seems like it's hard for everyone to talk about, so much so that no one talks about it.

No one is talking about depression, but depression is such a big problem right now that it needs to be.

That's a big problem.

But you don't see it on social media, do you?

Not seen on Facebook. I can't find you on Twitter.

We don't see it in the news because it's not happy, it's not fun, it's not bright.

We can't see it, so we don't know how serious it is.

But the seriousness and seriousness of it is this. Every 30 seconds, somewhere in the world, someone kills themselves from depression. It may be two blocks away, it may be two countries away, it may be two continents away, but it happens, and it happens every day.

And we, as a society, tend to look at it and think, "So what?"

so what? We looked at it and said, 'That's your problem.

That's their problem. ”

We say we're sad, we say we're sorry, but we also say, "So what?"

Well, two years ago it was my problem. Because I was sitting on the edge of a bed that I had sat on a million times before and had suicidal thoughts.

I was suicidal, and if you looked at my life superficially, you wouldn't see a suicidal child.

You'll see the kid who was the captain of the basketball team, the drama and drama student of the year, the English student of the year, who was always on the honors roster and was always on every party.

So you might say I wasn't depressed, I wasn't suicidal, but you'd be wrong.

That would be wrong. So that night, sitting next to a bottle of pills with pen and paper in hand, I considered taking my own life and came close to committing suicide.

I'm so close to being able to do that.

And I didn't. So I'm one of the lucky ones, one of the lucky ones who got on the ledge and looked down and couldn't jump off, one of the lucky ones who survived.

Well, I survived, so that's the end of my story. Here's my story: In four simple words, I suffer from depression.

I have depression and I think for a long time I had two completely different lives where one was always afraid of the other.

I worried that people were looking at me for who I was, that I wasn't the perfect, popular kid in high school that everyone thought I was, that there was conflict under my smile, darkness under my light, and even greater pain beneath my big personality.

Some people may worry that the girl won't return the favor to them.

Some people may be afraid of sharks. Some may fear death.

But for me, for most of my life, I was afraid of myself.

I was afraid of my truth, I was afraid of my honesty, I was afraid of my weakness, and that fear made me feel cornered, cornered, like there was only one way out, and I thought that way every day.

I've been thinking about it every day, and to be completely honest, I've been thinking about it again since I've been standing here. Because that's the disease, that's the struggle, that's depression, and depression isn't chickenpox.

If you win even once, you're gone forever.

It's what you live with. it is what you live for.

A roommate you can't kick out. A voice that cannot be ignored.

It's an inescapable feeling, and the scariest part is that it numbs after a while. It becomes normal for you, and what you really fear most is not the suffering inside you.

It's the prejudice in others, the shame, the embarrassment, the look of discontent on a friend's face, the whisper in the hallway that you're weak, the comment that you're crazy.

That's what prevents you from getting help.

That's what causes you to hoard it and hide it.

It's stigma. So you hold it back and hide it, hold it back and hide it, even though it keeps you in bed every day and makes your life feel empty no matter how you try to fill it, you hide it. Because the stigma in our society around depression is very real.

It's very real, and if you think otherwise, ask yourself this question. Which is better for your next Facebook status: 'My back hurts and it's hard to get out of bed' or 'I'm depressed and it's hard to get out of bed every morning'?

That's the stigma. Unfortunately, in the world we live in, when you break your arm, everyone runs over to sign your cast, but when you tell people you're feeling down, they run the other way.

That's stigma.

We very, very much accept that parts of our bodies other than our brains are broken. And it is ignorance.

It was sheer ignorance, and that ignorance has created a world where depression and mental health are incomprehensible.

This is ironic for me. Because despite being one of the most documented problems in the world, depression is one of the least discussed.

We push it aside, put it in a corner, pretend it doesn't exist, and expect it to heal itself.

Well, it wouldn't. It's not, and it's not going to be. Because it is wishful thinking, and wishful thinking is procrastination, not strategy. And you can't procrastinate on something so important.

The first step to solving a problem is recognizing that it exists.

Well, we haven't done that yet, so don't expect to find answers while you're afraid of questions.

And I don't know what the solution is.

I would like to, but it's not. But I think we have to start here.

It has to start with me, it has to start with you, it has to start with those who are suffering, those who are in the shadows.

We need to speak up and break the silence.

We must act bravely for what we believe in. Because if there's one thing I've noticed, and I think is the biggest problem, it's not building a world that excludes other people's ignorance.

It's about building a world that teaches you to accept yourself and be okay with who you are. Because if I'm being honest, I can see that we all struggle and suffer.

Whether it's this one or something else, we all know what it's like to hurt.

We all know what heartache feels like and we all know how important it is to heal.

But now depression is a deep wound in society and we are content to put a band-aid on it and pretend it doesn't exist.

Well, there it is. It's there and what do you know? that's okay.

Depression is okay. If you're going through it, know you're okay.

And know that you are not sick and weak, it is a problem, not an identity. Because when you get past the fear, ridicule, criticism, and prejudice of others, you see depression for what it is. It's part of life, just part of life. As much as some of the places I hate, some parts of my life have had depression dragging me down, and in many ways I'm grateful for that.

For, yes, it put me in a valley, but only to show me that there were mountains, and yes, it dragged me into darkness, but only reminded me that there was light.

More than anything in my 19 years on this planet, my pain has given me perspective and my wounds, my wounds have given me hope, hope, faith, faith in myself, faith in others, faith that things will get better, faith in others, belief that things will get better, we can change, speak up and speak up to fight ignorance, fight intolerance and most of all, learn to love yourself and accept yourself for who you are, not who the world wants you to be. I learned.

Because I believe in a world where accepting your light does not mean ignoring your darkness.

I believe in a world where we are judged by our ability to overcome adversity, not by avoiding it.

The world I believe in is one where I can look someone in the eye and say 'I'm going through hell' and they can look back at me and say 'Me too' and that's okay, because depression is okay. we are human

We are humans, we suffer, we suffer, we bleed, we cry. If you think true strength is never showing weakness, I'm here to tell you that you're wrong.

You're wrong because it's the other way around.

We are human and we have our problems.

We're not perfect, and that's okay.

So we need to stop ignorance, stop intolerance, stop bigotry, stop silence. And we need to get rid of taboos, look at the truth, and start talking. Because the only way to overcome the problems people are fighting alone is to stand strong together, stand strong together.

And I believe it can be done.

I believe it can be done. Thank you very much to all of you.

This is a dream come true. thank you. (Applause.) Thank you. (applause)

So while writing my new book, I wanted to tell a story that really got me hooked. It tells the story of events that took place in the early days of the Kingdom of Israel, 3,000 years ago.

And it will take place in what is now called Shepherah, in Israel.

And the reason that story hooked me was because I thought I understood it, but when I looked at it again, I realized I didn't understand it at all.

Ancient Palestine had mountain ranges along its eastern border.

The same is true in Israel today.

And in that mountain range are all the ancient cities of the region: Jerusalem, Bethlehem, and Hebron.

Then there was the coastal plain along the Mediterranean Sea, which is now Tel Aviv.

And connecting the mountains to the coastal plain is the region called the Shephelah, which is a series of valleys and ridges running from east to west that can follow the Shephelah and pass through the Shephelah from the coastal plain to the mountains.

And Shepherah, if you've been to Israel, you know it's the most beautiful place in Israel.

It has oak forests, wheat fields and vineyards and is very beautiful.

But more importantly, in the history of the region, it has served a real strategic function, and it has served a real strategic function: it is a means by which hostile armies on the coastal plain find their way up the mountain and threaten the people who live there.

And 3000 years ago, that's exactly what happened.

The greatest enemies of the kingdom of Israel, the Philistines, live on the coastal plain.

They are originally from Crete. They are marine peoples.

Then they may start heading towards the mountains through one of the Shepherah valleys. Because they want to occupy the highlands near Bethlehem and divide the kingdom of Israel in two.

And the kingdom of Israel, led by King Saul, was clearly caught in the wind as Saul descended his army from the mountain to face the Philistines in the Valley of Elah, one of the most beautiful valleys of Shepherah.

And the Israelites will dig along the northern ridge, and the Philistines along the southern ridge. And the two armies are in a stalemate, so they just sit there and stare at each other for weeks.

Neither can attack the other. Because to attack the other side, you have to go down a mountain, into a valley, and then up the other side, completely exposed.

So finally, to break the impasse, the Philistines send their mightiest warriors to the valley floor. Then the Philistines shouted to the Israelites. "Send in your most powerful warriors, and we'll handle it with just the two of us."

This was an ancient warfare tradition called single combat.

It was a way of resolving conflicts without incurring the bloodshed of a large-scale battle.

And the Philistines sent, their mighty warriors are giants.

he's 6 foot 9.

He wears this shining bronze armor from head to toe and carries a sword, a spear and a spear. He's a really scary person.

And he is so frightening that none of the Israeli soldiers want to fight him.

That's a death wish, right? I can't believe they can take him.

And the last one to come forward was this young shepherd boy, who approached Saul and said, "I will fight him."

And Saul says, "You can't fight him. That's ridiculous.

You are this child Here is this mighty warrior. ”

But shepherds stand firm. He said, "No, no, you don't know. I've been protecting herds from lions and wolves for years. I think I can do it."

And Saul has no choice. He has no one else to come forward.

So he said "OK".

And he turned to the child and said, "But you must put on this armor. You can't keep it."

So he tried to give the armor to the shepherd, but the shepherd said no.

"I can't wear this," he says.

The Bible verse is "You cannot wear this because I have not proved it", which means "I have never worn armor before. You must be insane."

So he reached down to the ground, picked up five stones, put them in the shepherd's bag, and began walking up the mountainside to meet the giant.

And when the giant saw this figure approaching, he cried out, "Come to me, so that I may feed your flesh to the birds of heaven and the beasts of the field."

He utters this kind of ridicule against this person who comes to fight with him.

And as the shepherd came closer and closer, the giant realized that the shepherd had a staff.

That's all he carries.

Using only this shepherd's staff instead of a weapon, he said - he is insulted - "Am I the kind of dog you come to me with a stick?"

And the shepherd-boy took a stone out of his pocket, put it in a sling, rolled it, and let it fly, and it hit right here, between the giant's eyes, where it was most dangerous, and he fell, died, or was unconscious. Then the shepherd boy ran up, took his sword, and cut off his head. When the Philistine saw this, he turned and fled.

And, of course, the giant's name is Goliath, and the shepherd boy's name is David. And the reason that story hooked me in the process of writing the book was that everything I thought I knew about it turned out to be wrong.

I mean, David should be the underdog in that story, right?

In fact, the words David and Goliath entered our language as metaphors for the unlikely victory of the weak over the much stronger.

Now, why do we call David an underdog?

Well, we call him an underdog because he's a kid, a little kid, and Goliath is such a big, strong giant.

We also call him the underdog, because Goliath is an experienced warrior, and David is just a shepherd.

But most importantly, we call him a weakling because that's all he has - it's that Goliath has all this modern weaponry, this glittering coat of armor and swords and spears and spears, and all David has is this trebuchet.

Well, let's start with the phrase, "This sling is all David has." Because that's the first mistake we make.

There are three types of warriors in ancient warfare.

There are cavalry, men on horseback, and men with chariots.

Heavy infantry is infantry, infantry armed with swords and shields and some type of armor.

And there is also artillery. Artillerymen are archers, but more importantly slingers.

A slinger is someone who has a leather pouch with two long cords in which they place a projectile, either a stone or lead ball, and spin it like this to release one of the cords. As a result, the projectile is sent forward toward the target.

It's important to understand that that's what David has and that stoning is not slingshot.

This is not it, is it? Not a child's toy.

In fact, it's an incredibly destructive weapon.

When David rolls the stone like this, he's probably spinning the sling at 6-7 revolutions per second. This means that when the stone is released it will move forward very quickly, perhaps 35 meters per second.

This is considerably faster than a baseball thrown by the best baseball pitchers.

More than that, the rocks of the Valley of Elah were no ordinary rocks. It was barium sulfate, a rock twice as dense as regular stone.

If you calculate the ballistics, or stopping power of a stone fired from David's sling, it's about the same as the stopping power of a [.45 caliber] handgun.

This is an incredibly destructive weapon.

As for accuracy, historical records show that an experienced slinger could hit, injure, or even kill a target at distances of up to 200 yards.

From medieval tapestries we know that trebuchet had the ability to attack birds in flight.

They were incredibly accurate.

When David lines up, and he's less than 200 yards from Goliath, he's pretty close to Goliath, but when he lines up and fires at Goliath, he has every intention and every expectation that he can hit the most vulnerable spot between Goliath's eyes.

If you look back in the history of ancient warfare, you will find again and again that slingers were the decisive factor against infantry in all kinds of battles.

So what is Goliath? He is a heavy infantryman, and when he challenges an Israelite to a duel, he expects to fight another heavy infantryman.

When we say, "Come unto me, to feed your flesh to the birds of heaven and the beasts of the field," the key phrase is "Come unto me."

Come to me, for we are going to fight hand to hand like this.

Saul has the same expectations.

David says, "I want to fight Goliath," and Saul tries to give him the armor, because Saul thinks, "Oh, when you say 'to fight Goliath,' you mean 'foot soldiers on foot soldiers to fight him in hand-to-hand combat.'"

But David doesn't expect it at all.

He's not going to fight like that. Why?

he is a shepherd He has spent his entire career using a trebuchet to protect herds from lions and wolves.

That's where his strength lies.

There he faces this shepherd, experienced in the use of devastating weapons, this dull giant weighed down with 100 pounds of armor and these incredibly heavy weapons useful only in close combat.

Goliath is a sitting duck. he has no chance.

So why do we keep calling David a weakling and calling his victory impossible?

There's this second important part.

It's not just that we misunderstand David and his weapon choices.

It also means that we deeply misunderstand Goliath.

Goliath is not what he looks like.

There are all sorts of hints about this in the biblical text, some of which, in retrospect, are very baffling and inconsistent with his image as this mighty warrior.

First, the Bible says that Goliath was led up into the valley by his followers.

That's strange, isn't it?

Here is this mighty warrior who challenges the Israelites to one-on-one combat.

Why is he being led by the boy's hand, perhaps to the point of fighting?

Second, the biblical story pays special attention to how slow Goliath moves, which is also a strange thing to say when describing the mightiest warrior known to mankind at the time.

And then there's also the sheer weirdness of how long it takes Goliath to see David before he reacts.

So David is going down the mountain, but is clearly not ready for hand-to-hand combat.

He has nothing to say, "I'm going to fight you like this."

He doesn't even have a sword.

Why wouldn't Goliath react to it?

It's as if they weren't aware of what was going on that day.

And then there's the strange comment he makes to David: "I'm the dog you should come to me with a stick?"

stick? David has only one stick.

Well, it turns out there was a lot of speculation within the medical community over the years that there was something fundamentally wrong with Goliath, trying to make sense of all those apparent anomalies.

Many articles have been written.

The first article, published in the Indiana Medical Journal in 1960, set off a chain of speculation that began with an explanation of Goliath's height.

So Goliath is a head above the rest of his time, and there's usually an explanation when someone deviates significantly from the norm.

Thus, the most common form of gigantism is a condition called acromegaly, which is caused by benign tumors of the pituitary gland that cause overproduction of human growth hormone.

And throughout history, many of the most famous giants all suffered from acromegaly.

So the tallest man ever was a man named Robert Wadlow, who was still growing at 8ft 11 when he died at the age of 24.

He had acromegaly.

Remember the wrestler Andre the Giant?

famous. He had acromegaly.

There is even speculation that Abraham Lincoln was acromegaly.

Anyone who is abnormally tall, that's the first explanation we can come up with.

And acromegaly comes with a very unique set of side effects, mainly related to vision.

As a pituitary tumor grows, it often begins to press on the optic nerves in the brain, resulting in double vision or severe myopia in people with acromegaly.

So when people start guessing what's wrong with Goliath, they say, "Wait a minute, he looks and sounds like an acromegaly person."

And that would also explain much of what was strange about his behavior that day.

Why does he move so slowly and has to be escorted down to the bottom of the ravine?

Because he cannot go on his own.

Why is he so strangely indifferent to David that he doesn't understand that David isn't going to fight him until the last moment?

Because he can't see it.

When he says, "Come to me, to feed your flesh to the birds of heaven and the beasts of the field," the phrase "come to me" alludes to his weakness.

I can't see you, so please come to me.

And "Am I the dog that should come to me with a stick?"

David sees two sticks while he only has one.

So the Israelites, who were looking down on him on the ridge of the mountain, considered him to be this very powerful enemy.

What they failed to understand was that the very source of his apparent strength was also the source of his greatest weakness.

And I think there is a very important lesson there for all of us.

Giants are not as strong or powerful as they appear.

And sometimes the shepherd boy has a sling in his pocket.

thank you.

(applause)

I don't think it's an exaggeration to say that every human being will face death at least once in their lifetime.

But what if that intimacy began long before you yourself faced the transition from life to death?

What would life be like if the dead were literally living next door to you?

In my husband's hometown in the highlands of Sulawesi Island in eastern Indonesia, there is a community of people who experience death not as an idiosyncratic event but as a gradual social process.

The most important social moment in people's lives, Tana Toraja, the center of social and cultural interaction is not weddings, births or family dinners, but funerals.

These funeral ceremonies are therefore characterized by elaborate ceremonies linking people into a system of mutual debt based on the quantity of animals such as pigs, chickens and most importantly buffaloes, to be sacrificed and distributed in the name of the deceased.

Hence, this cultural complex surrounding death, the ritual enactment of the end of life, has made death the most visible and noteworthy aspect of the Toraja landscape.

Funerals, which can last for days or weeks, are raucous, and mourning the dead is more like a publicly shared transition than a personal grief.

And it's a transition as much about the identity of the living as it is about mourning the dead.

That is why thousands of tourists visit Tana Toraja every year to see this culture of death, so to speak. And for many, the grandeur of these ceremonies and the length of the ritual is somehow unfathomable to how we face our own death in the West.

Therefore, although we share death as a universal experience, it is not experienced in the same way around the world.

And as an anthropologist, I see these differences in experience as rooted in the cultural and social worlds that define the phenomena around us.

Thus, while we see death as an unquestionable reality, an irrefutable biological state, Torajas see expired physical bodies as part of a larger social origin.

So again, physical cessation of life is not the same as death.

In fact, a member of society truly dies only when a large family agrees and has the necessary resources to conduct a funeral deemed appropriate to the status of the deceased.

And this ceremony must be held in front of the entire community and with everyone's participation.

Therefore, after a person has physically died, the body is placed in a special room in a traditional dwelling called a tongkonan.

And Tongkonan is not only a symbol of family identity, but also a symbol of the human life cycle from birth to death.

So, in essence, the shape of the building you are born into is the shape of the structure that will carry you to where your ancestors rested.

Many years after a person's physical death, until the funeral is held, the deceased remains a member of the family, called 'makara' (the sick) or 'mama' (the sleeping one).

They are symbolically fed and cared for, and at this point the family initiates many ritualistic orders to tell the wider community around them that one of the family members is undergoing a transition from this world to the otherworldly known as Puya.

So I know what some of you are thinking right now.

Is she really saying that these people live with the bodies of their dead relatives?

And that's exactly what I'm saying.

But rather than giving in to some sort of instinctive reaction to the proximity of the body, the proximity of death, or how this concept doesn't fit our very biological or medical definition of death, I like to think about how Toraja's view of death encompasses human experiences that are excluded by medical definitions.

I think Torajas are socially aware and culturally expressing what many of us feel to be true, despite the widely accepted biomedical definition of death. That is, there is a transitional period because relationships with other humans and their impact on our social reality do not end with the termination of the physical processes of the body, and relationships between the living and the dead change but do not end.

So Torajas express this idea of ​​lasting relationships by giving unsparing love and attention to the human body, the most visible symbol of that relationship.

So, my husband has fond memories of talking to, playing with, and spending time with his deceased grandfather, and this is not unnatural to him.

This is a natural part of the family's process of embracing a change in their relationship with the deceased, which is a transition from a relationship with the deceased as a living human being to a relationship with the deceased as an ancestral human being.

And here you can see the wooden statues of the ancestors. So these are people who have already been buried and have already had a funeral service.

These are called tau tau.

So the funeral itself embodies this relational view of death.

It ritualizes the effects of death on families and communities.

And it is also a moment of self-awareness.

It is the moment when people think about who they are, their place in society, their role in the life cycle according to Toraja cosmology.

There is a Toraja proverb that everyone becomes a grandparent, which means that after death we all become part of an ancestral lineage that anchors us between the past and the present and defines who our loved ones will be in the future.

So, in essence, we are all grandparents to the generations of human children that follow us.

And this metaphor of being part of the larger human family is also how children explain the money they invest in these sacrificial buffaloes, which are thought to carry people's souls from here to the next, and children explain that they invest money in this because they want their parents to pay back the debt they've invested in over the years and spent caring for them.

However, the buffalo sacrifice and ceremonial display of wealth also mark the status of the deceased and, by extension, the family of the deceased.

At funerals, therefore, relationships are not only reaffirmed, but transformed in a ritual drama that highlights the most salient feature of death in this place: its impact on life and the relationships of the living.

So just because all of this is focused on death doesn't mean that the Torajas don't aspire to the ideal of longevity.

They engage in many habits that they believe will confer good health and survival into old age.

However, in the face of debilitating illness and old age, they are not doing much to extend their lives.

In Toraja, it is said that everyone has a predetermined lifespan.

It is called Sunga.

And like a thread, it should be unwound to its natural end.

Thus, death being part of the cultural and social fabric of life affects people's everyday decisions about health and healthcare.

The chieftain of her husband's maternal clan, Nenet Katcha, is now approaching the age of 100, as far as we know.

And there are increasing signs that he is about to embark on his own journey to Puya.

And his death will be greatly mourned.

But I do know that my husband's family looks forward to the moment when we can ritualistically show what his amazing presence meant to their lives, when we can ritually tell the story of his life and weave his story into the history of our community.

His story is their story.

His funeral song would sing them a song about themselves.

And it's a story with no definite beginning or predictable end.

It's a story that continues long after his body ceases to function.

People ask me, are they terrified or repulsed to participate in a culture where physical signs of death greet us at every turn?

But I feel there is something very transformative about experiencing death as a social process, not just a biological death.

In fact, the U.S. healthcare system has its own drama in the relationship between the living and the dead, and decisions about how long to stretch the thread of life are based not only on the life-prolonging capabilities of medicine, but also on the emotional and social connections we have with those around us.

Much like the Toraja, we make decisions about life based on the meanings and definitions we attribute to death.

So I'm not saying that anyone in this audience should jump out and adopt Toraja traditions.

It may be a little more difficult to practice in America.

But I want to ask what can be learned from seeing physical death not just as a biological process, but as part of the larger human story.

What does it feel like to look with love at an expired human form, because it is part of all of us?

If we could expand our definition of death to include life, we could experience death as part of life and perhaps face it with something other than fear.

Perhaps one of the answers to the challenges facing the U.S. health care system, especially end-of-life care, is as simple as a shift in perspective, which in this case is to look at the social life of all death.

It may help us recognize that the way we limit our conversations about death to medical or biological matters reflects a larger culture we all share of fearing and avoiding talking about death.

If we could enjoy and appreciate other kinds of knowledge about life, including other definitions of death, the debate about the end of life could change.

It can change the way we die, but more importantly, it can change the way we live.

(applause)

My name is Amy Webb. A few years ago, I was facing the end of another great relationship that burned out spectacularly.

And I thought, what am I doing wrong?

I don't understand why this keeps happening.

So I asked people around me what they thought.

Whenever I consulted my grandmother, she always gave me a lot of advice, and she said, 'Don't be so picky.

Must date.

And most importantly, true love will find you when you least expect it. ”

As you will soon see, I am a data thinker.

I am constantly swimming through numbers, formulas and graphs.

I also have a very close family, and my sister and I are very close, so I wanted to have a similar family when I grew up.

So I'm at the end of this terrible breakup, I'm 30, I think I'll have to date someone for probably about 6 months until I'm ready to be monogamous and before we can live together sort of, and have to do it for a while before we get engaged.

And if I wanted to start having kids by 35, I would have had to be ready to get married five years ago.

That didn't work.

If my strategy was to minimize my path to true love, chance was the variable I had to deal with.

In short, I was trying to find out what the odds of finding Mr. Right?

Well, I was living in the city of Philadelphia at the time, and it's a big city, and I thought there was a lot of potential for this whole place.

So I started counting again.

Population of Philadelphia: There are 1.5 million people.

I think about half of them are men, so that number will drop to 750,000.

I'm looking for men between the ages of 30 and 36, and since they were only 4% of the population, there are currently 30,000 potential men.

I was looking to be Jewish. Because I am Jewish and that was important to me.

That's just 2.3 percent of the population.

Probably 1 in 10 men would be attracted to me, but I had no intention of dating an avid golfer.

So basically, that means there are 35 men you could date all over the city of Philadelphia.

In the meantime, my very large Jewish family was all already married and about to have many children, so I felt under a great deal of peer pressure to get my life back on track quickly.

So there are two possible strategies at this point.

First, you can follow your grandmother's advice and go the less unexpected way, where you might run into one of the 35 male candidates across the city of 1.5 million in Philadelphia, or you can try online dating.

Well, I like the idea of ​​online dating because it presupposes an algorithm, and it's really just a simple way to tell that there's a problem, use the data, run it through the system, and you're going to arrive at a solution.

Online dating is currently the second most popular way people meet, but algorithms have been around for thousands of years in nearly every culture.

In fact, matchmakers have existed in Judaism since time immemorial. They didn't have a clear algorithm per se, but they definitely ran the formula in their head, "Will girls like boys?"

Is your family going to get along?

what would the rabbi say?

Are they going to start having children soon?

The matchmaker ponders all this, unites the two, and that's it.

So in my case, I wondered, could data and algorithms lead me to Prince Charming?

So I decided to sign on.

Well, there was one small pitfall.

I'm registered with various dating sites, but as it happens, I've been really, really busy.

But it really wasn't the biggest problem.

The biggest problem is that I hate filling out surveys of any kind, let alone surveys like the Cosmo Quiz.

So I copied and pasted from my resume.

(Laughter) So in the description above, I said I'm an award-winning journalist and futurist.

When asked about fun activities and ideal dates, I answered about monetization and fluency in Japanese.

We talked a lot about JavaScript.

(Laughter.) So obviously this wasn't the best way to put my sexiest legs forward.

But the real downfall was that I had a lot of men I dated.

These algorithms had a lot of guys trying to take me on dates, but it ended up being a really bad date.

There was a guy named Steve from IT. Man.

We shared a love of gadgets, math and data, and a love of 80s music, and Algorithm was a match for us, so I agreed to hang out with him.

I'm Steve from IT. The man invited me to one of the most expensive restaurants in Philadelphia with white tablecloths.

And we walked into the store, and although we didn't have an immediate conversation, he was ordering a lot of food.

In fact he didn't even bother to look at the menu.

He had ordered multiple appetizers, multiple entrees for me as well, and suddenly there was a pile of food on the table and lots of bottles of wine.

So, we're done talking and nearing the end of our dinner, so we've decided on Steve from IT. He and I weren't really destined for each other, but when he got up to go to the bathroom, we ended up breaking up as friends, and the bills came to our table in the meantime.

Listen, I'm a modern woman.

I am totally against splitting the bill.

But then Steve from IT said the man didn't come back.

(gasping) That was my monthly rent.

(audience gasps) Needless to say, I didn't have a good night.

So I run home, call my mom, call my sister. And in doing so, entertain them with details at the end of each of these awful dates.

And they tell me, "Stop complaining."

(laughs) "It's too loud."

So I said okay, from now on I'll only bring my laptop to dates where I know there's Wi-Fi.

Throw this in your bag, have this email template, fill it out, collect information on various data points during the date, and prove to everyone empirically that this date really sucks.

(Laughter.) So I started tracking down really stupid, awkward, sexual remarks and stuff like that. Poor vocabulary. The number of times men have forced me to high-five.

(Laughter) So I started working out some numbers so I could make some correlations.

After all, for some reason, men who drink Scotch immediately mention kinky sex.

(Laughter) Well, it turns out they probably weren't the bad guys.

It was all bad for me.

And incidentally, the algorithm that set us up wasn't bad either.

These algorithms did what they were designed to do: take user-generated information (in my case, a resume) and match it with other people's information.

You see, the real problem here is that the algorithm works fine, but you and I don't when faced with a blank window where you're supposed to enter information online.

Few of us have the capacity to be completely and brutally honest with ourselves.

Another problem is that these websites ask questions like "Are you a dog person or a cat person?"

Which do you prefer, horror movies or romantic movies?

I'm not looking for a pen pal.

looking for a husband right?

So that data is somewhat superficial.

So I said, "Okay, I have a new plan."

I will continue to use these online dating sites, but rather than treat them as databases and wait for the algorithms to set things up for me, I'll try to reverse engineer this entire system.

So I learned that superficial data was being used to match me with other people, so I decided to ask my own question instead.

What was I looking for in my spouse?

So I kept writing and writing and eventually amassed 72 different data points.

I wanted someone with a Jewish feel, so I was looking for someone who had the same background and ideas about our culture, but who wasn't going to be forced to go to Schul every Friday and Saturday.

Work is very important to me, but not too hard, so I was looking for someone who works hard.

For me, hobbies are really just new work projects that I have started.

I also wanted someone who not only wanted two children, but who had the same attitude towards parenting as I did, someone who was perfectly fine with taking piano lessons from the age of 3, and someone who could take computer science classes if I could talk to them.

That being said, I also wanted someone to go to faraway and exotic places like Petra and Jordan.

I also wanted someone who was always 20 pounds heavier than me, regardless of my weight.

(Laughter) Now we have these 72 different data points. This is a fair amount, to be honest.

So what I did was go through that list and prioritize it.

I divided it into top tier and tier 2 points and ranked everything from 100 to 91, listing items like I'm looking for someone who's really smart, someone who challenges me and inspires me, etc., and then I balance it with tier 2 and tier 2 points.

These things were also important to me, but they weren't necessarily deal breakers.

(Laughter) So after all this was done, we built a scoring system. Because what I wanted to do was mathematically calculate whether or not I thought a man I found online would be a match for me.

I thought I needed a minimum of 700 points before I could email someone or reply to an email message.

With 900 points, I agree to date, but I won't consider any kind of relationship until someone crosses the 1,500 point threshold.

Well, as it turns out, this worked out pretty well.

So now I'm back online.

I found a Jewish doc57 who was incredibly handsome and incredibly well spoken. He has hiked Mount Fuji and walked along the Great Wall of China.

He likes to travel unless he is on a cruise ship.

And I thought, "I did it!"

I have cracked the code.

I found my family's dream Jewish Prince Charming.

There was only one problem. he didn't like me.

And I think the only variable I haven't considered is contention.

Who are the other women on these dating sites?

I found SmileyGirl1978.

She described herself as a "fun girl who is fun and sociable".

She listed her job as "teacher".

She described herself as "silly, sweet, and friendly."

She likes to make people laugh "a lot".

At this point, I knew I needed to do some market research as I clicked through profiles like:

So I created 10 fake male profiles.

Now, before you all lose -- (laughter) -- please understand that I'm technically doing this to collect data about everyone else in the system.

I didn't carry on a catfish crazy relationship with anyone.

I was really scraping their data.

But I didn't want everyone's data.

I just wanted data on women who were likely to be attracted to the type of man I really wanted to marry.

I followed a few rules when releasing these men into the wild.

So I never contacted the lady first.

I was just waiting to see who these profiles would attract, but mostly I was looking at two different datasets.

So I was looking at the qualitative data, what was the humor, tone, voice, communication style these women had in common?

We also have quantitative data. In other words, what was the average profile length and the time between messages?

What I was trying to get here is that I personally thought it would be as competitive as SmileyGirl1978.

I wanted to find a way to maximize my profile online.

Well, a month later, we have a lot of data to do another analysis.

And at the end of the day, content matters a lot.

So smart people tend to write a lot about themselves: 3,000, 4,000, 5,000 words, all of which can be very interesting.

However, the challenge here is that popular men and women stick to writing 97 words very well on average, even if that doesn't seem to be the case all the time.

Another characteristic of those who do this well is the use of non-specific language.

For me, The English Patient is my all-time favorite movie, but using it for my profile doesn't work. Because it's a superficial data point. Others may disagree and decide they don't want to go out because they don't want to sit and watch a three-hour movie.

Also, optimistic words are very important.

This is a word cloud highlighting the most popular words used by the most popular women, words like 'fun', 'girls' and 'love'.

And what I've realized is that you don't have to make your profile stupid.

Remember, I'm the one who speaks Japanese fluently, knows JavaScript, and says it's okay.

The difference is to be friendlier and help people understand the best way to reach you.

And as it turns out, timing is also very important.

Just because you have access to someone's cell phone number or instant messaging account and you happen to be awake at 2am doesn't mean it's a good time to communicate with them.

Popular women on these online sites spend an average of 23 hours between each communication.

And that's what we do in our normal courtship process.

And finally, there were pictures.

All the popular women were exposing their skin.

They were all very nice and in contrast to what I uploaded.

(Laughter) Once I had all this information, I was able to create a super profile. So it was still me, but I became optimized for this ecosystem.

And all in all, I did a really good job.

I was the most popular person online.

(Laughter.) (Applause.) And in the end, so many guys wanted to date me.

So I call my mother, I call my sister, I call my grandmother.

When I tell them about this great news, they say, "This is great! How long are you planning to leave?"

I said, "Actually, I'm not going to date anyone."

Remember, my grading system requires students to reach a minimum score of 700, but no one has achieved it.

They said, "What? It's still too loud."

Not long after that, I found a man named Thevenin. He said he was culturally Jewish and his job was hunting baby seals in the Arctic. I thought that was very wise.

He told me more about his travels.

He made a lot of really interesting cultural references.

She looks and speaks just how I want her to, and she scored 850 right away.

Enough for a date.

Three weeks later, we met in person and had a 14-hour conversation from coffee shop to restaurant and coffee shop to restaurant. When he drove me home that night, I re-scored him - [1,050 points!] I've always thought I was not picky enough.

A year and a half later, while we were sailing in Petra, Jordan, a non-cruise ship, he got down on his knees and proposed.

A year later, we were married, and about a year and a half later, our daughter, Petra, was born.

Audience: Oh!

(Applause) [What does that mean...] Clearly, I have a great life, so -- (laughter) The question is, what does all of this mean to you?

Love actually has an algorithm.

That's not what we offer online.

In fact, you wrote it yourself.

So whether you're looking for a husband or wife, finding your passion, or starting a business, all you really have to do is find your frame and play by your own rules. Feel free to be as particular as you like.

Well, on our wedding day, I had another conversation with my grandmother, and she said, "Okay, maybe I was wrong.

Sounds like you came up with a really great system.

Well, your matzabole...

It should be fluffy, not stiff. ”

(Laughter) I'll take her advice on that.

(applause)

An image is worth more than a thousand words, so I'd like to stop and start by showing you some images I've taken recently.

Well, my story is already at 6,000 characters and I think I should stop here.

(Laughter) At the same time, I think you probably need to explain the image you just saw.

What I try to do as a photographer, as an artist, is to connect the worlds of art and science.

As you can see in this image, I'm always trying to connect these two fields, whether it's an image of a soap bubble captured at the moment it bursts, a universe made up of tiny beads of oil paint, a strange liquid that behaves in a very peculiar way, or a paint modeled by centrifugal force.

What I find very interesting about these two is that they are both looking at the same thing. So they are reactions to their surroundings.

Yet they do it in very different ways.

If you look at science on the one hand, science is a very rational approach to its environment, whereas art, on the other hand, is usually an emotional approach to its environment.

What I try to do is combine these two perspectives into one so that my images speak not only to the mind of the viewer, but also to the brain of the viewer.

We will illustrate this based on three projects.

The first is to visualize sound.

As you may know, sound travels in waves, so if you have a speaker, the speaker actually does nothing except take the audio signal, convert it into vibrations, then travel through the air, get caught by our ears, and convert it back into an audio signal again.

So I wondered how I could make those sound waves visible.

So I came up with the following settings.

I took a speaker and put a thin foil of plastic on top of the speaker and added tiny little crystals on top of the speaker.

And now, when you play a sound through that speaker, the crystal moves up and down.

This happens so fast and in the blink of an eye that we worked with LG to capture this motion on a camera capable of capturing over 3,000 frames per second.

Let me show you what this looks like.

(Music: Massive Attack "Teardrop") (Applause) Thank you.

Agree, it looks pretty great.

But I have to tell you a funny story.

I got a sunburn indoors while filming in Los Angeles.

In Los Angeles, you can get a pretty good tan on any beach, but I got my tan indoors. And what happened is that when you shoot at 3,000 frames per second, you need a ridiculous amount of light, a lot of light.

I put this speaker up, pointed the camera at it, and pointed a bunch of lights at the speaker. I set up a speaker and put a tiny little crystal on top of it and did this over and over. It wasn't until noon that I realized my face was bright red from the lights on the speakers.

What was so funny was that the speakers were only coming from the right side, so the right side of my face turned red and I looked like the Phantom of the Opera for the rest of the week.

Now let's move on to another project with less harmful substances.

Has anyone heard of ferrofluids?

Ah, some people think so. wonderful.

Should I skip that part?

(Laughter) Ferrofluids behave very strangely.

It's a black liquid.

It has an oily consistency.

They are magnetic because they contain tiny metal particles.

Therefore, when this liquid is placed in a magnetic field, its appearance changes.

I'm doing a live demonstration here to show you this.

I'm pointing the camera under this plate. Underneath that plate is a magnet.

Then add some of the ferrofluid to the magnet.

Let's move it slightly to the right and focus a little more. wonderful.

In other words, we can see that the ferrofluid forms spikes.

This is due to the attraction and repulsion of individual particles within the liquid.

This is already very interesting, but let's add some watercolor here.

These are the standard watercolors used for painting.

It doesn't paint with a syringe, but it works just as well.

So what happened now is that when the watercolor flows into the structure, it doesn't mix with the ferrofluid.

This is because the ferrofluid itself is hydrophobic.

That is, it does not mix with water.

And at the same time, because it tries to maintain its position on the magnet, it creates amazing looking structures such as water channels and tiny little ponds of colorful water-based paint.

That was my second project.

Now let's move on to our final project, the story of Scotland's national drink.

(laughs) This image was also made using whiskey.

Now you might ask yourself, how did he do that?

Did he drink half a bottle of whiskey and draw on paper the hallucinations he had while intoxicated?

I can assure you that I was fully conscious during the photo taking.

Well, whiskey is 40 percent alcohol, and alcohol has some very interesting properties.

Perhaps you've experienced some of these traits before, but I'm talking about physical traits, not others.

When you open the bottle, the alcohol molecules spread into the air. This is because alcohol is a highly volatile substance.

And at the same time, alcohol is highly flammable.

And with those two properties, we were able to create the image you're looking at now.

Let's demonstrate this here.

And here is an empty glass container.

There's nothing in it.

And now fill with oxygen and whiskey.

Add more.

Just wait a few seconds for the molecules to spread inside the bottle.

So let's light this one up.

(Laughter) That's all.

It goes really fast, and it's not that impressive.

I could give it another try just to show it again, but some would argue that this is a complete waste of whiskey and should rather be drunk.

But let me show you what I just showed you in this live demonstration, in slow motion in a completely dark room.

What happened was that the flame traveled from the top to the bottom of the glass container, burning the mixture of air molecules and alcohol.

The first image you see is actually the flame stopped as it travels through the bottle, and you have to imagine it flipped 180 degrees.

So that's how these images were made.

(Applause.) Thank you.

Now that I've shown you three projects, you might ask yourself, what's this good for?

What's the idea behind it?

Is it just a waste of whiskey?

Is it just a strange material?

These three projects are based on very simple scientific phenomena such as magnetism, sound waves, or the physical properties of matter. What I'm trying to do is take these phenomena and try to show them in a poetic and invisible way. Therefore, we invite the viewer to stop for a moment and think about all the beauty that surrounds us all the time.

thank you very much.

(applause)

So we were solving a big problem.

On July 21, 1969, Buzz Aldrin stepped off the Apollo 11 lunar module and landed in the Sea of ​​Silence.

Armstrong and Aldrin were lonely, but their presence on the moon's gray surface was the result of a frantic collective effort.

The Apollo program was the largest peacetime mobilization in US history.

NASA spent about $180 billion in today's money, or 4 percent of the federal budget, to get to the moon.

Apollo employed about 400,000 people and enlisted the help of 20,000 businesses, universities and government agencies.

People died, including the crew of Apollo 1.

However, 24 people flew to the moon before the Apollo program ended.

Twelve people have walked its surface, with Aldrin now the oldest after Armstrong died last year.

So why did they go?

They didn't bring back much. The 841-pound old stone and what all 24 emphasized later: a new sense of the smallness and vulnerability of our common home.

why did they go The ironic answer is that they did it because President Kennedy wanted to show the Soviet Union that they had better rockets.

But Kennedy's own words at Rice University in 1962 give us a better clue.

(Video) John F. Kennedy: But some people ask why the moon.

Why choose this as a goal?

And you may ask why I climb the highest mountain.

Why did you fly across the Atlantic 35 years ago?

Why is Rice playing for Texas?

We chose to go to the moon.

We chose to go to the moon.

(Applause.) We chose to go to the moon in this decade and do other things, not because it's easy, but because it's hard.

Jason Pontin: For his contemporaries, Apollo was not just a victory of the West over the East during the Cold War.

At the time, the strongest emotion was amazement at the transcendental power of technology.

They went because it was important.

The moon landing took place in a long series of technical victories.

The first half of the 20th century produced assembly lines, airplanes, penicillin and tuberculosis vaccines.

By the middle of this century, polio was eradicated, and so was smallpox.

The technology itself appeared to have what Alvin Toffler called "acceleration thrust" in 1970.

For most of human history, we've never gone faster than a horse or a boat with a sail, but in 1969 the crew of Apollo 10 flew at 25,000 miles per hour.

Humans have not returned to the moon since 1970.

No one has traveled as fast as the Apollo 10 crew. The frivolous optimism about the power of technology faded as the big problems we imagined it would solve—getting to Mars, generating clean energy, curing cancer, and feeding the world—were out of hand.

I remember watching the Apollo 17 launch.

When I was five years old, my mother told me not to stare into the burning exhaust of a Saturn V rocket.

I vaguely knew that this would be the last lunar exploration, but I was absolutely certain that Mars would be colonized in my lifetime.

So it's become commonplace that "something happened to our ability to use technology to solve big problems."

I hear you all the time.

We've been hearing it here at TED for the past two days.

It feels as if techies are distracting us and enriching themselves with petty toys like iPhones, apps, social media, and algorithms that speed up automated trading.

Nothing wrong with most of these things.

They have expanded and enriched our lives.

But they do not solve humanity's great problems.

what happened?

As such, Silicon Valley has a parochial account, admitting that it doesn't fund more ambitious companies than it did when it funded Intel, Microsoft, Apple, and Genentech.

Silicon Valley blames the incentives offered to entrepreneurs by the market, especially venture capitalists.

In Silicon Valley, he says, venture investment has shifted from funding transformative ideas to funding incremental or even fake problems.

But I think that explanation is not enough.

It mostly explains what's wrong with Silicon Valley.

Even when venture capitalists were most risk-satisfied, they preferred small investments—small investments that they could exit in 10 years or less.

Venture capital has always struggled to profitably invest in technologies such as energy that require huge capital and take a long time to develop, and VCs have never funded the development of technologies intended to solve big problems with no immediate commercial value.

No, the reason why we can't solve big problems is more complicated and deeper.

We sometimes choose not to solve big problems.

You can even go to Mars if you want.

NASA also has a plan outline.

But going to Mars would be subject to a political decision with public appeal, which will never happen.

We are not going to Mars. Because everyone thinks there are more important things on earth.

Sometimes big problems cannot be solved due to the failure of the political system.

Today, less than 2% of the world's energy consumption comes from advanced renewable sources such as solar, wind and biofuels, for purely economic reasons.

Coal and natural gas are cheaper than solar and wind, and oil is cheaper than biofuels.

We want alternative energy sources that are competitively priced. None exist.

Technologists, business leaders, and economists now basically agree on what national policies and international treaties would encourage the development of alternative energy sources. Primarily a massive increase in energy research and development and some sort of carbon pricing.

However, in the current political climate, there is no hope that a US energy policy or international treaty that reflects that consensus will materialize.

Big problems that were thought to be technical can turn out not to be.

Hunger has long been understood to be caused by a failure of the food supply.

But 30 years of research have found that hunger is a political crisis with devastating effects on food distribution.

Technology can improve things like crop yields and food storage and transportation systems, but as long as there is bad government, there will be hunger.

Finally, the big problem is that sometimes we don't really understand the problem, so we can't find a solution.

President Nixon declared war on cancer in 1971, but it quickly became apparent that there are many types of cancer, most of which are wildly resistant to treatment. It is only in the last decade that effective and viable treatments have become a reality.

Difficult problems are difficult.

It is not true that technology cannot solve big problems.

We can and must, but all four elements must be present. Political leaders and the public must be concerned with solving problems. Institutions must support that solution. It really must be a technical problem. And we have to understand it.

A kind of metaphor for technology's ability to solve big problems, the Apollo program met these criteria.

But it is an irreproducible model for the future.

Not 1961.

There are no vibrant competitions like the Cold War, no politicians like John Kennedy who can heroize difficult and dangerous people, no popular science fiction myths like Solar System Exploration.

Best of all, it turned out to be easy to get to the moon.

It was just three days later.

And it probably didn't solve much of the problem either.

We are alone today, and future solutions will be harder to come by.

God knows, we are not lacking the ability to take on challenges.

thank you very much.

(applause)

Here are the questions we need to revisit together: What should be the role of money and markets in our society?

There are few things today that money cannot buy.

If you've been sentenced to prison in Santa Barbara, California, you should know that you can purchase a solitary confinement upgrade if you don't like the standard accommodations.

That's true. how much do you think

What do you think?

$500?

Not the Ritz Carlton. Jail!

$82 per night.

$82 per night.

If you're going to an amusement park and don't want to stand in long lines to buy a popular ride, there's a solution.

At many theme parks, you can pay extra to be first in line.

They call them fast track or VIP tickets.

And this isn't just happening at amusement parks.

Washington, D.C. can have long lines for important congressional hearings.

Now some people don't like standing in long lines, even in the rain, perhaps all night long.

So now, for lobbyists and other people who want to attend the hearings but don't want to wait, there are companies that have queues and you can go there.

You can pay them a certain amount of money, they can hire homeless and jobless people to stand in line for as long as they can, and the lobbyist can sit at the front of the room at the front of the line just before the hearing starts.

Paid line standing.

In the larger arena there is a reliance on market mechanisms, market thinking and market solutions.

Consider how we fight wars.

Did you know that Iraq and Afghanistan had more private military contractors on the ground than the US military?

Now, this is not because there was a public debate about whether we wanted to outsource the war to private companies, but this is what happened.

Over the last 30 years we have experienced a silent revolution.

We have moved from a market economy to a market society almost without realizing it.

Here are the differences: The market economy is a tool for organizing production activities, a valuable and effective tool, while the market society is where almost everything is for sale.

This is a way of life in which market mindsets and market values ​​begin to govern every aspect of life: relationships, family life, health, education, politics, law, civic life.

Well, why worry? Why worry that we will become a market society?

I think there are two reasons.

One of them has to do with inequality.

The more things money can buy, the more important the presence or absence of abundance.

If money only determined access to yachts, luxury vacations and BMWs, inequality would be less of an issue.

But when money increasingly controls access to the necessities of a prosperous life, such as access to decent health care, access to the best education, political voice and influence in election campaigns, and it controls them all, inequality becomes very important.

So the marketization of everything exacerbates inequalities and their social and civil consequences.

That's one reason to worry.

Apart from concerns about inequality, there is a second reason. That's it. In some social commodities and practices, the intrusion of market thinking and market values ​​can change the meaning of those practices, crowding out attitudes and norms worth caring about.

I would like to give you an example of the use of the controversial market mechanism, namely cash incentives, and see what you think about it.

Many schools are grappling with the task of motivating children, especially those from disadvantaged backgrounds, to study hard, perform well in school, and apply themselves.

Some economists have suggested a market solution. It's about giving cash incentives to kids for getting good grades, high test scores, and reading books.

In fact they tried this.

They conducted several experiments in several major American cities.

New York, Chicago, and Washington D.C. tried this, offering A $50 and B $35.

In Dallas, Texas, there is a program that gives 8-year-olds $2 for every book they read.

Let's see what happens -- some are for, some are against this cash incentive to motivate achievement.

Let's see what people here think about it.

Imagine that you are in charge of a major school system and someone comes to you with this suggestion.

And let it be the foundation. they will provide the funding.

No need to go out of your budget.

How many would agree and how many would oppose trying it?

Let's raise our hands and see.

First, how many of you think it's worth at least trying to see if it works? Hands up.

And how many would disagree? How many of you would say so -- I mean, the majority here are against it, but a very small minority are for it.

let's discuss.

Let's start with those who object, those who eliminate it before even trying it.

What is the reason?

Who will start our discussion?Yes?

Heike Moses: Hello everyone. I'm Heike I think it just kills the intrinsic motivation. So in terms of children wanting to read books, it only changes their behavior because paying them just deprives them of this incentive.

Michael Sandel: Takes away essential incentives.

What is intrinsic motivation, or should it be?

HM: Well, the intrinsic motivation should be to learn.

MS: Learning. HM: Knowing the world.

And what if you stop paying them?

So do they stop reading?

MS: Well, let's see if anyone supports this and thinks it's worth trying.

Elizabeth Loftus: I'm Elizabeth Loftus. You said worth a try. So why not experiment and measure?

MS: Then measure. And what do you measure?

How Many Will You Measure -- EL: Measure how many books they read and how many they continued to read after you stopped paying them.

MS: Oh, since we stopped paying.

ok, how about that?

HM: Frankly, I don't mean to offend anyone, but I think it's a very American way of doing things.

(Laughter) (Applause) MS: Okay. Questions that emerged from this discussion were: Do cash incentives drive out, corrupt, or drive out higher motivation—the essential lesson we want to impart—learning to love learning and reading for yourself?

And while people disagree about what the impact will be, the question seems to be whether market mechanisms and cash incentives are somehow teaching the wrong lesson, and if that happens, what will happen to our children?

I have to tell you what happened in these experiments.

Cash results for good grades were very mixed and did not lead to higher grades in most cases.

At $2 a book, kids are reading more.

It also got them to read short books.

(Laughter) But the real question is, what happens to these kids after that?

Have they learned that reading is a tedious job, piecework done for pay, or are they worried about it, or might they read for the wrong reasons at first, but then come to love reading itself?

Now, even this brief discussion reveals something that many economists overlook.

Economists often assume that markets are inert and do not touch or defile the goods they exchange.

They believe that market exchanges do not change the meaning or value of the commodities exchanged.

This may be true enough if we are talking about material goods.

It doesn't matter if you sell me a flat screen TV or give me a gift.

Both methods work the same.

But the same may not be true if we are talking about immaterial goods and social practices such as teaching and learning and participating together in civic life.

In these areas, the introduction of market mechanisms and cash incentives can undermine or eliminate worthy attitudes of non-market values ​​and concerns.

When we see that markets and commerce, when extended beyond the material realm, can change the nature of commodities themselves and change the meaning of social practices, as in the example of education and learning, we must ask where markets belong and where they do not, and where they can undermine values ​​and attitudes worth actually caring about.

But to make this argument, we have to do something we're not very good at. It is about discussing together, in public, the value and meaning of the social practices we care about, from our bodies to our home lives, our relationships, our health, our education and learning, and our civic lives.

We tend to shy away from those questions because they are controversial questions.

In fact, during the past three decades, when market logic and market thinking have gathered power and gained prestige, our public discourse has become hollow and empty of greater moral meaning.

We avoid these questions for fear of disagreement.

But when we find that the market changes the nature of our commodities, we have to debate ourselves the larger question of how to value commodities.

One of the most corrosive effects of putting a price on everything is to our commonality, our sense of being together.

Against the backdrop of rising inequality, all aspects of life have become marketized, creating a situation in which the wealthy and those of modest means are increasingly living separate lives.

We live, work, shop and play in many places.

Our children go to separate schools.

This is not good for democracy, and it is not a satisfying way of life, even for those of us who can afford to be at the front of the line.

Here's why.

Democracy does not demand perfect equality, but it does demand that people share a common life.

What is important is that people from different social backgrounds and different ways of life meet and collide with each other in their daily lives. Because it teaches us to negotiate and accept differences.

And this is how we value our common interests.

So, after all, market problems are not primarily economic problems.

It's really a matter of how we want to live together.

Do we want a society where everything is for sale, or are there certain moral and civic commodities that the market doesn't respect and money can't buy?

thank you very much.

(applause)

We all know that today's world is full of problems.

We have heard it today, yesterday, and every day for decades.

Serious problem, big problem, pressing problem.

Undernourishment, access to water, climate change, deforestation, lack of skills, insecurity, adequate food, lack of adequate medical care, environmental pollution.

One problem after another, but I think the big difference this time around in my short time on Earth is the awareness of these problems.

we all know very well.

Why are we having such a hard time dealing with these issues?

That's the question that's haunted me all along, coming from a completely different perspective.

I am not a social problem person.

I am a man in business and helping businesses make money.

God forbid.

So why do we have so many problems with these social issues, and is there really a role for business, and if so what is it?

To answer this question, I think we need to step back and consider how we have understood and pondered both the problems and the solutions to this great societal challenge that faces us.

Now, in many of the social challenges we face, I think many see business as the problem, or at least one of the problems.

Think fast food industry, pharmaceutical industry, banking industry.

As you know, this is the lowest point in terms of respect for business.

Business is not seen as a solution.

That is now considered a problem for most people.

And in many cases, it's no surprise.

There are many bad guys out there who have done the wrong thing and actually made matters worse.

So this view is probably justified.

How have we seen solutions to these social problems, the many problems facing society?

We tended to think of solutions in terms of NGOs, governments and philanthropy.

In fact, the unique organizational structure of this era is the phenomenal rise of NGOs and social organizations.

This is a unique and new organizational form that we have grown into.

To meet all these challenges, a great deal of innovation, a great deal of energy and a great deal of talent are currently being mobilized through this structure.

And many of us here are deeply involved in that.

I'm a business school professor, and I actually think I've founded four non-profit organizations by now.

Whenever I became interested and became aware of a social issue, I founded a non-profit organization.

This is how we thought of ways to address these issues.

A business school professor once thought so.

But at this point, I think we've been dealing with this situation for quite some time.

We have known these issues for decades.

We have decades of experience working with NGOs and government agencies, but there is a troubling reality.

The nasty reality is that we are not progressing fast enough.

we haven't won

These problems still seem very difficult and intractable, but the solutions we are achieving are all small solutions.

We are making progress little by little.

What are the fundamental problems we have in dealing with these social problems?

Eliminating all complexity introduces scale issues.

It cannot be scaled up.

we can progress. I can show you the benefits.

I can show you the results. we can make things better.

we are helping we are doing better. we're doing well

It cannot be scaled up.

We cannot have a massive impact on these issues.

why is that?

Because you don't have the resources.

And it's really clear now.

And it's been more evident in decades than it is now.

We do not have sufficient funding to address these issues at scale using current models.

There are not enough tax revenues or philanthropic donations to address these issues the way we currently deal with them.

We have to face that reality.

And the lack of resources to deal with these problems will certainly only grow in today's developed countries with every financial challenge we face.

So if it's fundamentally a question of resources, where are the resources in society?

How do we actually create the resources we need to meet all these societal challenges?

I think the answer is very obvious. they are doing business.

All wealth is actually created by business.

Businesses create wealth when they make a profit and meet their needs.

All wealth is created that way.

Make a profit to meet a need, which translates into taxes, income, and charitable contributions.

All resources come from there.

Only businesses can actually create resources.

Other institutions can also use them to do important work, but only companies can create them.

And businesses produce them when they are able to make a profit and meet their needs.

Resources are overwhelmingly generated by business.

The question is, how do we make use of this?

How can we take advantage of this?

Businesses generate those resources when they make a profit.

The profit is the small difference between the price and the cost of producing the solution the company is creating to the problem it is trying to solve.

But that profit is the magic.

why? Because that benefit makes the solutions we create infinitely scalable.

Because if you can make a profit, you can do 10, 100, 1 million, 100 million, 1 billion.

The solution stands on its own.

When a business makes a profit, it does.

So what does this have to do with social issues?

Well, the idea is to try to redistribute this benefit to social problems.

Business should give more.

Companies should take more responsibility.

And that's the path we've taken in business.

But again, this road we've been on won't get us where we're supposed to be.

Today, I started out as a strategy professor and am still a strategy professor.

I am proud of it.

But over the years, I have also become increasingly concerned with social issues.

I have worked in healthcare, the environment, economic development, and poverty reduction, but as I worked in the social sphere, I began to see something that, in a way, had a profound effect on me and my entire life.

The common sense of economics and the view of business has historically been that there really is a trade-off between social and economic performance.

The conventional wisdom is that businesses profit from causing social problems.

A classic example is pollution.

If your business pollutes the environment, you get more out of it than if you try to reduce it.

Companies are reluctant to reduce pollution because it costs a lot of money.

Maintaining an unsafe work environment pays off.

A safe working environment costs too much money, and without a safe working environment, companies can benefit more.

That was the norm.

Many companies fall into that habit.

They resisted environmental reforms.

They resisted workplace improvement.

I think that way of thinking leads to a lot of the behavior we've come to criticize in business, and a lot of the behavior I've come to criticize in business.

But the more I delve into all these social issues, and indeed the more I try to tackle them myself, personally, and in some cases through the non-profit organizations I was involved with, the more I realize the opposite is true.

Business does not profit from causing social problems. In fact, in a fundamental sense it is not.

That's a very simplistic view.

The more we understand these issues, the more we realize that business can actually benefit from solving social problems.

That's where the real profit comes from.

Let's take pollution.

We learned today that reducing pollution and emissions actually pays off.

It will save you money.

Make your business more productive and efficient.

Don't waste resources.

Ensuring a truly safe working environment and avoiding accidents is a sign of good process and therefore increases business profitability.

Accidents are expensive and cost a lot of money.

Problem after problem, we begin to learn that there really is no trade-off between social progress and economic efficiency in a fundamental sense.

Another issue is health.

So what we've discovered is that employee health is something companies should care about. Good health makes employees more productive and helps them get to work without absenteeism.

Deeper research, new research and new ways of thinking about the intersections between business and social issues really show that there are fundamental and deep synergies, especially if you're not thinking very short term.

In the very short term, we can fool ourselves into having fundamentally conflicting goals, but in the long term, we are ultimately learning on the ground that this is simply not true.

So how can we harness the power of business to address the fundamental problems we face?

Imagine if you could do that. Because if you can do that, you can scale up.

We were able to leverage this vast resource pool and organizational capacity.

And what do you think? Now that is finally happening. And it's all thanks to people like you who have been raising these issues year after year for decades.

We see organizations like Dow Chemical leading the trans- and saturated-fat revolution with innovative new products.

This is an example of Jain irrigation.

This is the company that has brought drip irrigation technology to thousands and millions of farmers, dramatically reducing their water usage.

We see companies like Brazilian forestry company Fibria figuring out how to avoid logging primary forest and use eucalyptus to yield much more pulp per hectare and produce much more paper than it would from harvesting old trees.

Companies like Cisco have trained 4 million people in IT to date. Skills to expand opportunities for IT adoption while taking real responsibility. Leverage technology to grow your entire business.

Businesses today have a fundamental opportunity to influence and address these social issues, and this opportunity is the greatest opportunity we see in business.

And the question is, how do we adapt this shared value issue to business thinking?

This is what I call shared value. The business model is to address social issues.

That is our shared value.

Shared value is capitalism, but it is a higher kind of capitalism.

It is ultimately capitalism as it should be, meeting critical needs and not competing over petty differences in product characteristics or market share.

Shared value is the ability to create social value and economic value at the same time.

Because we can scale, it's important to find opportunities to unlock our greatest potential to actually address these social issues.

We can work on shared value on multiple levels.

It's real. It's happening.

But for this solution to work, we need to change the way we look at the business itself, and thankfully this is on the way.

Companies were caught up in the conventional wisdom that there was no need to worry about social issues, that this was some sort of side business that someone else was doing.

There are companies now adopting this idea.

But we must also recognize that business cannot do this as effectively as NGOs or governments working in partnership with them.

The new NGOs that are really making a difference are the NGOs that have found these partnerships and found ways to work together.

The most advanced governments are those that find ways to enable shared value in business, rather than viewing them as the only players that have to make decisions.

And governments have many ways they can influence the willingness and ability of companies to compete in this way.

I believe that if we can see business itself differently, and if other people can see business differently, we can change the world.

i know it. I can see it.

I feel

I think young people, Harvard Business School students, understand that.

If we can break through this kind of division, this anxiety, this tension, this feeling that we are not fundamentally working together in advancing this social problem, then I think we can break this down and eventually find a solution.

thank you.

(applause)

Traffic commissioners do more than just stop signs and traffic lights.

It includes urban design and street design.

Roads are some of the most valuable resources a city has, but most of its assets are hidden in plain sight.

The lesson from New York over the past six years is that this asset can be renewed.

It's a quick, low-cost way to rebuild streets, has immediate effect, and can be very popular.

You just have to look at it a little differently.

This is important because we live in an urban age.

For the first time in history, most people will live in cities, and the United Nations estimates that the world's population will double in the next 40 years.

Urban design is therefore an important task for our future.

Mayor Bloomberg knew this when he launched PlaNYC in 2007.

The plan recognized that the city belongs to a global marketplace and that if the city is to continue to grow and prosper and attract the additional million people it expects to migrate, it needs to focus on quality of life and infrastructure efficiency.

In many cities, our streets have been in a kind of suspended animation for generations.

This is a photo of Times Square in the 50's. Despite technological innovation, cultural shifts, and political shifts, this is Times Square in 2008.

Not much has changed in the last 50 years.

So we worked hard to maximize efficient mobility, provide more space for buses, more space for bikes, more space for people to enjoy the city, and refocus our agenda to make the roads as safe as possible for everyone who uses them.

We set a clear action plan with goals and benchmarks.

Having goals is important. Because if you want to steer a ship in a big city in a new direction, you need to know where you're going and why you're going.

The design of the streets tells all about what to expect.

In this case, it is expected to evacuate on the spot.

The design of this street is actually aimed at maximizing the movement of vehicles moving from point A to point B as quickly as possible, ignoring all other uses of the road.

When we started our business, we did some early research into how the streets were used and found that much of New York City is a seatless city.

People are sitting on fire hydrants in pictures like this, but that's not the hallmark of a world-class city.

(laughs) Not good for parents with children.

Not so good for seniors. Not good for retailers.

It may not be good for fire hydrants.

It's certainly not good for the police.

So we worked hard to change that balance. Perhaps the best example of our new approach is Times Square.

With 350,000 people walking through Times Square every day, people have been trying for years to make a difference.

They changed traffic lights, changed lanes, and did everything they could to make Times Square work better.

It was dangerous and it was difficult to cross the road.

It was chaotic.

So none of those approaches worked, so we took another approach, a bigger one, and looked at our city differently.

So we did a pilot run for 6 months.

We closed Broadway from 42nd to 47th Streets and created 2.5 acres of new pedestrian space.

And temporary material is an important part of the program. Because I was able to show how it works.

As you know, I work for a data-driven mayor.

So it was all about data.

So if it works better for traffic, if it's safer and better for business, we can keep it, and if it doesn't work, or it doesn't hurt or get dirty, we can put it back, because these are temporary materials.

And that's such a big part of consent, and even less anxiety when you think something can be undone.

However, the results were overwhelming.

Traffic has improved. It was much safer.

Opened five new flagship stores.

It's been a complete home run.

Times Square is now one of the top 10 retailers on the planet.

And this is an important lesson. Because it doesn't have to be a zero-sum game between moving traffic and creating public spaces.

Every project has surprises, but one of Times Square's big surprises was how quickly people flocked to the space.

As soon as we extinguished the orange barrels, people appeared in the streets.

It was like an episode of Star Trek.

I hadn't been there before, zzzzzt!

Everyone has arrived.

I don't know where they were, but they were there.

And since the street furniture had not yet arrived, this was actually an immediate challenge for us.

So we went to a hardware store, bought hundreds of lawn chairs, and lined them up on the street.

And the lawn chairs became the talk of the town.

It wasn't about car-free Broadway.

It was that lawn chair.

"What did you think of the lawn chair?"

"Do you like the color of the lawn chairs?"

So if you have a large, controversial project, think about lawn chairs.

(Laughter) This is the final design of Times Square, and we think it will create a flat surface from sidewalk to sidewalk, a beautiful pavement with studs that reflect the light from the signs, create a wonderful new energy in the street, a really great place, a new crossroads in the world that lives up to its name.

And we plan to cut the ribbon for this first stage this December.

In all our projects, public space projects, we work closely with local businesses and local commercial entities who maintain the space, move furniture and care for plants.

This is in front of Macy's. They were very supportive of this new approach. Because they understood that more people walking would be better for business.

And we've done these projects all over the city, in all kinds of neighborhoods.

This one is from Bed-Stuy in Brooklyn, and you can see the short legs that were used in the car, not really needed.

So what we did was paint the streets, lay down some epoxy gravel, connect the triangles with the storefronts on Grand Avenue, and create a great new public space. This has been great for businesses along Grand Avenue.

We did the same with Dumbo in Brooklyn. This was one of the first projects we did, taking a fairly dingy underutilized parking lot and renovating it over the weekend with paint and planters.

Three years after implementing the project, retail sales increased by 172%.

And this is twice as much as in the adjacent area of ​​​​the same neighborhood.

We worked very quickly with paint and temporary materials.

Instead of waiting for years of planning research and computer models to perfect something, we used paint and temporary materials to make it happen.

And the evidence for that is not in the computer model.

It's real performance on the road.

You can enjoy painting.

In total, we've created over 50 pedestrian squares in all five districts of the city.

We repurposed 26 acres of roadway currently in use and transformed it into a new pedestrian space.

I think part of the success is in its emulation.

You've seen this kind of approach since we painted Times Square. We've seen this approach everywhere: Boston, Chicago, San Francisco, Mexico City, Buenos Aires.

This one is actually in Los Angeles and I actually copied the green dots that were on the street as well.

But I can't stress enough how quickly this allows you to move away from traditional construction methods.

We brought this fast-acting approach to our cycling program, and in six years, we've turned cycling into a real New York City transportation option.

I think it's fair to say -- (Applause) -- Once a pretty scary place to ride a bike, New York is now one of the cycling capitals of the United States.

And we acted quickly to build a network of interconnected lanes.

You can see the map of 2007.

This is what it looked like in 2013 after building 350 miles of street bike lanes.

I like this one because it looks so easy.

Just click on it and it will appear there.

It also brought new designs to the streets.

We created America's first parking-protected bike lanes.

(Applause.) We protected bikers by floating parking lanes, and it was great.

The traffic volume of bicycles has increased rapidly.

All injuries for all users – pedestrians, cyclists and drivers – were reduced by 50%.

And we built 30 miles of these protected bike lanes and now you can see them popping up all over the country.

And here you can see that this strategy worked.

The blue line is the rapid increase in the number of cyclists.

The green line is the number of bike lanes.

And the yellow line is the number of injuries, which has remained almost flat.

There is something about the axiom that there is security in numbers, as we have seen no net increase in injuries after this massive expansion.

Not everyone liked the new bike lanes, and a few years ago there was a lawsuit and some media hype.

A Brooklyn newspaper called the bike lane in Prospect Park West "the most contested piece of land outside the Gaza Strip."

(Laughter) And this is what we did.

But dig under the headlines and you'll see that the public was far ahead of the press and politicians.

In fact, I think most politicians would be happy to have such poll numbers.

64% of New Yorkers support these bike lanes.

This summer, we launched Citi Bike, the largest bike-sharing program in the US with 6,000 bikes and 330 adjacent stations.

Three million trips have been made since the program started.

People have covered 7 million miles so far.

This is equivalent to circling the earth 280 times.

With this little blue key you can unlock the city and this brand new mode of transportation.

And daily usage continues to soar.

What happened is that 36,000 people use the streets of New York City on average each day.

The previous high was 44,000 in August.

Yesterday, 40,000 people rode Citi Bike in New York City.

The bicycle is used 6 times a day.

I think you can see that in street riders as well.

It used to look like the ninja-clad bike messenger guy on the left.

And today, cyclists look the way New York City looks.

Young and old, black and white, women and children, they all ride bicycles.

Affordable, safe and convenient transportation.

It's pretty extreme.

This approach has also been adopted for buses, with New York City having the largest fleet of buses in North America and the slowest bus speeds.

As we all know, you can walk across town more than take a bus.

So we built six express bus routes and 57 miles of new express bus lanes, focusing on New York City's busiest areas.

Pay at the kiosk before boarding the bus.

We set up dedicated lanes and banned cars from entering because they were ticketed on camera if they used the lanes, which has been very successful.

I think one of my favorite moments as Transportation Chairman was the day we launched City Bikes. I was riding my city bike up the first street on a protected bike lane. And I looked over and saw a pedestrian standing safely on a pedestrian island. Cars were moving and birds were chirping (laughter). The bus was speeding through a dedicated lane.

It was really great.

And this is how it looked six years ago.

So I think the lesson from New York is that it's possible to change the streets quickly, it's not expensive, it can be profitable quickly, and it can be very popular.

All that is needed is to rethink the streets.

They are hidden in plain sight.

thank you.

(applause)

"Iran is Israel's best friend and we will not change our position in relation to Iran."

Believe it or not, these are the words of the Prime Minister of Israel, but not Ben-Gurion or Golda Meir of the Shah's time.

It's actually Yitzhak Rabin's.

The year is 1987.

Khomeini is still alive and using the worst rhetoric against Israel, just like Ahmadinejad today.

Still, Rabin called Iran a geopolitical friend.

Today, the threat of war and lofty rhetoric often lead us to believe that this is yet another unsolvable Middle East conflict with roots as old as the region itself.

Nothing could be further from the truth. Today I would like to explain why.

Throughout history Iran's relations with the Jews have actually been very good, beginning in 539 BC when Cyrus the Great of Persia liberated the Jews from Babylonian captivity.

A third of the Jewish population remained in Babylonia.

They are the Iraqi Jews of today.

The third emigrated to Persia.

They are today's Iranian Jews, 25,000 of whom still live in Iran, making it the largest Jewish community in the Middle East outside Israel itself.

And a third returned to historic Palestine, where they happened to rebuild the Temple in Jerusalem a second time, funded by Persian taxes.

But even in modern times, the relationship was sometimes close.

Mr. Rabin's statement reflected decades of security and intelligence cooperation between the two nations, born of a recognition of common threats.

Both countries feared the Soviet Union and Arab powers such as Egypt and Iraq.

And then there is Israel's marginalism, the idea that Israel's security is best achieved through alliances with non-Arab countries on the regional fringes in order to balance its Arab neighbors.

But from the Shah's point of view, he wanted this to be as secret as possible, so when Yitzhak Rabin, for example, traveled to Iran in the '70s, he usually wore a wig so no one would know who he was.

The Iranians have built a special tarmac at the airport far from Tehran's central terminal so that no one would notice the multitude of Israeli aircraft flying between Tel Aviv and Tehran.

So did all this end with the Islamic Revolution of 1979?

Despite the new government's very clear anti-Israel ideology, the geopolitical logic for cooperation between the two countries lived on because they still had a common threat.

And when Iraq invaded Iran in 1980, Israel feared an Iraqi victory and actively assisted Iran by selling weapons to Iran and providing spare parts for Iran's American weapons at a time when Iran was so vulnerable because of the US arms embargo, which Israel gladly violated.

In fact, back in the 1980s, it was Israel that talked to Iran, sold weapons to Iran, and lobbied Washington to ignore Iran's anti-Israel ideology.

And, of course, this culminated in the Iran-Contras scandal of the 1980s.

But with the end of the Cold War came the end of the ruthless peace between Israel and Iran.

The two common threats that have brought them closer together for decades have suddenly more or less disappeared.

The collapse of the Soviet Union, the defeat of Iraq, and the creation of a new environment in the region in which both nations feel more secure, have been left unchecked.

Some in Israel argued that Iran could now pose a threat if Iraq did not balance it out.

In fact, the current dynamic between Iran and Israel has its roots in the region's geopolitical restructuring after the end of the Cold War rather than in the events of 1979. Because at this point, Iran and Israel had emerged as two of the most powerful states in the region, increasingly seeing each other as rivals and competitors rather than as potential security partners.

Thus, Israel, which lobbied for improved relations between the United States and Iran in the 1980s, now fears US-Iran rapprochement, which it believes will come at the expense of Israeli security interests, and instead seeks to further isolate Iran.

Ironically, this happened at a time when Iran was more interested in making peace with Washington than in destroying Israel.

Iran has isolated itself for its extremism, and after indirectly supporting the United States in the 1991 war against Iraq, Iranians hoped to be rewarded by being incorporated into the region's post-war security fabric.

But Washington, as it did in Afghanistan a decade later, chose to ignore Iranian aid and instead moved toward strengthening Iran's isolation. It was at this point, around 1993-1994, that Iran began to transfer its anti-Israel ideology into its operational agenda.

Iranians believed that the US would continue to push for Iranian isolation no matter what they did, even if they moderated their policies, and the only way Iran could force the US to change its stance was to impose a cost if the US did not.

The peace process was the easiest target, but now Iran's ideological crust is accompanied by unconventional attacks, and Iran has begun extensively backing previously shunned Palestinian Islamist groups.

In a way, this may sound paradoxical, but according to Clinton administration's Martin Indike, the Iranians weren't completely misunderstood, but because the US believed that the more peace there was between Israel and Palestine, the more isolated Iran would be.

The more isolated Iran becomes, the more peace there will be.

So, according to Indyk, this is his word. The Iranians were interested in engaging us in the peace process to break our containment policy.

It's not about ideology, it's about breaking containment policies.

But even at the worst of their entanglement, all sides have reached out to each other.

When Prime Minister Netanyahu was elected in 1996, he lobbied the Iranian people for ways to revive the doctrine in the region.

Tehran showed no interest.

Years later, Iran sent a comprehensive negotiating proposal to the Bush administration, which made it clear that it could put Iran and Israel back on the terms again.

The Bush administration didn't even react.

No team has ever missed an opportunity.

But this is not an ancient conflict.

This is not even an ideological conflict.

The rise and fall of hostilities changed not with ideological fervor, but with changing geopolitical circumstances.

When Iran's and Israel's security imperatives called for cooperation, they did so despite their deadly ideological conflicts.

When Iran's ideological impulses collided with strategic interests, strategic interests always took precedence.

This is good news. Because it means that neither war nor hostility is an inevitable conclusion.

But some people want war.

Some believe it is 1938, Iran is Germany and Ahmadinejad is Hitler.

If we accept this as true, then really it is 1938, Iran is Germany and Ahmadinejad is Hitler, then the question we have to ask ourselves is who would want to play the part of Neville Chamberlain.

Who would risk peace?

This is a metaphor deliberately aimed at excluding diplomacy, and excluding diplomacy makes war inevitable.

In an ideological confrontation there can be no truce, no draw, no compromise, only victory or defeat.

But rather than seeing this as an ideology and making war inevitable, it would be wise to look for ways to make peace possible.

The conflict between Iran and Israel is a new phenomenon only a few decades old in its 2,500-year history, and its geopolitical roots mean that solutions can be found and compromised, however difficult they may be.

After all, it was Yitzhak Rabin himself who said, "I will not reconcile with my friends.

You get along with your enemies. ”

thank you.

(applause)

Over the past two and a half years, I have been one of the few, if not the only, child psychiatrist working in refugee camps, coastlines and rescue ships in Greece and the Mediterranean.

And I can say that with great confidence. We are witnessing a mental health catastrophe that affects most of us and will change the world.

I live in Haifa but spend most of my time abroad these days.

When I was on the Greek island of Lesvos, on a rescue ship in the Mediterranean, thousands of refugee ships arrived on the coastline, crowded with more than 1.5 million refugees.

A quarter of them are children fleeing war and hardship.

Each ship carries different suffering and trauma from different countries in Syria, Iraq, Afghanistan and Africa.

Over 12,000 refugees have lost their lives in the last three years alone.

And hundreds of thousands of people lost their souls and mental health from this cruel and traumatic experience.

I would like to tell you about Omar, a 5-year-old Syrian refugee boy who arrived on the shores of Lesbos in an overcrowded inflatable boat.

Crying, frightened, unable to comprehend what was happening to him, he was on the verge of another trauma.

I quickly realized that this was a golden hour, a short time that could change his story, and that he could change the story he told himself for the rest of his life.

I was able to reconstruct his memory.

I quickly held out my hand and said to his trembling mother, in Arabic, "Atheni elwarad o kudi nafas."

"Give the child to me and take a breath."

his mother gave him to me.

Omar looked at me with frightened, teary eyes and said (in Arabic), "Ammo (Uncle in Arabic) Shu Hada?"

"What is this?"

He pointed to a police helicopter hovering above us.

"It's a helicopter!

I'm here to photograph you with my big camera, because Omar, only a great and mighty hero like you can cross the ocean. ”

Omar stopped crying when he saw me and asked (in Arabic) "Ana Batal?"

"Am I a hero?"

I spoke with Omar for 15 minutes.

And I gave his parents some pointers to follow.

This brief psychological intervention reduces the prevalence of post-traumatic stress disorder and other mental health problems in the future, and prepares Omar to get an education, join the workforce, provide for his family, and more.

how?

By stimulating good memories stored in the amygdala, the emotional reservoir of the human brain.

These memories will fight traumatic memories if reactivated in the future.

For Omar, the smell of the sea isn't just a reminder of his traumatic trip from Syria.

Because for Omar, this story is now a story of courage.

This is the power of Golden Hour, allowing us to reframe trauma and establish new narratives.

But this crisis alone makes Omar one of more than 350,000 children without adequate mental health support.

350,000 children and me.

Mental health professionals should be on the rescue team when a crisis is underway.

This is why my wife and I and our friends co-founded The Humanity Crew.

One of the few aid organizations in the world that specializes in psychosocial support and first response mental health interventions for refugees and displaced persons.

To provide them with appropriate interventions, we develop a four-step approach, a psychosocial work plan that follows each stage of the refugee journey.

As a mental health lifeguard, you start out on a rescue boat in the ocean.

Then through camps, hospitals, and online clinics that cross borders and languages.

And finally, the country of exile, to help them integrate.

Since its first mission in 2015, the Humanity Crew has included a delegation of 194 qualified and trained volunteers and therapists.

We have provided 26,000 hours of mental health support to over 10,000 refugees.

There are things we can all do to prevent this mental health catastrophe.

We need to realize that first aid is necessary not only for the body, but also for the mind and soul.

The effects on the soul are mostly invisible, but the damage can last a lifetime.

Remember that the difference between us humans and machines is the beautiful and delicate soul within us.

Let's do our best to save more Omar.

thank you.

(Applause) (Cheers) (Applause)

Well, as Chris pointed out, I study the human brain, the function and structure of the human brain.

And I want you to think for a moment about what this means.

Here is this jelly mass. A 3-pound chunk of jelly that fits in the palm of your hand allows you to envision the vastness of interstellar space.

It can contemplate infinite meanings, and it can contemplate itself contemplating infinite meanings.

And this unique reflexive quality we call self-awareness, which I consider to be the holy grail of neuroscience and neurology, hopefully one day we will be able to understand how it happens.

So how do we study this mysterious organ?

So you have 100 billion nerve cells, or tiny fragments of protoplasm, interacting with each other, and from this activity comes human nature and all the abilities that we call human consciousness.

How does this happen?

There are many ways to approach the functioning of the human brain.

One of the approaches we mainly use is to observe patients with genetic alterations in small areas of the brain and persistent damage to small areas of the brain.

What happens in that case is not a total decline in mental capacity, but a kind of cognitive dullness.

What you get is a highly selective loss of one function, while others remain intact. This gives us the confidence to claim that that part of the brain is somehow involved in mediating that function.

So we can map a function to a structure and look at what the circuit is doing to produce that particular function.

That's what we're trying to do.

So let's look at some notable examples of this.

In fact, this talk will cover 3 examples in 6 minutes each.

The first example is an unusual syndrome called Capgras syndrome.

If you look at the first slide, the temporal lobe, the frontal lobe, and the parietal lobe, the lobes that make up the brain.

And if you look, hidden inside the inner surface of the temporal lobe, you can't see it there, but there's a small structure called the fusiform gyrus.

It's called the facial region of the brain. This is because if this is damaged, it will not be possible to recognize a person's face.

You can recognize them by their voice and say, "Oh yeah, that's Joe," but you can't tell who it is by their face, right?

I can't even recognize myself in the mirror.

So when you wink, you know it's you, and you know it's a mirror, but you don't actually recognize yourself.

OK. It is now well known that this syndrome is caused by damage to the fusiform gyrus.

But there is another rare syndrome, so rare, in fact, that few doctors, even neurologists, have heard of it.

This is called the Capgra delusion, in which an otherwise perfectly normal patient, who has suffered a head injury and has recovered from a coma, looks at his mother and says, "This woman looks just like my mother, but this woman is an impostor.

She is another woman pretending to be my mother. ”

Now, why is this happening?

Why is there such a person--and this person is perfectly clear and intelligent in all other respects, but when he sees his mother his delusions kick in and he says that this is not his mother.

Now, the most common interpretation of this is Freud's view in every psychiatric textbook, and that's this guy. By the way, the same argument applies to women, but we're only talking about men here.

When you were a little baby, a little baby, you had a strong sexual attraction to your mother.

This is Freud's so-called Oedipus Complex.

Not that I believe this, but this is Freud's standard view.

And as they grow, the cortex develops to curb their latent sexual urges towards their mother.

If you don't thank God, you will get sexually aroused when you see your mother.

And what happens is that a blow to the head damages the cerebral cortex, your subconscious sexual urges come to the surface and flare up, and suddenly and inexplicably you find yourself sexually aroused by your mother.

And you say, "Oh my God, if this is my mother, why am I sexually aroused?"

she is another woman she's a scammer ”

That's the only interpretation that makes sense to your damaged brain.

For me, this discussion didn't make much sense.

As all Freudian arguments are, this is very original -- (laughter) -- but I've seen patients with the same delusions about pet poodles, the same delusions, so it didn't make much sense.

(laughter) He says, "Doc, this is not Fifi. It looks just like Fifi, but it's a different dog." Right?

Now, let's use Freud's explanation.

(Laughter.) You start talking about some kind of latent bestiality in every human being, or something like that, which of course is utterly ridiculous.

So what's really going on?

We therefore examine the structure and function of normal visual pathways in the brain to explain this bizarre disorder.

Visual signals normally enter the eyeball and are sent to the visual cortex of the brain.

In fact, there are 30 areas in the back of the brain that are solely concerned with vision, and after processing them all, the message is sent to a small structure called the fusiform gyrus, where it recognizes faces.

There are neurons there that are sensitive to the face.

You could call it the face part of the brain.

We talked about it before.

Well, if it gets hurt, you won't be able to see your face, right?

But from that area, messages cascade to a structure called the amygdala in the limbic system, the emotional core of the brain, which assesses the emotional significance of what you're looking at.

Prey? Are you a predator? are you mate?

Or is it something quite trivial, like a lint, a piece of chalk, or--I hate to point it out--a shoe? OK?

You can ignore it completely.

So when the amygdala is excited and this is what matters, messages flow into the autonomic nervous system.

Your heart beats faster.

You start sweating to dissipate the heat generated by muscle movement.

This is lucky. This is because two electrodes can be placed on the palm of the hand to measure changes in skin resistance caused by perspiration.

That is, when you are watching something, it can determine whether you are excited or not.

We'll get to that in a moment.

So my idea is that when this man sees an object, when he sees his own object, or any object for that matter, it goes to the visual cortex, but it is processed in the fusiform gyrus, and you perceive it as a pea or a table or a mother.

The message is then transmitted to the amygdala and then to the autonomic nervous system.

But perhaps in this story, an accident cut the wire from the amygdala to the brain's emotional core, the limbic system.

Since the spindle is intact, the man can still recognize his mother and says, "Oh yeah, this looks like my mother."

But because the wires to the emotional center are cut, "But if it's your mother, why can't you feel the warmth?" he says.

Or maybe terrorism? right?

(Laughter) So he says, "How do I explain this inexplicable lack of emotion?"

This person cannot be my mother.

A strange woman pretending to be my mother. ”

How would you test this?

Well, what you do is, you can bring someone of you here, put them in front of a screen, measure their galvanic skin response, show a picture on the screen, and measure how much they sweat when they look at an object like a table or an umbrella. Of course I don't sweat.

If you show them pictures of lions, tigers, or pinups, they'll sweat, right?

And, believe it or not, when you show them a picture of their mother – and this is normal people – they start sweating.

You don't even have to be Jewish.

(Laughter) Now, what if I show you this patient?

Take the patient and show them the picture on the screen and measure the galvanic skin response.

Tables, chairs, lint, nothing happens like a normal person, but the galvanic skin response flattens out when I show her a picture of her mother.

The wire from the visual cortex to the emotional center has been cut, so there is no emotional response to the mother.

That is, because the visual area is normal, his vision is normal, and his emotions are normal - he laughs, he cries, etc. - but the wire from vision to emotion is cut, so he is delusional that his mother is an impostor.

This is a nice example of the kind of things we do. It takes a strange, seemingly incomprehensible neuropsychiatric syndrome and argues that the standard Freudian view is wrong and that in fact we can come up with an accurate explanation in terms of the known neuroanatomy of the brain.

By the way, later this patient goes and his mother calls from the next room and he picks up the phone and says, "Wow, Mom, how are you? Where are you?"

There is no delusion over the phone.

Then, an hour later, when she approached him, he said, "Who are you?"

You look like your mother. ”

The reason is that there is another pathway from the auditory center of the brain to the emotional center, which the accident did not cut off.

This explains why he can recognize his mother through the phone, no problem.

Looking at her directly, he says it's an imposter.

So how is this complex circuit set up in the brain?

Is it natural, genetic, or nurtured?

We approach this question by considering another interesting syndrome called the phantom limb.

And you all know what a phantom limb is.

When an arm is amputated due to gangrene, a leg is amputated, or an arm is lost in a war, such as the Iraq War, which is now a serious problem, the existence of that lost arm continues to be vividly felt, and it is called a phantom arm or phantom leg.

In fact, phantoms can occur on almost any part of the body.

Believe it or not, so does the gut.

I have seen patients who have had their uterus removed (hysterectomy) and who have a phantom uterus, including phantom menstrual cramps at the appropriate time of the month.

And in fact, a student asked me the other day, "Do they get psychedelic PMS?"

(Laughter) It's a subject ripe for scientific exploration, but we're not pursuing it.

Now the next question is what can we learn about phantom limbs by doing experiments?

One of the things we found is that about half of patients with phantom limbs claim to be able to move their phantom limbs.

Pat your brother on the shoulder, answer the phone when it rings, and wave goodbye.

These are very compelling and vivid sensations.

The patient is not delusional.

He knows the arm isn't there, but it's still a fascinating sensory experience for the patient.

However, in about half of patients, this does not happen.

Phantom Limbs -- They'll say, "But sir, the phantom limbs are paralyzed.

Fixed with clenched spasms, excruciatingly painful.

Movement may relieve pain. ”

So why is the phantom limb paralyzed?

It sounds contradictory.

However, when examining case report forms, it was found that people with phantom limb paralysis had their original arm paralyzed due to peripheral nerve injury.

The actual nerve that supplies the arm has been cut, or cut in a motorcycle accident, for example.

That is, a patient stores a painful real arm in a sling for months or a year, then in a botched attempt to get rid of the pain in the arm, a surgeon amputates it, and then gets the same painful phantom arm.

And this is a serious clinical problem.

The patient becomes depressed.

Some of them are driven to suicide.

So how can this syndrome be treated?

So what causes a paralyzed phantom limb?

A review of the case report showed that they had a real arm, the nerve supplying that arm had been severed, the real arm was paralyzed, and they had been lying in a sling for several months before the amputation. This pain then carried over to the Phantom itself.

Why is this happening?

If the arm is intact but paralyzed, the brain sends the arm, the front part of the brain, a command to ``move'', but receives the visual feedback ``do not move''.

move. No, move. No, move. no.

This is embedded in the circuitry of the brain and is called learned paralysis.

Thanks to this Hebian connection, the brain learns that the mere command of moving the arm produces the sensation of the paralyzed arm.

And when you amputate your arm, this learned paralysis carries over into body image and phantoms.

Well, how do you help these patients?

How can the learned paralysis be reversed to free him from the excruciating clenching spasms of the Phantom Arm?

Well, we said, what if we now send a command to the Phantom and give him visual feedback that the Phantom is following his command, right?

You may be able to relieve psychedelic pain and psychedelic spasms.

How do you do that? Well, virtual reality.

But that would cost millions of dollars.

So we came up with a way to do this for $3, but we didn't tell the funding agency.

(laughs) Okay? What you're doing is building what I call a mirror box.

In the middle there is a cardboard box with a mirror, in which we put the phantom. So my first patient, Derek, came in.

He had his arm amputated ten years ago.

He suffered a brachial avulsion, a severed nerve, a paralyzed arm, and had his arm amputated after lying in a sling for a year.

He had a phantom arm that was excruciatingly painful and he could not move it.

It was a paralyzed phantom arm.

So when he came there, I gave him such a mirror, in a box that I called a mirror box.

The patient then places the phantom left arm, which is clenched and jerked, on the left side of the mirror and the normal hand on the right side of the mirror, forming the same posture, a clenched posture, and looks into the mirror. And what will he experience?

He sees a resurrected Phantom. Looking at the normal arm in the mirror, this phantom appears to be resurrected.

“Now, wiggle your illusion, your real finger, or look in the mirror and try to move your real finger,” I said.

You get the visual impression that the phantom is moving, right?

It's obvious, but what's amazing is that afterward the patient says, "Wow, my phantom has moved again, and the pain, the clenching spasms have subsided."

And remember, my first patient -- (applause) -- thank you. (Applause.) My first patient came in and he looked in the mirror and I said, "Look at your phantom reflection."

And he started laughing, "I can see my vision," he said.

But he's not stupid. he knows it's not real.

He knows it's a mirror reflection, but it's a vivid sensory experience.

Here I said, "Move your normal hands and phantoms."

He said, "Oh, I can't move the Phantom. You know that. It's a pain."

I said, "Please move your normal hand."

And he says, "Oh my God, my illusion is working again. I can't believe it!"

It relieved my pain."

And I said, "Please close your eyes."

he closes his eyes

"And move your normal hands."

"Ah, nothing. They squeezed me again."

"Okay, open your eyes."

"What, what, it's moving again!"

So he was like a kid in a candy store.

So I said, "Okay, this proves my theory about learned paralysis and the important role of visual input, but I'm not going to win a Nobel Prize for making someone move a phantom limb."

(Laughter) (Applause.) When you think about it, it's a completely useless ability.

(Laughter) But then I started to realize that there could be other types of paralysis that we see in neurology, such as stroke and focal dystonia. There may be a learned element to this, which can be overcome with a simple trick of using a mirror.

So I said, 'Look, Derek' -- first of all, this guy can't just carry around a mirror to relieve his pain -- I said, 'Hey, Derek, take it home and practice for a week or two.

Perhaps, after a period of practice, the pain will be relieved if the paralysis is removed without the use of a mirror and the paralyzed arm begins to move. ”

So he said ok and took it home.

I said, "Look, after all, this is $2. Take it home."

So he took it home and called me two weeks later and said, "Doctor, you won't believe this."

I said, "What?"

"It's gone," he said.

I said, "What's gone?"

I thought the mirror box was gone.

(Laughter) He said, "No, no, no, you know this hallucination I've had for the last ten years?

It's gone ”

And I said - I'm worried, God, I mean, I've changed this guy's body image, what about human subjects, ethics, and everything else?

So I said, "Derek, does this bother you?"

He said, "No, I haven't had a phantom arm in the last three days. So no phantom elbow pain, no clenching, no phantom forearm pain. All those pains are gone."

But the problem is, I still have a phantom finger hanging from my shoulder and I can't get your box. ”

(laughter) "So could you change the design and put it on my forehead so that I can get rid of my phantom fingers?"

He thought I was some kind of magician.

Now, why is this happening?

That's because the brain is facing a tremendous sensory conflict.

I have received a message from Vision that the Phantom has returned.

On the other hand, there is no proprioception, just a muscle signal that you have no arms, right?

And your motor command says you have arms, and because of this conflict your brain says, at all, there are no illusions, there are no arms, right?

It goes into a sort of deny state and gates the signal.

And when the arm disappears, so does the pain. Because pain without a physical body cannot float in space.

That's the bonus.

The technique is now being tested by other groups in Helsinki on dozens of patients, so it could prove valuable as a treatment for phantom limb pain, and people are actually trying the technique for stroke rehabilitation.

Strokes are usually thought of as fiber damage, but nothing can be done about it.

However, some components of stroke palsy have also been found to be learned paralysis, and perhaps that component could be overcome with the use of mirrors.

It has also passed clinical trials and has helped many patients.

Now let's move on to the third part of the story. It's about another strange phenomenon called synesthesia.

It was discovered by Francis Galton in the 19th century.

He was a cousin of Charles Darwin.

He pointed out that certain people in the population, who are otherwise perfectly normal, have the following idiosyncrasies: In other words, every time you see a number, you get a color.

Can 5 be blue, 7 yellow, 8 chartreuse, and 9 indigo?

Remember, these people are otherwise perfectly normal.

Or C Sharp -- Sometimes a tone evokes a color.

Maybe C-sharp is blue, F-sharp is green, and another tone is yellow.

Why is this happening?

This is called synesthesia. Galton called it synaesthesia, or mixture of sensations.

In us all senses are clear.

These people confuse their senses.

Why is this happening?

One of the two aspects of this problem is very interesting.

Galton said it has a genetic basis, a genetic basis, because synaesthesia runs in families.

Second, about synesthesia. This is my take on the main subject of this lecture, creativity. Synesthesia is eight times more common among artists, poets, novelists, and other creative people than the general population.

Why?

I will answer that question.

I have never been answered.

What is synaesthesia and what causes it?

Well, there are many theories.

One theory is that they are just crazy.

Well, this isn't really a scientific theory, so forget it.

Another theory is that they're acid addicts and potheads, right?

There may be some truth to this, as it's much more common here in the Bay Area than in San Diego.

(laughter) Okay. Now, for the third theory, let's ask ourselves what's really going on with synesthesia. have understood?

There, we found that in the fusiform gyrus of the brain, the color regions and the number regions are right next to each other.

So, we said, there is an accidental cross-wiring between colors and numbers in the brain.

In other words, every time you see a number, you see the corresponding color, so synesthesia happens.

Remember -- why does this happen?

Why do some people have crossed wires?

Remember when I said it runs in families?

That's a hint.

So there is an abnormal gene, a mutation in the gene that causes this abnormal cross-wiring.

We all find that everything is innately connected to everything else.

Therefore, every brain region is wired to every other region, and these are trimmed to create the characteristic modular structure of the adult brain.

Thus, there is a gene that causes this trimming, and when that gene is mutated, it results in poor trimming between adjacent brain regions.

And if it's between numbers and colors, you get number-color synesthesia.

If you are between tone and color, you get tone and color synesthesia.

So far, so good.

Now, what if this gene is expressed everywhere in the brain and everything is interconnected?

Well, think about what artists, novelists, and poets have in common: their ability to do figurative thinking by connecting seemingly unrelated ideas, such as "Here is the East and Juliet is the Sun."

Well, I wouldn't say Juliet is the sun, but does that mean she's a glowing ball of fire?

I mean, people with schizophrenia do, but that's another story, right?

Ordinary people say she is warm like the sun, bright like the sun, and nurturing like the sun.

I found the link immediately.

Now, assuming that this greater interconnection and conception is also present in different parts of the brain, there would be a greater propensity towards figurative thinking and creativity in people with synaesthesia.

Thus, there is an eight-fold higher prevalence of synesthesia among poets, artists and novelists.

Well, this is a very phrenological view of synesthesia.

One final demonstration -- may I have a minute?

(Applause.) Okay. I'll tell you that you're synesthetes, but you deny it.

This is what I call the Mars Alphabet. Just like the alphabet, A is A, B is B, and C is C.

Each phoneme has a different shape, right?

Here is the Mars alphabet.

One of them is Kiki and the other is Booba.

Which one is Kiki and which one is Booba?

How many of you think that's Kiki and that's Booba? Raise your hand.

Well, it's one or two mutants.

(laughter) How many of you think that's Booba and that's Kiki? Please raise your hand.

Ninety-nine percent of you are.

Now, none of you are Martians. how did you do

That's because you're doing a cross-model synesthetic abstraction. That is to say, sharp inflections -- kiki, hair cells firing in the auditory cortex -- mimic kiki, visual inflections, those jagged-shaped abrupt inflections.

Now this is very important. Because what this message is telling you is that your brain is doing something primitive. It's just that. It seems like a silly illusion, but these photons in your eyes have this shape, and the hair cells in your ears are stimulating auditory patterns, but your brain is able to extract the commonalities.

This is a primitive form of abstraction, and we now know that this occurs in the fusiform gyrus of the brain. Because when this is damaged, not only do these people lose their ability to work on bouba-kiki, they also lose their ability to work on metaphors.

If you ask this guy, what does "everything that glitters isn't gold" mean?

The patient said, "Just because it's shiny with metal doesn't mean it's gold.

You have to measure the specific gravity, right? ”

So they completely miss the metaphorical meaning.

Thus, this region is about eight times larger in higher animals, especially humans, than in lower primates.

Something very interesting is happening here in the angular gyrus. Because the angular gyrus is the crossroads between auditory, visual, and tactile sensations, it has become gigantic in humans. And something very interesting is happening.

And I think that's the basis for many of our unique human abilities, such as abstraction, metaphor, and creativity.

All of these questions that philosophers have explored for thousands of years can be explored by us scientists by creating brain images, studying patients and asking the right questions.

thank you.

(Applause) I'm sorry.

(laughter)

I am an infectious disease trained doctor who migrated from San Francisco to Somalia after my training.

And my goodbye from the director of infectious diseases at San Francisco General Hospital was, "Gary, this is the biggest mistake you've ever made."

But I was in a refugee situation with 1 million refugees in 40 camps and 6 doctors.

There were many epidemics there.

My work was mainly concerned with tuberculosis, and then a cholera epidemic struck.

In short, I was responsible for stopping the spread of tuberculosis and the spread of cholera.

And to do this job, of course, we had to recruit refugees as a new category of specialized health workers, because of the limited number of health workers.

After three years in Somalia, I was recruited by the World Health Organization to take charge of the AIDS epidemic.

My main assignment was in Uganda, but I have also worked in Rwanda, Burundi, Zaire and now Congo, Tanzania, Malawi and several other countries.

My last assignment there was to run a unit called Intervention Development, which was responsible for designing interventions.

After working abroad for 10 years, I was exhausted.

There were really only a few left.

I was traveling from country to country.

I was very isolated mentally.

I wanted to go home.

I have seen many deaths, especially epidemic deaths, but epidemic deaths feel different.

Full of panic and fear, I could hear women crying in the desert.

And then I wanted to go home, rest, and try again.

I didn't know about the epidemic problem in America.

In fact, I knew nothing of America's problems.

As a matter of fact—seriously.

And indeed, I've had friends on occasion and found that their homes have a direct water supply.

How many people are in that situation?

(Laughter.) And some of them, actually a lot of them, had water in multiple rooms.

And I noticed that they would move this little thermostat to change the temperature of the house by a degree or two.

And now I do.

And I really didn't know what I was going to do, but my friend started telling me about kids shooting other kids with guns.

And I asked, what are you doing about it?

What are we doing about it in America?

And there were two essential explanations or ideas that were prevalent.

One was punishment.

And we've heard this before.

Those of us who have been involved in behavioral research know that punishment is something that should be discussed, but also that it is greatly overrated.

It was not the main driver for behavior, nor was it the main driver for behavioral change.

In addition, it reminded us of ancient epidemics, plague, typhus and leprosy, which had previously been completely misunderstood because science had not existed until then. There were bad people, bad moods, bad air, widows being dragged around moats, and the idea that dungeons were part of the solution was common there.

Another explanation, or in some sense a suggested solution, is to fix everything: schools, communities, homes, families, everything.

And I've heard this before too.

I used to call this the "everything" theory, or EOE (everything on earth).

But I've also noticed that in dealing with other processes and issues, sometimes you don't have to deal with everything.

And I felt there was a big gap here.

The issue of violence is a dead end, and this has historically been the case with many other issues as well.

Diarrheal illness persisted.

Malaria was at a dead end.

You often have to rethink your strategy.

Not that I had no idea what it would be like, but there was a sense that I had to do something about new categories of workers, something related to behavior change, something related to public education.

But I started asking questions and looking into the usual things I had explored earlier. For example, what does a map look like?

What does your graph look like?

What does your data look like?

And here's the map of violence in most US cities:

Clustering was occurring.

This reminded me of the cluster outbreaks we have seen in epidemics of infectious diseases such as cholera.

And I looked at the map, and the map showed this typical wave after wave. Because every epidemic is a combination of many epidemics.

And it looked like an epidemic.

And we asked the question, what actually predicts violent events?

And the greatest predictor of violent events turned out to be antecedent violent events.

This also sounds like someone gave someone a case of flu or a cold if they had a case of the flu, or that the biggest risk factor for tuberculosis was exposure to tuberculosis.

So we see that in some ways violence behaves like an epidemic.

We recognize this anyway in common experiences and newspaper articles about the prevalence of violence in brawls, gang wars, civil wars and even massacres.

But there is also good news about this. Because there are ways to reverse the trend. There are really only three things that can be done to reverse the epidemic, and the first is to stop the contagion.

To break the transmission, we need to detect and find the first case.

In other words, we have to find active tuberculosis patients for TB. A person who infects other people.

Recognize?

And there are special workers to do it.

For this particular problem, we have designed a new category of personnel, like SARS personnel and those looking for avian flu, who may discover the first cases.

In this case, someone is very angry because someone saw their girlfriend or borrowed money. Workers can be found and trained into these specialized categories.

And the second thing, of course, is to prevent further spread. That means finding other people who may have had tuberculosis but not as prevalent now. For example, people with small cases of tuberculosis, or people who are just hanging out in the neighborhood and belong to the same group. In that case, in a sense, there should also be management that is specific to the particular disease process.

And the third part is changing norms. This means a series of community activities, reforms and public education. And then we get the so-called herd immunity.

And it is the combination of these factors that has been so successful in reversing the AIDS epidemic in Uganda.

So what we decided to do in 2000 was to sort of wrap up this situation by hiring a new category of workers. The first was a violent saboteur.

And all of this in one of the worst police districts in America at the time.

In other words, just like Somali health workers, violence disruptors hired from the same group with credibility, credibility and accessibility are designed for different categories and trained in persuasion, chilling people, buying time, changing paradigms, etc.

And another category of workers, outreach workers, keeps people in treatment for 6 to 24 months.

Same as T.B., but the goal is to change behavior.

And there's also a lot of community action to change the norm.

This initial experiment resulted in a 67% reduction in shootings and homicides in Chicago's West Garfield neighborhood.

(Applause.) And this has been great for the neighborhood itself. First it was 50 or 60 days, then 90 days, but unfortunately another 90 days later there was another shooting and the mothers were hanging out in the afternoon.

They were using a park they hadn't used before.

The sun was out. Everyone was happy.

But, of course, the funder said, "Wait a minute, try again."

So, luckily, I had to raise funds to repeat the experience. This is one of four neighborhoods where shootings and homicides have decreased by 45%.

Since then it has been replicated 20 times.

Independent evaluations conducted by Johns Hopkins University with support from the Department of Justice and the CDC show that shootings and homicides are reduced by 30-50 percent and 40-70 percent using the new method.

In fact, there are currently three independent assessments of this.

Since then, he has been featured on the cover of The New York Times' Sunday Magazine, and is now attracting a great deal of attention.

The Economist magazine in 2009 said this was the "approach to watch".

And a movie was made about our work.

[interrupter] But it wasn't too soon, because many people didn't agree with this practice.

There was a lot of criticism, a lot of opposition, and a lot of dissenters.

So what is the health problem?

What does epidemic mean?

What do you mean by no bad guys?

And the entire industry is designed to manage bad people.

What does it mean to hire people with experience?

My business friends were like, 'Gary, you're being heavily criticized.

you must be doing something right. ”

(Laughter) A musician friend of mine added the word "man."

Anyway, moreover this issue still exists and was heavily criticized for not addressing all other issues as well.

But we have been able to control malaria, reduce HIV, and reduce diarrheal disease in economically poor areas without restoring the economy.

As for what's really going on, the movement is clearly growing, although there is still opposition.

Health departments now do this in many major US cities, including New York City, Baltimore and Kansas City.

In Chicago and New Orleans, health departments play a huge role in this regard.

This is more accepted by law enforcement than it was a few years ago.

Trauma centers and hospitals are playing a role in further strengthening.

And the United States Conference of Mayors endorsed not only this approach, but also a concrete model.

Indeed, even faster is the international environment, with District 1 in Puerto Rico seeing a 55 percent drop, suspension just beginning in Honduras, Kenya applying the strategy in recent elections, and Iraq having 500 suspensions.

In other words, violence behaves as a disease, but it also reacts as a disease.

So, in a way, this theory seems to have been validated by therapy.

And recently, the Institute of Medicine released a workshop report that explored several data, including neuroscience, on how this problem really spreads.

So I think this is good news. Because it gives me an opportunity to get out of the Middle Ages that I feel this field was in the Middle Ages.

It gives us the opportunity to consider the possibility of replacing some of these prisons with playgrounds and parks, to consider the possibility of turning our neighborhoods into neighborhoods, to enable new strategies, new sets of methods, new sets of workers—science may replace morality.

And getting away from emotions is the most important part of the solution to science.

So I never intended to come up with this.

It was really just wanting a break so looking at maps, looking at graphs, asking some questions and trying out some tools that have actually been used many times before for other purposes.

I myself tried to stay away from infections, but it didn't work.

thank you.

(applause)

So in my free time outside of Twitter, I love telling stories online and experimenting with what new digital tools can do.

And in my work at Twitter, I've actually spent a little bit of time working with writers and storytellers to broaden the scope of what people are experimenting with.

Today, I would like to share with you some examples of what I consider to be really interesting behaviors of people who use flexible identities and anonymity on the web, blurring the lines between fact and fiction.

But I would like to go back to the 1930's.

Long before there was a little thing called Twitter, radio brought us broadcasting, connecting millions of people to a single point of broadcast.

And from that point the story was born.

Some of the stories were familiar.

There were also new stories.

For a while, radio was a well-known format, but then radio began to evolve its own format specific to that medium.

Think about an episode that happened live on the radio.

Combining live theater with written fiction serialization gives us this new format.

The reason I bring up radio is because I think it's a great example of how new media define new formats, which in turn define new stories.

And of course, today we have a whole new medium: the online world.

This is a map of authenticated users on Twitter and connections between them.

There are thousands and thousands of them.

All of these points are broadcasters of their own.

We have entered the many-to-many world. Access to tools is the only barrier to broadcasting there.

And I think very new formats should start to emerge as people learn how to tell stories in this new medium.

I actually believe we are at a wide open frontier for creative experimentation. We have begun to explore and settle the wilderness of the Internet and are now preparing to begin building structures upon it. And those structures are new forms of storytelling that the internet allows us to create.

I believe this starts with the evolution of existing methods.

For example, short stories are said to be undergoing a renaissance of sorts thanks to e-readers and digital marketplaces.

One of the authors, Hugh Howie, experimented with short stories on Amazon by publishing one very short novel called Wool.

And in fact, he said that he never intended to make "Wool" a series, but that the audience liked the first story so much that they asked for more, so he gave them more.

He gave them "Wool 2", which was slightly longer than the first novel, "Wool 3", which was even longer, culminating in "Wool 5", a 60,000 word novel.

I believe Howey was able to do all of this because of the eBook's rapid feedback system.

He was able to write and publish in a relatively short period of time.

There was no intermediary between him and the audience.

It was just him connecting directly with his audience and building on the feedback and enthusiasm they gave him.

So this whole project was an experiment.

I think it started with one short story and that experimentation really became part of Howey's format.

And that's what the medium has made possible, the experimentation as part of the format itself.

This is a short story by author Jennifer Egan called "Black Box".

It was originally written specifically with Twitter in mind.

Egan convinced the New Yorker to start a New Yorker fiction account where she could tweet all these lines she made.

Of course, Twitter has a limit of 140 characters.

Egan derided it as just writing by hand in this storyboard sketchbook, and took advantage of the physical space constraints of the storyboard rectangle to write individual tweets that eventually became over 600 tweets serialized in The New Yorker.

Every night at 8pm, you can listen to short stories from The New Yorker's fiction account.

I find it very interesting to listen to literary novels.

Egan's story experience, of course, like anything else on Twitter, had multiple ways to experience it.

You can scroll back, but interestingly, if you're watching live, you can't control when you read the actual tweets, which adds suspense.

They came in fairly regular clips, but normally as a reader you can control how fast you go through the text as the story builds, but in this case the New Yorker took control and there was this tension of sending you off bit by bit and waiting for the next line.

Another great example of fiction and short stories on Twitter, Eliot Holt is an author who wrote a story called "Evidence."

The incident began with the following tweet: "On November 28th at 10:13pm, a woman identified as Miranda Brown, 44, of Brooklyn, fell to her death from the rooftop of a Manhattan hotel."

It opens with Elliot's voice, but then Elliot's voice fades away and we hear Elsa, Margot, and Simon. Elsa, Margot, and Simon are characters that Elliot created on Twitter specifically to tell this story, with multiple perspectives leading up to this moment at 10:13 p.m.

When this woman fell to her death.

These three characters brought an authentic vision from multiple perspectives.

One reviewer called Elliot's story "Twitter fiction done right."

She captured that voice, had multiple characters, and it happened in real time.

Interestingly, however, Twitter was not the only distribution mechanism.

Twitter was also used as a production mechanism.

Elliott later told me he wrote everything with his thumb.

She was lying on the couch, tweeting line by line, hopping back and forth between various characters.

I think this spontaneous creation of what comes out of the character's voice gave authenticity to the character itself, but also to the format in which she created multiple perspectives on a single story on Twitter.

Once you start playing with flexible identities online, it gets even more interesting when you start interacting with the real world.

The "Invisible Obama", the famous "femme-filled binder" during the 2012 election campaign, and even the fan fiction world of "West Wing" Twitter have accounts for all of the "West Wing" characters, including the bird knocking on Josh Lyman's window in one episode. (Laughter) These are all quick thematic iterations.

They are creative people experimenting with the limits of what is possible with this medium.

When you look at things like Twitter's "West Wing," you see fictional characters interacting with the real world.

They comment on politics and shout against parliamentary evil.

Remember, they are all Democrats.

And they relate to the real world.

they respond to it.

So when you embrace flexible identities, anonymity, and engagement with the real world, and are able to leverage these tools in your storytelling beyond simple homages and parodies, things really get interesting.

Therefore, a parody account existed during the Chicago mayoral election.

It was Mayor Emmanuel.

Especially in the abusive part, Rahm Emanuel gave me everything I asked for.

This foul-mouthed account tracked the day-to-day activities of the race and provided commentary as it progressed.

It followed all the natural tropes of a good and solid Twitter parody account, but then it started to get weird.

And then, as the story progressed, it transitioned from this commentary to a multi-week real-time sci-fi blockbuster in which main character Rahm Emanuel travels through multiple dimensions on Election Day. It didn't actually happen.

I checked the newspaper again.

And, very interestingly, it came to an end.

This is not something that normally happens with Twitter parody accounts.

It was the end, the true story conclusion.

So it made a lot of sense for Dan Sinker, the author, a journalist and anonymous all along, to turn it into a book. Because it was ultimately in narrative form. And I think making this into a book expresses this idea that he created something new that needed to be translated into an earlier format.

In fact, one of my favorite examples of what's happening on Twitter right now is the very absurd Crimer Show.

The Climber Show uses all the tropes of a TV show to tell the story of a super-criminal and a hapless detective who face off in this very strange jargon.

Is it strange that the creators of The Climber Show say it's a parody of the type of show popular in the UK?

And there are often times when super-criminal climbers do all these TV things.

He's always taking his sunglasses off and looking at the camera, but these things just happen in text.

I think that by borrowing all these tropes from television, plus presenting each climber show as an episode spelled E-P-P-A-S-O-D, or “eppasod,” you actually create something new.

Almost every day on Twitter there is a new "epathod" of the Crimer Show, archived as such.

I think this is an interesting experiment, even formally.

Something completely new was created here from parodying something on TV.

I think there are a lot of really good examples of non-fiction real-time storytelling, too.

RealTimeWWII is an account that records in great detail what happened on this day 60 years ago, as if you were reading a news report for that day.

And author Teju Cole has experimented a lot with putting literary twists on news events.

In this particular case, he's talking about drone attacks.

I think both of these examples are starting to show how people can tell stories using non-fictional content that can be incorporated into new types of fictional storytelling.

Real-time storytelling, fact and fiction, the blurring of the lines between the real and digital worlds, flexible identities, anonymity, etc., these are all tools that we have access to, I think they are just building blocks.

They are the bits we use to create structures and frames that then become our settlements in this wide-open frontier for creative experimentation.

thank you.

(applause)

"Give me liberty or give me death."

When Virginia Governor Patrick Henry said these words in 1775, he had no idea that they would resonate with future generations of Americans.

At the time, these words were intended for the British, but over the past 200 years they have come to embody what many Westerners believe: freedom is the most cherished value, and the best political and economic systems have it built into them.

who can blame them?

Over the past 100 years, the combination of liberal democracy and private capitalism has helped propel the United States and the West to new levels of economic development.

Over the past 100 years, incomes in the United States have increased 30-fold and hundreds of thousands have been lifted out of poverty.

American ingenuity and innovation, on the other hand, have fueled industrialization and helped create and build home appliances such as refrigerators and televisions, automobiles, and even mobile phones that fit in your pocket.

Thus, even in the depths of private capitalism's crisis, President Obama said, "The question before us is not whether markets do good or evil.

Its power to generate wealth and expand freedom is unparalleled. ”

Not surprisingly, therefore, there is a persistent belief among Westerners that the whole world will decide to adopt private capitalism, liberal democracy as its model of economic growth, and will continue to prioritize political rights over economic rights.

But for many in emerging markets, this was an illusion, and the Universal Declaration of Human Rights, signed in 1948 and adopted unanimously, only masked the division between developed and developing nations and ideological beliefs between political and economic rights.

This division will only widen.

Today, many in emerging markets, home to 90 percent of the world's population, believe that the West's obsession with political rights is irrelevant and what really matters is providing food, housing, education and health care.

"Give me liberty or give me death" is fine if you can afford it, but for those living on less than a dollar a day, it becomes too busy surviving and raising a family to spend time proclaiming and defending democracy.

Now, I know that a lot of people, not only in this room but all over the world, will think, "Really, this is hard to understand." Because private capitalism and liberal democracy are sacred.

But today I ask you. What would you do if you had to choose?

What if you had to choose between a roof over your head and the right to vote?

Over the last ten years, I have had the opportunity to travel to over 60 countries. Many are located in emerging markets, Latin America, Asia, and continental Africa.

I have met with presidents, dissidents, policy makers, lawyers, teachers, doctors, and men on the street, and these conversations have revealed that many in emerging markets believe there is a real divide between what people ideologically believe about Western politics and economics and what the rest of the world believes.

Now, don't get me wrong.

I'm not saying that people in emerging markets don't understand democracy, or that they don't ideally want to elect presidents and leaders.

Of course I would.

But what I'm trying to say is that at the end of the day, they're more concerned about where their living standards will come from and how their government will make it happen for them than whether their government is democratically elected.

In fact, this issue has become a very poignant question. For, for the first time in a long time, there is a real challenge to the Western political and economic ideological system, and this system is embodied by China.

And we have state capitalism, not private capitalism.

Instead of liberal democracy, they deprioritized democratic institutions.

It also decided to prioritize economic rights over political rights.

What I am telling you today is that this system, as embodied by China, is gaining momentum among people in emerging markets as the system to follow. Because people in emerging markets believe that this is the system that promises the best and fastest improvement in living standards in the short term.

If you don't mind, let me first take a moment to explain why they came to this belief, financially.

First and foremost is China's economic performance over the past 30 years.

She brought about record economic growth and was able to lift millions out of poverty in a meaningful way, especially by lifting more than 300 million people out of poverty.

This is true not only in terms of economy, but also in terms of living standards.

In China, we can see that 28% of people have secondary education.

That percentage is now approaching 82%.

So overall, the economic improvement was very noticeable.

Second, China has been able to meaningfully reduce income inequality without changing its political structure.

Today, the United States and China are the world's two largest economies.

They have vastly different political systems and different economic systems, one being private capitalism and the other broadly state capitalism.

However, these two countries have the same GINI coefficient, a measure of income equality.

Perhaps more worrisome is the recent improvement in income equality in China, while the decline in income equality in the United States.

Third, people in emerging markets are eyeing China's amazing and legendary infrastructure development.

This means that not only is China building its own roads, ports and railroads, but it has built an 85,000-kilometer road network within China, surpassing the United States -- even looking to places like Africa, China could help tar the 9,000 miles from Cape Town to Cairo, or three times the distance from New York to California.

Now this is what people can see and point out.

Perhaps unsurprisingly, in a 2007 Pew survey, Africans in 10 countries said they thought the Chinese were doing great things to improve their lives, by as much as 98 percent.

Finally, China also offers innovative solutions to long-standing social problems facing the world.

A trip to Mogadishu, Mexico City and Mumbai shows that dilapidated infrastructure and logistics continue to hamper the delivery of medicines and healthcare in rural areas.

But through a network of state-owned enterprises, the Chinese have been able to tap into these rural areas and use their own companies to help deliver these medical solutions.

Guys, it's no surprise that people all over the world are pointing to what China is doing and saying, "I like it. I want it."

I want to be able to do what China is doing.

That's the system it seems to work. ”

I am also here to tell you that there have been many changes in what China is doing as a democracy.

Doubts are growing among people, especially in emerging markets, as they believe that democracy should no longer be seen as a prerequisite for economic growth.

In fact, not only China, but also countries such as Taiwan, Singapore, and Chile actually show that economic growth is a prerequisite for democracy.

Recent research provides evidence that income is the single biggest factor in determining how long a democracy lasts.

The study found that if the per capita income was about $1,000 a year, the democracy would last about eight and a half years.

If your per capita income is between $2,000 and $4,000 a year, your democracy is likely to last only 33 years.

And only if per capita income exceeds $6,000 a year will democracy go to hell or high water.

What this tells us is that we first need to establish a middle class that can hold the government accountable.

But perhaps it also tells us that we should worry about crushing democracy as we go around the world. Because we risk ending up with an illiberal democracy, in some ways worse than the authoritarian government they are replacing.

The evidence for illiberal democracy is very depressing.

Freedom House found that although 50% of the countries in the world today are democracies, 70% of those countries are illiberal in the sense that people have no freedom of speech or freedom of movement.

But also, a study released last year by Freedom House found that freedom has been declining every year for the past seven years.

What this means is that for someone like me who values ​​liberal democracy, we have to find more sustainable ways to ensure sustainable forms of democracy in a liberal way. Its roots are in economics.

But the report also said that as China plows its way to becoming the world's largest economy, experts expect that to happen in 2016, likely further widening the rift between the political and economic ideologies of the West and the rest of the world.

What would that world look like?

Well, the world may look more like state involvement and state capitalism. Expansion of nation-state protectionism. Not only that, but as I pointed out earlier, political and individual rights continue to decline.

The general question that remains for us is, what then should the West do?

And I suggest they have two options.

Western countries can compete, and they can cooperate.

If the West chooses to compete with the Chinese model, effectively going around the globe to advance an agenda of private capitalism and liberal democracy, this will basically be against the headwinds, but it will also be a natural stance for the West to take, since in many ways it is the antithesis of the Chinese model, which deprioritizes democracy and state capitalism.

In fact, if the West decides to compete, there will be even greater divisions.

Another option is for the West to cooperate, which means giving emerging market countries the flexibility to organically figure out what kind of political and economic system works best for them.

Now, some of you in the audience might think that this is a cession to China, in other words, a way for the West to fall behind.

But what I said is that if the United States and European countries want to maintain their global influence, they may need to consider working together in the short term to compete, and thereby focus more aggressively on economic achievements so that they can help build a middle class and thereby hold governments accountable and create the democracies we really want.

In fact, Western countries should encourage their companies to trade and invest in these regions instead of traveling around the world preaching to other countries about their involvement with China.

Rather than criticize China for its misdeeds, Western countries should show how good their political and economic systems are.

And perhaps the West should take a piece from its own history book and remember that it takes a great deal of patience to develop today's models and systems, rather than imposing democracy all over the world.

In fact, Supreme Court Justice Stephen Breyer reminds us that it took nearly 170 years of constitutional law for equal rights to exist in the United States.

Some would argue that equal rights do not exist even today.

In fact, some groups argue that we still do not have equal rights under the law.

Best of all, the Western model says it all.

It is a model that puts food on the table.

It's a refrigerator.

It landed mankind on the moon.

But in reality, people used to point to Western countries and say, "I want that, I like that," but now there's a new figure on the streets in the form of the country of China.

Today, generations look at China and say, "China can create infrastructure, China can create economic growth, and we like it."

Because ultimately the question before us, and the seven billion people on the planet, is how can we create prosperity?

People who value the model of politics and economics in a very rational way, and pivot to that model, to a model that guarantees a better standard of living in the short term.

As I leave here today, I would like to leave a very personal message. This is what I believe we should do as individuals. It is about being open-minded to the fact that our hopes and dreams of bringing prosperity to people around the world, creating poverty for hundreds of millions, and ending poverty in a meaningful way must be based on being open-minded. Because these systems have both good and bad points.

To illustrate, I looked back at my own records.

that's my photo

Oh wow. (laughs) I was born and raised in Zambia in 1969.

When I was born, black people didn't get birth certificates, and that law changed in 1973.

This is an affidavit from the Zambian government.

I want to tell you this because in 40 years I have gone from not being recognized as a human being to today standing in front of an eminent TED crowd and sharing my views with you.

In this way, we can promote economic growth.

We can put the brakes on poverty in a meaningful way.

But it will also require a reassessment of the assumptions, assumptions, and constraints around which we grew up around democracy, private capitalism, and what creates economic growth, reduces poverty, and creates freedom.

We may have to tear out those books, start considering other options, and open our hearts to the truth.

Ultimately, it's all about transforming the world and making it a better place.

thank you very much.

(applause)

So I am an urban planner, urban designer, former art advocate, trained in architecture and art history. Today I want to talk not about design, but about America and how America can become more economically resilient, how America can become healthier, and how America can become more environmentally sustainable.

And I know this is a global forum, but I think we need to talk about America. This is because, in some places, not all, American ideas have a history of being appropriated and imitated around the world, for better or worse.

And the worst idea we could ever think of is suburban sprawl.

As we speak, it's emulated in many places.

When I say suburban sprawl, I mean the reorganization of the landscape and the creation of landscapes around the need for motor vehicle use. It also refers to how the automobile, once a tool of freedom, has become a gassing, time-wasting, life-threatening prosthetic that many of us, in fact most Americans, simply need to go about our daily lives.

There are also alternatives.

As you know, half of the world is said to live in cities.

In America, many people who live in cities still rely on automobiles to live in cities.

And what I'm working on, and what I need to do, is make our cities more walkable.

But I can't give a design argument as influential as the one I've learned from economists, epidemiologists, and environmental activists.

Those are the three arguments I will briefly describe today.

When I was growing up in the '70s, the typical American spent one-tenth of an American family's income on transportation.

Since then, the number of roads in America has doubled, and one-fifth of our income is now spent on transportation.

Working families, defined in the US as earning $20,000 to $50,000 a year, currently spend slightly more on transportation than they do on housing, but it's this phenomenon called "driving until you qualify" that keeps them moving further and further from city centers and jobs to find a home, confined to two, three, and four hour commutes a day.

And these are the areas in, say, California's Central Valley that didn't suffer when the housing bubble burst and gas prices rose. they were destroyed.

And in fact, these are many of the half-empty communities you see today.

Imagine spending everything you have on your mortgage, and then your mortgage is submerged and you have to pay twice as much as your driving costs.

So we know what it's doing to our society and all the extra work we have to do to support our cars.

What if cities decide to set other priorities?

And perhaps the best example here in America is Portland, Oregon.

Portland made many decisions in the 1970s that began to distinguish it from nearly every other city in America.

While most other cities have grown an undifferentiated spare tire of sprawl, it has set the city's growth boundaries.

Most cities have implemented programs to widen roads, remove parallel parking and trees to increase traffic, while narrowing roads.

And while most cities were investing in building more roads and highways, they were really also investing in biking and walking.

And spent $60 million on bike equipment. This seems like a lot, but it was spent over about 30 years, so $2 million a year - not much - and half the price of a single clover they decided to rebuild in that city.

These and other similar changes have also changed the lifestyle of Portlanders, and although the number of miles driven per day, or the amount of driving per person, actually peaked in 1996, it has been declining ever since, and is now 20 percent less than the rest of Portland.

The typical Portlander drives 4 fewer miles and 11 minutes less per day than before.

Economist Joe Courtright has calculated that the 4 miles plus 11 minutes equals just 3.5 percent of all income earned in the area.

So if they're not using that money to drive, which by the way is 85 percent of the money we spend driving is gone from local economies, what are they spending that money on?

Portland is known for having the most roof racks per capita, the most independent bookstores per capita, and the most strip clubs per capita.

These are all exaggerations, slight exaggerations of basic truths. That said, Portlanders spend more money on all kinds of recreation than the rest of America.

In fact, Oregonians spend more on alcohol than most other states, which could be a good thing or a bad thing, but it's nice to see them driving less.

(Laughter) But the reality is that they spend most of that money on their homes, and investing in a home is about as local as possible.

But Portland has an entirely different story, which is not included in this calculation. That means there has been a 50 percent increase in college-educated millennials between the last two Censuses, as educated young people have moved to Portland in droves. That's five times the average for the rest of the country, or even the national average.

So, while the city saves residents money by being walkable and bike-friendly, it's also a cool city that people aspire to these days.

The best economic strategy a city can take, therefore, is to become a place people want to live, rather than the old-fashioned way of attracting companies and creating biotech clusters, medical clusters, or aerospace clusters.

And millennials are certainly the engine of entrepreneurship, with 64% of them first deciding where they want to live, then moving there, then looking for work and coming to your city.

The health debate is a scary one, and you've probably heard parts of this debate before.

Again, in the 70's, 1 in 10 Americans were obese.

Currently, one in three Americans is obese and two-thirds of the population is overweight.

Twenty-five percent of young men and 40 percent of young women are too overweight to join our military.

According to the US Centers for Disease Control and Prevention, one-third of children born after 2000 will have diabetes.

America has first-generation children who are projected to live shorter lives than their parents.

This America's health crisis that we've all heard about is an urban design crisis, and I believe urban design is in the solution.

Because we've been talking about diet for a long time and we know that diet affects weight and of course weight affects health.

But we just started talking about physical inactivity, how physical inactivity that comes from our landscape, from the fact that we live in a place where there is no such thing as a convenient walk anymore, is making us gain weight.

And finally, the results of a study called "Gluttony vs. Sloth" conducted in the UK were announced. It tracked weight to diet and weight to lack of exercise, and found a much higher and stronger correlation between the latter two.

In this case, Dr. James Levine of the aptly-named Mayo Clinic put the subjects in electronic underwear, followed a regular diet and started taking in calories.

Some gained weight, some didn't.

The researchers, who had expected some sort of metabolic or DNA factor at work, were shocked to learn that the only difference they could see between the subjects was how much they exercised, and that, in fact, those who gained weight actually spent an average of two hours more sitting per day than those who didn't.

In this way, studies linking body weight and inactivity are being conducted, but there are also studies linking body weight and where you live.

Do you live in a walkable or hard-to-walk city, or where in the city do you live?

In San Diego, we used Walk Score. Walk Score evaluates all addresses across the United States, and soon around the world, in terms of how walkable they are. They used walk scores to designate more and less walkable areas.

Well what do you think? If you live in a more walkable area, you have a 35% chance of being overweight.

If you live in an area where walking is difficult, you have a 60% chance of being overweight.

That's why we're doing a lot of research now that links where you live to your health. Especially in America, the biggest health crisis we have comes from environmentally induced inactivity.

And last week I learned a new word.

They call these areas "obesity-prone."

I may be wrong, but would you please understand?

Of course, that's one thing.

Simply put, asthma is epidemic in this country.

You probably never thought about it.

Asthma kills 14 Americans every day, three times more than in the 90s, mostly from car exhaust.

Pollution in America no longer comes from factories, it comes from exhaust pipes. How much people drive in your city, or city VMT, is a good predictor of asthma problems in your city.

And finally, when it comes to driving, it comes down to car crashes, the leading cause of death among healthy adults and one of the leading causes of death for all of humanity.

And we take car accidents for granted.

We believe this is a natural risk while on the go.

But the reality is that 12 out of 100,000 people die in car accidents here in America each year.

It's pretty safe here.

Well, what do you think? In the UK, it is 7 per 100,000 people.

That's Japan, 4 in 100,000.

Do you know where 3 people out of 100,000 are?

New York City.

So is San Francisco. So is Portland.

Oh, does that mean cities will drive less and be safer?

Tulsa: 14 per 100,000 people.

Orlando: 20 per 100,000 people.

What matters is how your city is designed, not whether you are in it.

Was it designed around cars or people?

Because when your city is designed around cars, they are very good at colliding with each other.

This is part of the larger health debate.

Finally, environmentalism is an interesting one. Because environmentalists put a lot of money into it about ten years ago.

The American environmental movement has historically been an anti-urban movement since Jefferson.

"Cities are harmful to human health, liberty and morality.

If we continue to pile ourselves up in cities, as we do in Europe, we will be corrupted just as we are in Europe, and will eat each other just as we are in Europe. ”

Apparently he had a sense of humor.

And the American environmental movement was classically an Arcadian movement.

To be more environmentally conscious, we migrate to the countryside, commune with nature, and build suburbs.

But of course we've seen what it does.

America's carbon map, which shows where CO2 is coming from, has only reinforced this debate over the years.

When you look at a carbon map, you map by square mile, so any carbon map of the United States looks like a satellite image of a peaceful United States night sky, with the hottest cities, the coolest suburbs, and the darkest rural areas.

Is that the correct way to measure CO2 until some economists say so?

There are a finite number of people living in this country at any given time, so we can probably choose to live where the impact is less.

And they said, "Let's measure CO2 per household." And when they did that, the map flipped, with city centers being the coolest, suburbs being warmer, and suburban “drive to qualify” areas in bright red.

Fundamental changes have taken place, with environmentalists and economists like Ed Glaser claiming we are a destructive species.

If you love nature, your best bet is to get away from it and move to the city. The more dense nature is, the better. Dense cities like Manhattan are the best performing cities.

That means the average Manhattan resident has been consuming gas at a rate not seen anywhere else in the country since the 2020s, consuming half of Dallas' electricity.

But of course we could do better.

Canadian cities consume half as much gasoline as American cities.

Consumption in European cities halved again.

So clearly we can and want to do better and we are all trying to be green.

My final argument on this topic is that I think we are wrong in trying to be environmentally friendly. And I'm one of the many who believe this focuses on gadgets and accessories - what can I add to my home or what I already have to make my lifestyle more sustainable? -- seems to dominate the discussion.

Therefore I am not immune to this.

My wife and I built our new home in an empty lot in Washington, D.C. and did our best to clear the shelves of the sustainability store.

It is fully equipped with a solar power generation system, a solar water heater, a dual-flush toilet, and a bamboo floor.

Logs burned in my high-tech German stove probably emit less carbon into the atmosphere than if left to decompose in the woods.

But all these innovations said so in their brochures.

(Laughter) All these innovations are just a small part of what we can contribute by living in a walkable neighborhood three blocks from the metro in the city center.

We replaced all the light bulbs with energy efficient ones. You should do the same, but replacing all your light bulbs with energy efficient ones will save you as much energy in a year as moving to a walkable city in a week.

And we don't want this kind of discussion.

Politicians and marketers fear marketing green as a "lifestyle choice."

No way, you don't want to tell Americans that they have to change their lifestyle.

But what if lifestyle is really about quality of life, perhaps something we all enjoy more, better than what we have now?

Well, the gold standard for quality of life rankings is called the Mercer Survey.

You may have heard of it.

They rank hundreds of countries around the world according to 10 criteria they believe improve quality of life, including health, economy, education and housing.

There are six more. short story.

(Laughter) And it's very interesting to see that Honolulu, the highest ranking US city (#28), is followed by the usual contenders of Seattle, Boston and other walkable cities.

Sunbelt driving cities, Dallas and Phoenix, and sorry Atlanta, these cities are not listed.

But who is better than that?

Canadian cities like Vancouver still consume half the fuel.

And usually German-speaking cities like Düsseldorf or Vienna win, also burning half the fuel there.

And you see this array, this weird array.

Does being more sustainable lead to a higher quality of life?

I would argue that the same thing that makes you more sustainable is what makes a higher quality of life, and that is living in a walkable neighborhood.

Sustainability, including our wealth and health, may therefore not be a direct function of our sustainability.

But especially here in the United States, we waste time, money and lives on the highways, which is why the air is so polluted. In that case, these two problems seem to share the same solution of making cities more walkable.

It's not easy to do, but it's possible, it's happening, and it's happening now in several cities around the world and in our country.

I take some comfort in the words of Winston Churchill: "Americans can be expected to do the right thing after they have exhausted their alternatives." (Laughter) Thank you.

(applause)

As humans, it is natural for us to want to improve our health and minimize suffering.

No matter what life throws at us: cancer, diabetes, heart disease, even broken bones, we want to try to recover.

Now, as director of the Biomaterials Laboratory, I am very interested in how humans have used materials in their bodies in very creative ways over the years.

Take, for example, this beautiful blue pearl oyster.

This was actually used by the Mayans as a replacement for artificial teeth.

I'm not quite sure why they did that.

it's difficult. Durable.

But it also had other very good properties.

In fact, when you put it in your jawbone, it can become one with your jaw, and part of that integration comes from the fact that this material is designed in a very specific way, has beautiful chemistry, and has a beautiful structure, we know with very sophisticated imaging techniques.

And I think in many ways the use of blue pearl oysters and the Maya can be considered the first real application of Bluetooth technology.

(Laughter) But if you go back in history and think about how people have used different substances in their bodies, it's been mostly doctors who have been very creative.

They took things off the shelves.

One of my favorite examples is that of Sir Harold Ridley who was, or at least became, a famous ophthalmologist.

During World War II, he saw pilots returning from a mission and noticed that their eyes were filled with tiny pieces of material, but what was very interesting was that the material did not actually cause an inflammatory response.

So he looked into this and found that the material was actually small pieces of plastic that came out of the Spitfire's canopy.

This led to the proposal of this material as a new material for intraocular lenses.

It's called PMMA and is now used by millions of people each year to help prevent cataracts.

I think this example is really great. Because it serves as a reminder that in the early days people often chose materials because they were bioinert.

Their very purpose was to perform a mechanical function.

Putting them into the body does not cause any adverse reactions.

And what I want to show you is that in regenerative medicine there is a big shift away from the idea of ​​using bioinert materials.

In fact, we are actively looking for materials that are bioactive, interact with the body, can be put into the body to perform their function, and dissolve over time.

This diagram shows what we think of as a typical tissue engineering approach.

There are cells, usually taken from the patient.

These can be placed on a material, and that material can be made very complex if desired, and it can be grown in the lab or returned to the patient intact.

This is the approach used worldwide, including in our lab.

But one of the things that's really important when you think about stem cells is that obviously they can be many things and they want to be many things. Therefore, we want to make sure that the environment in which we place the stem cells has enough information so that they can become the right kind of specialized tissue.

And if you think about the different types of tissue people are looking to regenerate in different laboratories around the world, there are just about every tissue you can think of.

And in fact, the structure of these tissues is quite different, and how the tissue regenerates is highly dependent on whether the patient has underlying medical conditions and other conditions. We also have to think very carefully about the materials we use, their biochemistry, mechanics and many other properties.

All our tissues have very different regenerative capacities. Here we have poor Prometheus, who made a rather tricky career choice and was punished by the Greek gods.

He was tied to a rock and every day an eagle came to eat his liver.

But, of course, his liver regenerated every day, so he received eternal punishment from God day after day.

The liver regenerates in such a wonderful way, but in fact when you think about other tissues such as cartilage, it turns out that cartilage is very difficult to regenerate, even from the simplest of cuts.

Therefore, it varies greatly from organization to organization.

Now, bone falls somewhere in between, and it's one of the tissues we often study in the lab.

And bones are actually very good at repairing.

It has to be. Almost everyone has had a broken bone at some point.

One possible method of fracture repair is this procedure called iliac crest harvest.

And what a surgeon might do is take some bone from the iliac crest here and transplant it somewhere else in the body.

And it actually works very well because it's your own bone, well vascularized and with a very good blood supply.

The problem, however, is that there are limits to what can be done, and that surgery can actually leave the patient in a lot of pain at the defect site two years after surgery.

So what we thought was, of course, there is a great need for bone repair, but this iliac crest-type approach actually has a lot of limitations, and perhaps we could recreate the bone generation in the body on demand so that it could be implanted without the very, very painful sequelae that would occur with iliac crest harvesting.

Here's what we did. The way we did it was by going back to this typical tissue engineering approach and actually thinking quite differently.

And since I've simplified it so much, I've removed many of those steps.

We have removed the need to harvest cells from patients, remove the need to introduce very fancy chemicals, and remove the need to grow these scaffolds in the lab.

And what we really focused on was the material system, and making it very simple, but we used it in a very clever way, so we were able to generate a huge amount of bones using this approach.

In other words, we were using our bodies as catalysts to help us build more new bone.

This is an approach that we call an in vivo bioreactor, and using this approach we were able to create vast amounts of bone.

I will tell you about it.

So what we're doing is that in humans, there's a layer of stem cells on the outside of the long bones.

That layer is called the periosteum.

And that layer is actually usually very tightly attached to the underlying bone and contains stem cells.

These stem cells are very important in the developing fetus and also play a role in awakening and helping the bone repair in the event of a fracture.

Therefore, we developed a method of collecting the periosteal layer and injecting fluid under it. The liquid transforms into a very hard gel within 30 seconds and can actually lift the periosteum from the bone.

So, in essence, we create an artificial cavity right next to both bone as well as a very rich layer of stem cells.

It then enters the body through a pinhole incision that prevents other cells from entering the body. And what happens is that artificial in vivo bioreactor cavities lead to the proliferation of these stem cells, allowing them to form many new tissues that, over time, can be harvested and used elsewhere in the body.

This is a histological slide of what we see when we do it, essentially what we're looking at is a very large amount of bone.

In this photo you can see the middle of the leg, the bone marrow. Then you can see the original bone. You can see where the original bone ends. Just to the left of it is new bone growing inside the cavity of the bioreactor, which can actually get bigger.

And that boundary you see between the old bone and the new bone acts as a very slight point of weakness, so the surgeon can actually come and take that new bone, and the periosteum can grow back in, so the leg is in a similar state as if it hadn't been operated on in the first place.

Therefore, compared to iliac crest harvesting, it is very low in terms of post-pain.

And it's actually kind of an on-demand procedure, as you can grow different amounts of bone depending on how much gel you put in there.

Well, at the time we did this, this got a lot of attention in the press. Because this was a very good way to generate new bone. And I've been getting so many contacts from different people interested in using it.

Let me tell you, these contacts are sometimes very strange, a little unexpected, and the most interesting, in other words, the contacts I got were actually from a team of American football players who all wanted to have double-thick skulls on their heads.

And sometimes you get those kinds of contacts. Of course, being British and raised in France, I tend to be very outspoken. So I had to explain very well to them that in their particular case there wasn't much to protect in the first place.

(Laughter) (Applause) This was our approach, simple ingredients, but thoughtful consideration.

And indeed, we know that cells in the body, the embryo, can form a different type of tissue, cartilage, as they develop. So we developed a slightly different gel with a slightly different chemistry, and when you put it in there, you get 100% cartilage instead.

I think this approach works very well for pre-planned steps, but you should plan ahead.

So other kinds of operations will definitely require other scaffold-based approaches.

And when you think about designing other scaffolds, you actually need a really multidisciplinary team.

Our team also includes chemists, cell biologists, surgeons, and physicists, all of whom come together to get serious about designing materials.

But we want to give them enough information to make the cells do what we want, but not so complicated that it's hard to get to the clinic.

One of the things we often think about is trying to understand the structure of tissues in the body.

And when you think about bone, which is obviously my own favorite tissue, when you zoom in, you see that it's beautifully organized, really beautifully organized, even if you don't know anything about bone structure.

We have many blood vessels running through us.

If we zoom in again, we can see that the cells are actually surrounded by a 3D matrix of nanoscale fibers, giving them a lot of information.

Zooming in again, in fact, in the case of bone, the matrix around the cells is beautifully organized at the nanoscale, a hybrid material that is part organic and part inorganic.

And that led to a whole field looking at developing materials with this hybrid kind of structure.

Here are just two examples of how materials with such a structure can be created and customized in practice.

What you have here is very soft, also this hybrid kind of material, but it actually has amazing toughness and you can see it's no longer brittle.

And inorganic materials are usually too brittle to have that kind of strength or toughness.

One other thing I would like to briefly mention is that many of the scaffolds we make are porous, and we need to grow blood vessels on them, so they have to be porous.

But in reality the pores are often much larger than the cells, so even in 3D the cells may perceive it as a slightly curved surface, which is a bit unnatural.

So one thing we can think of is to actually create scaffolds with slightly different dimensions that can surround the cells in 3D and give them a little more information.

And there is a lot of work being done in both these areas.

Finally, I would like to say a few words about the application of this sort of thing to cardiovascular disease. Because this is a very big clinical problem.

And one thing we do know, unfortunately, is that when you have a heart attack, that tissue starts to die, and over time the prognosis can get worse.

And indeed, it would be really nice if we could stop that dead tissue from dying or help it regenerate.

And while there are many clinical trials of stem cells going on around the world, using different types of cells, one common theme that emerges is that these cells, in fact, very often die when transplanted.

And we can put them into the heart, or we can put them into the blood system, but either way, it doesn't seem to be able to get the right number of cells to reach the desired location and achieve the beautiful cell regeneration we'd expect for good clinical outcomes.

Some of what we're thinking, and what many others in the field are thinking, are actually developing materials for that.

But there is a difference here.

We still need chemistry, we still need mechanics, we still need very interesting topography, we still need very interesting ways to surround cells.

But now, the cells themselves would probably also very much prefer materials that are conductive, since they themselves respond very well and actually transmit signals between cells.

You can see them hitting these materials in sync. This is a very exciting development underway.

Finally, I would like to say that to be able to work in this kind of field is not only a very exciting science, but a real privilege for all of us who work in this field that has the potential to affect patients, both small and large.

For that, I would like to thank everyone.

thank you.

(applause)

Throughout my career, I have been fortunate to work with many international architects, documenting their work and observing how their designs impact the cities in which they live.

I think of newer cities like Dubai, or ancient cities like Rome with Zaha Hadid's amazing MAXXI Museum, or cities like the High Line here in New York, cities that have been heavily influenced by the development of the High Line.

But what I find really interesting is what happens when architects and planners leave and these places are occupied by people, like here in Chandigarh, India, which was entirely designed by architect Le Corbusier.

Sixty years later, the city is being occupied by people in a way that probably wasn't intended. For example, here people are sitting at the windows of the assembly hall.

But over the years, I have documented Rem Koolhaas' CCTV building in Beijing and the Olympic Stadium in the same city by architects Herzog and de Meuron.

At large construction sites in China, we see a kind of makeshift camp where workers live throughout the construction process.

Construction takes years, so the workers end up forming a rather rough and well-prepared informal city, in stark contrast to the sophisticated structures they are building.

For the past seven years, I have been following my interest in the built environment. Anyone who knows me will tell you that this obsession keeps me in a suitcase 365 days a year.

Being on the move sometimes allows us to capture life's most unpredictable moments, like here in New York the day after the Sandy Storm hit the city.

Exactly three years ago, I visited Caracas, Venezuela for the first time, and when I flew over the city, I was simply amazed at the slums that spread throughout the city. Nearly 70 percent of the population lives in slums that literally stretch all over the mountains.

During a conversation with a local architect, Urban Think Tank, I learned about Torre David, a 45-story office building located in the heart of Caracas.

The building was under construction until the developer died in the early 90's when the Venezuelan economy collapsed.

About eight years ago, people moved into the abandoned tower and began building houses between all the pillars of this unfinished tower.

There is only one small entrance to the entire building, and 3,000 residents enter and exit through that single door.

Residents worked together to create public spaces and design them to feel more like homes than unfinished towers.

In the lobby, we painted the walls and planted trees.

I also made a basketball court.

However, if you look closely, you can see a huge hole where an elevator or service would have passed.

Inside the tower, people came up with different solutions in response to different needs arising from living in an unfinished tower.

With no elevator, the tower is like a 45-story walk-up.

It was designed in a very particular way by this group with no architecture or design training.

And with each inhabitant finding their own way, the tower will become like a living city, a place where microeconomy and small businesses come to life.

Inventive residents, for example, find opportunities in the most unexpected cases, such as an adjoining parking lot that has been reclaimed as a taxi route to transport residents through ramps to shorten the journey to their apartments.

As you walk through the tower, you'll see how the residents have figured out how to create the walls, how to create airflow, how to create transparency, how to circulate throughout the tower, etc., basically creating a house that perfectly adapts to the conditions of the site.

When new residents move into the tower, they usually just mark their space with a few curtains or sheets as they already have a roof over their heads.

Walls slowly rise from found materials, and people create spaces from found objects and materials.

It's remarkable to see the design decisions they're making. For example, if everything is made out of red brick, some residents will cover that red brick with another layer of red brick patterned wallpaper, etc. to give it some kind of neat finish.

Residents literally built these houses with their own hands. This labor of love gives great pride to the many families who live in this tower.

They usually make the most of their surroundings and try to make their spaces look nice and homey, at least within reach.

There are all sorts of services, including barbershops and small factories throughout the tower, and small grocery stores and shops on each floor.

And find a church.

And there's a gym on the 30th floor, where all the weights and barbells are made out of leftover pulleys from an elevator that wasn't installed.

Seen from the outside behind this ever-changing façade, you can see how fixed concrete beams provide a framework for building the house in an organic and intuitive way that directly addresses the needs of its inhabitants.

Go to Africa, Nigeria, to a community called Makoko, a slum of 150,000 people just meters above the Lagos Lagoon.

It looks like a completely chaotic place, but from above it looks like a grid of waterways and canals connecting each house.

From the main wharf, people board long wooden canoes that carry them to various homes and shops in the vast area.

Once out on the water, it is clear that life is perfectly adapted to this very particular way of life.

Even canoes become general stores, with women rowing from house to house selling everything from toothpaste to fresh fruit.

Behind every window and door frame I see a small child staring at me. Makoko looks full of people, but what's actually more shocking is the number of children pouring out of every building.

Population growth in Nigeria, especially in areas like Makoko, is a painful reminder of just how out of control things are.

Makoko has almost no systems or infrastructure.

Electricity is operated and the freshest water comes from home-grown wells located throughout the area.

This entire economic model was designed to fit a particular way of life on the water, making fishing and boat building common occupations.

Barber shops, CD and DVD shops, movie theaters, tailors, there are entrepreneurs who have set up businesses all over the area and it's all there.

Some photo studios, like hotels in Sweden, show a sort of desire to live in a real home or connect with a distant place.

On this special night, I stumbled across this live band dressed in matching t-shirts.

They floated along the canals in large canoes equipped with generators for the enjoyment of all local residents.

By the time the sun goes down, the area is almost pitch black except for a small light bulb or firelight.

The reason I came to Makoko was this project by my friend Kunle Adiemi. He recently completed construction of a three-story water school for children in Makoko.

With the whole village above the water, public space is very limited, and now that the school is complete, the ground floor is a playground for children, but when classes are not in session, the platform is like a town square, where fishermen mend their nets and floating merchants moor their boats.

Another place I would like to share with you is Zabaleen in Cairo.

They are the descendants of farmers who began migrating from Upper Egypt in the 40s and now make a living by collecting and recycling household waste from all over Cairo.

For years, the Zabaleen lived in makeshift villages, moving out of sight of local authorities, but in the early 1980s settled on Mokattam Rock on the eastern edge of the city.

Today, the area is home to approximately 50,000 to 70,000 people, with up to three generations living in one building in self-built high-rise communities.

While these self-built apartments seem to lack planning or a formal grid, each family's specialization in a particular form of recycling means that the ground floor of each apartment is reserved for trash-related activities, while the upper floors are dedicated to living space.

I find it incredible to see a pile of garbage invisible to the people who live there. For example, this very prominent man posing with garbage pouring out of his back, or two young men sitting and chatting among a pile of garbage.

For most of us, life in such a pile of garbage may seem utterly uninhabitable, but for the people of the Zabaleen, it's just another kind of normal.

What I find interesting about all these places I've spoken to today is that they prove that normal doesn't really exist and that people can adapt to any situation.

Throughout the day, we often see small parties like this engagement party going on around town.

In this tradition, the bride-to-be displays all her belongings and immediately takes them to her new husband.

Such gatherings provide such a juxtaposition where all new things are on display and all trash is used as props to showcase all new home accessories.

Like Makoko and Torre David, the entire Zabaleen has all the same amenities as a typical area.

There are retail stores, cafes and restaurants, and the community is a Coptic community. As such, it also has a church, numerous religious iconography throughout the area, and a full range of everyday services such as electronic repair shops, barbershops, and more.

The Zabaleen family's visit is also full of surprises.

From the outside, these homes look like any other casual building in the city, but step inside and you'll encounter all manner of design decisions and interior décor.

Despite the limited space and funding available, the homes in the area have been meticulously designed.

Every apartment is unique and its personality speaks to each family's circumstances and values.

Many of these people take their homes and interior spaces very seriously, putting a lot of effort and attention to detail.

The walls of the common areas are similarly decorated with faux marble patterns.

But despite this elaborate decoration, these apartments are sometimes used in very unexpected ways. Like, for example, this house that caught my attention when all the mud and grass was literally seeping out from under the front door.

When I was let in, this fifth-floor apartment seemed to be being transformed into a complete animal farm, with six or seven cows grazing in what would have been the living room.

But the apartment across the hall from this cowshed is home to a newlywed in what locals describe as one of the nicest apartments in the area.

This attention to detail amazed me. The owner of the house proudly showed us around this apartment and it was decorated from floor to ceiling.

But it's easy to forget you're standing on a landfill, next to a cowshed, if it weren't for the strange, familiar stomach-churning odor that perpetually wafts through the apartment.

What impressed me the most was being welcomed with open arms into a home built with love, care and unstinting passion, despite such seemingly deplorable surroundings.

Let's move across the map to regions called China, Shanxi, Henan, and Gansu.

Until recently, an estimated 40 million people lived in underground homes in this region, famous for its soft, porous Loess Plateau soil.

These dwellings are called yaodong.

With this subtractive architecture, these yaodongs are literally built in the dirt.

These villages offer a completely different landscape, with square and rectangular houses hidden behind mounds of dirt, standing seven meters below ground.

When people were asked why they were digging their homes out of the ground, they simply replied that they were poor farmers of wheat and apples, had no money to buy the materials, and that this digging was the most rational way of life for them.

From Makoko to Zabaleen, these communities have approached the challenges of planning, designing and managing their communities and neighborhoods in ways that specifically respond to their environment and context.

Created by the people who live, work and play in these specific spaces, these neighborhoods are intuitively designed to make the most of their circumstances.

In most of these places, governments are completely absent, leaving residents with no choice but to reuse their found items. Although these communities are very disadvantaged, they provide examples of great ingenuity and indeed prove that we have the capacity to adapt to all kinds of situations.

It's this kind of skeletal framework that allows people to have a base that makes places like Torre David particularly remarkable.

Now imagine what these already ingenious communities could come up with on their own and how special their solutions would be given the basic infrastructure they had available.

Today, we see large-scale housing development projects that provide cookie-cutter housing solutions for many people.

From China to Brazil, these projects try to provide as many houses as possible, but they are completely generic and do not cater to the individual needs of people.

Finally, I would like to end with a quote from my friend and inspiration, Zita Cobb. He is the founder of the amazing Shorefast Foundation based on Fogo Island, Newfoundland.

She said, "There is a plague of sameness that kills human joy," and I could never quite agree with her.

thank you.

(applause)

i'm james

I'm a writer and artist, creating work about technology.

My work includes drawing life-size outlines of military drones on streets around the world. It helps people think and understand these very ugly, hard-to-think technologies.

I'm building things like neural networks that predict election results based on weather forecasts because I'm interested in what the real-life possibilities of these strange new technologies are.

Last year, I built my own self-driving car.

But I don't trust technology too much, so I also designed traps for it.

(Laughter) And I do these things mainly because I think they're so fascinating, but also because I think when we talk about technology, we're mostly talking about ourselves and how we make sense of the world.

So, let's talk about technology here.

It is a video of "Surprise Egg".

It's basically a video of someone opening a bunch of chocolate eggs and showing the viewer the toys inside.

that's it. So much for 7 minutes of long work.

And note two things about this.

First, this video has been viewed 30 million times.

(Laughter) And the other thing is that the channel has 6.3 million subscribers and 8 billion total views, and 30 million people are watching the man opening the egg just with more videos like this.

It sounds pretty weird, but if you search for "surprise eggs" on YouTube, you'll find 10 million of these videos, which I think is an undercount.

I'm sure there are many more.

There are endless of them if you keep looking.

There are millions of these videos made with an increasingly baroque mix of brands and materials, with more being uploaded every day.

It's a strange world, isn't it? right?

But the point is, you're not an adult watching these videos.

It's children, little children.

These videos are like crack for little kids.

There's something about this repetition, the continual dopamine hits of revealing stories, that keeps them completely hooked.

And little kids keep watching these videos over and over and over and over for hours and hours.

And if you try to take the screen away from them, they'll keep screaming, screaming, screaming.

If you don't believe me, and you've already seen the audience nod, if you don't believe me, find someone with a small child and listen. Then they will know about the surprise egg video.

This is where it all starts.

It's 2018 and someone, or many, is using the same mechanism that Facebook and Instagram use to keep users checking out their apps, and YouTube to hack the brains of very young children in exchange for advertising revenue.

At least I hope they do.

There are easier ways to earn ad revenue on YouTube, so I hope they're aiming for that.

You can make it up or steal it.

So if you search for really popular children's cartoons like "Peppa Pig" or "Paw Patrol," you'll find that there are millions of them online as well.

Of course, most of them weren't posted by the original content creators.

These are being sent in bulk from various random accounts, making it impossible to know who is posting them or what their motives are.

Do you feel nostalgic?

Because it's the exact same mechanism that happens with most digital services, and it's impossible to know where this information came from.

This is basically fake news for children, and we are being educated from birth to click on the first link we see, regardless of the source.

That doesn't seem like a very good idea.

There's one more thing that really matters about YouTube for kids.

This is called "The Finger Family Song".

I just heard someone groaning in the audience.

It's called "The Finger Family Song".

This is the very first one I found.

It's from 2007, but has only 200,000 views, which isn't the case for this game at all.

But there's a song in this song that's insanely jarring, and I'm not going to play it to you. Because it will burn into your brain just like it burns into my brain. And I'm not going to do that to you

But just like a surprise egg, it seeps into a child's head and drives them crazy.

So, in less than a few years, you'll be seeing videos of these finger families popping up everywhere, and different language versions of popular children's cartoons featuring food and, frankly, all sorts of animated elements you'd expect to find lying around.

And again, there are millions of videos available online in such an insane combination.

And the more time I spend with them, the more I start to feel like I'm going crazy.

And from there I set out to have a deep sense of strangeness and a deep lack of understanding of how this thing was constructed that seemed to manifest around me.

Because it is impossible to know where these things came from.

who is making it?

Some of them seem to consist of teams of professional animators.

Some of them were randomly assembled by software.

Some of them are very wholesome looking young kid entertainers.

And some of that is from people who obviously shouldn't be near children.

(Laughter) And again, it's impossible to figure out who's making this -- is this a bot, for example?

is this a person? is this a troll?

What does it mean to not know these differences anymore?

Again, doesn't that uncertainty feel kind of nostalgic now?

So the main way people get views for their videos is by stuffing the video titles with these popular terms.

For example, if you take "Surprise Egg" and add "Paw Patrol", "Easter Egg", and all the other popular video words to the title, you end up with a jumble of meaningless words that humans can't understand at all.

Of course, the only people watching your videos are really little kids, so what the hell do they know?

The real audience for this content is software.

It's an algorithm.

This is software used by YouTube to select, promote and recommend videos that are similar to other videos.

That's why the title and content are such a completely meaningless mash.

But remember, there are actually people still in this algorithmically optimized system. I mean, people who are more and more forced to act out stranger word combinations like desperate improvisers screaming in unison with a million toddlers.

There are real humans trapped inside these systems. That's another very strange aspect of the culture driven by this algorithm. Because even humans must eventually behave like machines in order to survive.

And also, on the other side of the screen, there are still little kids watching this, completely stunned by this strange mechanism.

And most of these kids are too young to even use the website.

It's like they're tapping the screen with their little hands.

And then there's Autoplay, which keeps playing these videos over and over in a loop, endlessly for hours at a time.

And there's something very strange about the system right now, and autoplay takes you to some pretty weird places.

This way, in a few dozen steps, you can go from cute videos of counting trains to Mickey Mouse masturbating.

yes. I am sorry about that.

This gets even worse.

This is what happens when all these different keywords, different pieces of attention, and hopelessly generated content come together in one place.

This is where all the very strange keywords roost.

Multiply the Finger Family video with the live-action superhero stuff, add some weird troll jokes or whatever, and suddenly you're in a really weird place.

It's the content that contains violent or sexual content that is most likely to offend parents.

Children's cartoons such as being assaulted, being killed, and weird pranks that actually really scare children.

What you have is software that takes all these different effects and automatically generates your children's worst nightmares.

And this really, really affects young children.

Parents report that their children have become traumatized, afraid of the dark, and scared of their favorite cartoon characters.

What this means is that if you have young children, you should keep them away from YouTube completely.

(Applause.) But the other thing that really bothers me about this is that we don't even really understand how we got here.

We took all these influences, all these things, and combined them in a way that no one intended.

But this is also how we build our entire world.

We're taking all this data, a lot of it bad data, a lot of historical data full of all the biased, worst impulses in history, building it into huge datasets and automating it.

And we're building it into credit reports, insurance premiums, predictive policing systems, sentencing guidelines, and more.

This is how we are actually building the world today from this data.

And what's even worse is that we built a system that seemed perfectly optimized for the absolute worst aspects of human behavior, or that we did it by accident because we didn't really understand the system we were building and didn't really understand how to do something else with it, without even realizing we were doing it.

There are some things that seem to drive this most fully on YouTube. The first is advertising. This is really about monetizing attention without other variables coming into play, caring about the people who are actually developing this content, concentrating power, separating them.

And I don't know how you feel about using advertising for some kind of help, but I think the sight of a grown man in diapers rolling in the sand hoping some obscure algorithm will give you money probably suggests that this is not what our society and culture should be based on, and how to fund it.

And another major factor driving this is automation. This is introduced without any oversight as soon as the technology arrives. And then when it's out in the world, it's like raising your hand and saying, "Hey, this isn't us, it's the technology."

It's like, "We're not involved."

This is not enough. Because this stuff isn't just governed by algorithms, it's regulated by algorithms.

When YouTube first started paying attention to this, the first thing it did was to bring in better machine learning algorithms to moderate its content.

Well, as any machine learning expert will tell you, basically machine learning is what we started calling software that we don't really understand how it works.

And I think that's enough.

We know what's going to happen, so we shouldn't let the AI ​​decide what's appropriate.

Others will start censoring too.

The censorship of queer content will begin.

Censorship of legitimate public speech will begin.

What is allowed in these discourses should not be entrusted to a system that does not take responsibility.

That's part of the discussion we should all be discussing.

But I would like to remind you that the alternative is not very pleasant either.

YouTube also recently announced that it plans to release a fully human-controlled version of its app for kids.

Facebook -- Zuckerberg said much the same thing when asked in Congress how he intended to moderate his views.

He said he would let a human do it.

What that really means is that young children aren't the first to see this stuff, and low-wage, precarious contract workers who don't have adequate mental health support will suffer as well.

(Laughter.) And I think we can all do much better than that.

(Applause.) I think the idea that ties those two things together is really agency.

It's like, how much do we really know, in terms of agency, how we know how to act in our own best interests.

It's almost impossible to do that in these systems that we don't fully understand.

Power inequality always leads to violence.

And inside these systems, we find that understanding inequalities do the same.

If there's one thing we can do to improve these systems, it's to make them more readable for the people who use them, and to help us all have a common understanding of what's really going on here.

But what I think most about these systems, I think I explained, is that this isn't really about YouTube.

it's all about.

Accountability and agency, opacity and complexity, the problems of violence and exploitation inherent in concentrating power in the hands of a few are much bigger issues.

And they're not just YouTube problems, they're not technology problems in general, they're not new.

They have been with us for many years.

But we finally built this system, this global system, the Internet, and actually showed them to us in this extraordinary way, making them undeniable.

Technology has the uncanny ability to embody and perpetuate all of our most insane and often hidden desires and prejudices and encode them into the world, but at the same time write them down and make them visible to us so that we can no longer pretend they do not exist.

We need to stop thinking of technology as the solution to all our problems and instead think of technology as a guide to what those problems really are. Then you can start thinking about and dealing with those issues properly.

thank you very much.

(Applause.) Thank you.

(Applause) Helen Walters: Thank you, James, for coming and talking.

What's interesting is that when you think about movies with robot overlords, it's a bit more appealing than what you're describing.

But I wonder. In these films, resistance is growing.

Is there a growing resistance to this sort of thing?

Do you see any positive signs, green shoots of resistance?

James Bridle: I don't know of direct resistance. Because I think this is super long term.

I think it's very deeply embedded in the culture.

My friend Eleanor Saitta always says that any technical problem of sufficient scale and scope is first and foremost a political one.

So all of these things that we're working on in this are not just about building technologies better, but actually changing the society that's creating these technologies.

No, I think we have a very long way to go right now.

But like I said, I think by unpacking them, explaining them, and speaking very honestly, we can at least really start that process.

HW: So when we talk about readability and digital literacy, I find it hard to imagine that we should put the burden of digital literacy on the users themselves.

But who is responsible for education in this new world?

JB: Again, I think this responsibility is on all of us. Everything we do, build, or make needs to be done in consensual discussion with all those who are avoiding it. We are not building systems that are meant to trick people into doing the right thing, but that each of these systems are educational, so people are really involved in every step of their education.

That's what I expect. Even with this truly harrowing content, if you can pick it up and see it right, it is actually part of an education in itself, and you can begin to understand how complex systems work together, and perhaps apply that knowledge elsewhere in the world.

HW: James, this is a very important discussion. I know a lot of people here are really open and ready to accept that. Thank you for starting this morning.

JB: Thank you. cheers.

(applause)

So I want you to come back with me for a few minutes to the dark night in China, the night I met my husband.

It's a very old city, and it was still called Beijing.

So I went to the party.

I sat next to a plump, middle-aged man in owl glasses and a bow tie who turned out to be a Fulbright scholar who had come to China specifically to study Sino-Soviet relations.

What a gift that was to me, then, as an enthusiastic young foreign correspondent!

I ask him for information, and I'm mentally jotting down notes for the story I'm about to write.

I talk to him for hours.

Only a few months later I found out who he really was.

He was the China representative for the American Soybean Association.

"I don't know. Soybeans?"

You said you were a Fulbright scholar. ”

“So how much would you tell us if we said we were in the world of soybeans?”

(laughter) I said, "You idiot."

Jerk wasn't the only word I used.

I said, "You could have fired me."

And he said, "Let's get married."

(Laughs) "Travel around the world and have many children."

So we did.

(Laughter) (Applause) And what a living man Terrence Brian Foley turned out to be.

He was a Chinese scholar who later obtained a PhD in his 60s. in Chinese history.

He speaks six languages, plays 15 instruments, is a certified pilot, was a former San Francisco cable car driver, and was an expert in pig nutrition, dairy cows, Dixieland jazz, and film noir. And we traveled all over the country, the world. And we had many children.

We were following my work and it seemed there was nothing we could do.

So it's no wonder that when we found out about cancer, without saying a word to each other, we believed that if we were smart enough, strong enough, brave enough, and hard enough, we could keep him from dying again.

And for years we seemed to be successful.

The surgeon came out of the operation.

what did he say? He said what surgeons always say: "We got it all."

Then a problem arose when a pathologist took a closer look at the kidney cancer.

It turns out to be a rare, highly aggressive type that, once diagnosed, is most often fatal within weeks at most.

Still he didn't die.

Strangely enough, he survived.

He coached Little League for our son.

He built a playhouse for our daughter.

In the meantime, I'm buried in the internet looking for experts.

I am looking for a cure.

So just like cancer comes back, a year goes by before the cancer comes back and the death sentence is served again, but this time it's nine months.

So we try another treatment, an aggressive and nasty one.

It makes him feel so sick that he has to stop it, yet he continues to live.

Another year has passed since then.

Two years pass.

more specialists.

We take our children to Italy.

We will take our children to Australia.

And as the years pass, the cancer begins to grow.

Now comes a new treatment.

they are exotic they are experimental.

They are trying to attack cancer in new ways.

So he entered a clinical trial and it worked.

The cancer began to shrink and I was able to avoid death for the third time.

So now I ask you, how do I feel when that time has finally come and another dark night has come between midnight and 2am?

This time in the intensive care unit, a 20-something resident he had never met before told him that Terrence would probably die tonight.

So what would I say if he said, "What do you want me to do?"

I got another drug.

it's new. more powerful.

He started it just two weeks ago.

Perhaps there is still hope ahead.

So what do I say?

I say, "Keep me alive if you can."

And Terrence died six days later.

So we fought, we struggled, we won.

It was an exhilarating fight, so I would like to fight again today without hesitation.

We fought together, we lived together.

It turned what was supposed to be the most miserable seven years of our lives into the most glorious.

It was also an expensive battle.

It was the kind of battle that everyone here would agree on, the kind of choice that drives up the cost of end-of-life care and healthcare for all of us.

And for me, for us, we pushed the fight to the limit, and I didn't get a chance to tell him what I say to him almost every day now: "Hey buddy, it's been a hell of a ride."

We never got a chance to say goodbye.

We never thought this was the end.

We always had hope.

So what can we conclude from all this?

As a journalist, I wrote a book called The Price of Hope after Terrence's death.

I wrote this because I wanted to know why I did the same thing, why he did the same thing, why the people around us did the same thing.

And what did I discover?

Well, one of the things I've discovered is that experts believe one answer to my last action was a piece of paper called an advance directive to help my family navigate through seemingly unreasonable choices.

I still had the paper.

Both of us were.

And they were readily available.

It was in my hands immediately.

They both said the same thing. "If there is no more hope, do nothing."

I knew Terrence's wishes as clearly and surely as I knew mine.

But we never lost hope.

With a clear paper in hand, we continued to redefine hope.

I believed I could keep him from dying, but I would be embarrassed to say this if I hadn't met so many people and talked to so many people who felt exactly the same way.

Until a few days before his death, I had a very strong, if not absurd, feeling that I could prevent him from dying again.

Well, what do experts call this?

They say it's a denial.

That's a strong word.

But let me tell you that the word denial is far from being a strong enough word to describe what we go through in the face of the death of a loved one.

And I heard medical professionals say, "Oh, I want to do this, but my family is against it."

My family won't listen to my reasoning.

they deny it.

Why can they insist on this treatment at the end?

It's obvious, but they deny it. ”

Now, I think this might not be a very useful idea.

It's not just family.

The medical professionals and you out there are in denial.

you want to help I want to fix it.

I want to.

Everything you've done so far has been successful, but when a patient dies, it feels like a failure.

I saw it firsthand.

A few days before Terence died, his oncologist said, "Tell Terence better days are coming soon."

A few days before he died.

But Ira Bjok, director of palliative medicine at Dartmouth College, said, "You know, even the best doctors in the world have never succeeded in making a person immortal."

So what the experts call 'negative', I call 'hope', to borrow the words of a friend who works in software design.

Just redefine denial and hope and it becomes the hallmark of being human.

it's not a bug.

It's a feature.

(Laughter) So we need to think more constructively about this very common, very deep, very powerful human emotion.

It's part of the human condition, but our systems and thinking weren't built to accommodate it.

So Terrence told me about a night long ago, and I believed it.

Maybe I wanted to believe

And while Terrence was sick, I wanted to believe in the story of how we fought together.

Giving up the fight because it felt that way and felt like giving up. That meant giving up not just his life, but our story, our story as fighters, our story as invincible, and for doctors our story as healers.

So what do you need?

You may not need new paper.

Perhaps we need new stories. It is not a story of abandonment or despair, but rather of victory and triumph, of valiant battle and ultimately of graceful retreat, of acknowledging that even the greatest general cannot defeat all his enemies, that no doctor has ever succeeded in making a man immortal, and that no wife, no matter how hard she tried, could not stop even the bravest, resourceful, and most maddeningly lovable husband from dying when the time came to die.

People mentioned hospice, but I didn't listen.

Hospice is for dying people and Terrence was not dead.

As a result, he ended up spending only four days in hospice, which I think is pretty typical as you all know, but we weren't ready for the end so we didn't say goodbye.

Patients and doctors alike have a higher way to cure disease, but no higher way to death.

Dying was considered a failure, and we had heroic stories to fight with, but no heroic stories to let go.

So maybe we need a story to acknowledge the end and say goodbye, and maybe our new story will be about hero fights and hero farewells.

Terrence loves poetry and the Greek poet Constantine Cavafi is one of my favorite poets.

Here are some quotes from him.

This is a poem about Mark Antony.

Do you know Mark Antony, the man of Cleopatra, the conquering hero?

One of Cleopatra's companions.

And he was a pretty good general.

He has won all his battles and escaped all those who wanted to capture him, but this time he finally came to the city of Alexandria and found himself lost.

people are leaving. they are playing instruments

they are singing

And suddenly he knew he was defeated.

And suddenly he realized that God had forsaken him, and it was time to let go.

And the poet tells him what to do.

He teaches him how to say noble farewells worthy of a hero.

“As if you had been preparing for a long time, as if you had courage, as if you were the one who deserved such a city as this, approach the window with firm steps and with feeling.

It's a farewell to a man greater than life, a man who could have done anything, almost anything, a man who kept hope alive.

Isn't that what we're missing?

How can we learn that people's decisions about their loved ones are often based on the tiniest of hopes, strongly, powerfully, and often irrationally?

The existence of overwhelming hope is not denial.

It's part of our human DNA, and it may be time for health systems, doctors, patients, insurance companies, and us to start considering the power of hope.

Hope is not a bug.

It's a feature.

thank you.

(applause)

I would like to share a story that connects the infamous Adam and Eve privacy incident with the remarkable shift in boundaries between public and private that has occurred over the past decade.

you know the incident

Adam and Eve find themselves naked one day in the Garden of Eden.

they will be amazed.

And the rest is history.

Adam and Eve would probably act differently now.

[@Adam Last night was awesome! [@Eve yep.. babe, do you know what happened to my pants?] We are revealing more about ourselves online than ever before, and so much information about us is collected by organizations.

While there are many gains and benefits from this large-scale analysis of personal information, or big data, there are also complex trade-offs that come from giving up privacy.

And my story is about these tradeoffs.

I begin with an observation that, in my opinion, has become more and more clear over the last few years. Any personal information can be confidential.

In 2000, around 100 billion photos were taken around the world, but only a fraction of them were actually uploaded online.

In 2010, 2.5 billion photos were uploaded per month on Facebook alone, most of which were identified.

In the same period, computers' ability to recognize people in photographs improved by three orders of magnitude.

What happens when you combine these technologies? Face data becomes more available. Improving the ability of computers to recognize faces. There's also cloud computing, which puts computing power that a few years ago was only in the hands of three-letter agencies, available to everyone in this theater. And with ubiquitous computing, can I connect my non-supercomputer cell phone to the Internet and get hundreds of thousands of face indexes in a few seconds?

We speculate that the result of this combination of technologies will fundamentally change our very conception of privacy and anonymity.

To test it, we ran an experiment on the campus of Carnegie Mellon University.

Students passing by were asked to participate in the study, taking pictures with their webcams and completing questionnaires on their laptops.

While they were completing the survey, we uploaded their shots to our cloud computing cluster and began using facial recognition equipment to match the shots against a database of hundreds of thousands of images downloaded from their Facebook profiles.

By the time the subject reached the final page of the study, which had been dynamically updated with the 10 best matching photos found by the recognizer, the subject was asked to indicate whether they were in the photo.

Can you see the subject?

Well, the computer did, and it actually did in one of the three subjects.

So, essentially, you can start with an anonymous face, offline or online, and thanks to social media data, you can name that anonymous face using facial recognition.

But a few years ago we did something else.

We started with social media data, statistically combined it with US government social security data, and finally predicted social security numbers, which is highly confidential in the US.

Can you see where I'm going with this?

Combining the two studies, therefore, the question is, starting with a face, can facial recognition be used to find a name and public information about that name and that person, and from that public information, private information and even more sensitive information can be inferred and associated with the face?

The answer is yes, it is possible, and it did.

Of course the accuracy is getting worse and worse.

[27% of the first five digits of the subject's SSN were identified (in 4 trials)] But in fact, we even decided to develop an iPhone app that would use the phone's built-in camera to take a shot of the subject, upload it to the cloud, and do what we just described in real time. So an example of augmented reality, and perhaps creepy, of looking for matches, finding public information, trying to guess sensitive information, and then sending it back to the cell phone overlaid on the subject's face. augmented reality.

In fact, we didn't develop this app to make it available, we just developed it as a proof of concept.

In fact, push these technologies to their logical limits.

Imagine a future where strangers around you look at you through Google glasses, or someday contact lenses, and use 7 or 8 data points about you to infer other information they may know about you.

What would this future without secrets look like?

And should we care?

We might like to believe that a future with this abundance of data will be a bias-free future, but the reality is that having this much information does not mean that we will be able to make more objective decisions.

In another experiment, subjects were presented with information about potential job seekers.

This information contains references to perfectly legal but perhaps slightly embarrassing information posted online by the subject.

Now, interestingly, some of our subjects posted comparable information, while others did not.

Which group do you think is likely to judge our subject harshly?

Paradoxically, it was that group that posted similar information, an example of moral dissonance.

Now you might be thinking that this is not the case for me because I have nothing to hide.

But really, privacy isn't about hiding something negative.

Imagine that you are the head of human resources for a particular organization and have received a resume and want to find out more information about the candidate.

So if you google their name, you'll find this information in one universe.

Alternatively, in a parallel world, this information can be found.

Do you think both candidates are equally likely to be called for an interview?

If you think so, then you are nothing like the US employers who were actually in our experiment. So that's exactly what we did.

We created a Facebook profile, played with features, and started sending resumes to companies in the US. We then detected and monitored whether they were looking for candidates for our company and acting on the information they found on social media. And they were.

Discrimination against equally skilled candidates was occurring through social media.

Today, marketers, just like us, believe that all information about us will always be used in our favor.

But think again. Why should it always be so?

In the movie Minority Report released a few years ago, there was a famous scene in which Tom Cruise walked through a shopping mall with holographic personalized advertisements appearing around him.

Now, that movie is set about 40 years from now in the year 2054, and while the technology looks exciting on the surface, it already vastly underestimates the amount of information an organization can gather about you and how it can use it to influence you without even realizing it.

As an example, this is another experiment that we're actually running that hasn't been completed yet.

Imagine that an organization has access to your Facebook friend list and can detect the two friends you like the most through some kind of algorithm.

Then create a face composite of these two friends in real time.

Now, our previous research has shown that people no longer even perceive themselves in facial syntheses, but respond to those syntheses in a positive way.

So the next time you're looking for a particular product, the next time you see an ad suggesting that you buy that product, it's no longer just a standard spokesperson.

It will become one of your friends and you won't even notice this happening.

Now the problem is that the current policy mechanisms we have to protect ourselves from the misuse of personal information are like bringing a knife into a shootout.

One of these mechanisms is transparency, telling people what to do with their data.

And in principle it is very good.

It's necessary, but it's not enough.

Transparency can be misdirected.

Even if you tell people what you're going to do, you can still encourage them to disclose any amount of personal information.

So, in yet another experiment, this one with students, we asked them to provide information about their behavior on campus, including this rather sensitive question.

[Have you ever cheated on an exam?] Now, I said to one group of subjects, "Your answers are only visible to other students."

Another group of subjects was told, "Students and teachers will see your answers."

transparency. notification. And sure enough, it worked, in the sense that the first group of subjects were much more likely to disclose than the second group.

That's natural, right?

But then we added misdirection.

We repeated the experiment with the same two groups, but this time added a delay between when the subjects were told how to use the data and when they actually started answering the questions.

How much delay do you think you need to add to negate the inhibitory effect of the instructor seeing your response?

10 points?

five points?

one cent?

Is it about 15 seconds?

Fifteen seconds was sufficient for the two groups to disclose the same amount of information. It is as if the second group no longer cares about the teacher reading the responses.

Now, I have to admit that the story so far may sound very dark, but that's not what I mean.

In fact, I want to share with you the fact that there are alternatives.

The way we currently do it is not the only way, certainly not the best way.

When someone says, "People don't care about privacy," think about whether games are designed and manipulated to not care about privacy. And when we come to the realization that these manipulations are taking place, we are already halfway through the process of being able to defend ourselves.

When someone says privacy is incompatible with the benefits of big data, consider that over the past two decades, researchers have developed technologies that allow virtually any electronic transaction to be conducted in a more privacy-preserving manner.

We can browse the Internet anonymously.

Even the NSA can send emails that only the intended recipient can read.

Privacy-preserving data mining is also possible.

This means you can reap the benefits of big data while protecting your privacy.

Of course, you probably don't hear much about these technologies because they mean a shift in costs and revenues between data owners and data subjects.

So I go back to the Garden of Eden.

There is a second interpretation of the Garden of Eden story about privacy that has nothing to do with the issue of Adam and Eve feeling embarrassed naked.

John Milton's Paradise Lost echoes this interpretation.

In the Garden, Adam and Eve are materially content.

they are happy they are satisfied

But they also lack knowledge and self-awareness.

They discover themselves the moment they eat the fruit of knowledge that lives up to its name.

they notice. they gain autonomy.

But the price to pay is to leave the gardens.

So privacy is, in a way, a means and a price to pay for freedom.

Again, marketers say that big data and social media are not just a profit paradise for them, but a garden of Eden for us ordinary people.

Get free content.

You will be playing Angry Birds. Get targeted apps.

But the reality is that in a few years, organizations will get to know us so well that they can guess our desires before we even form them, and perhaps buy products for us before we even know we need them.

Well, there was one British writer who envisioned this kind of future in which we sacrifice autonomy and freedom for comfort.

Even more important than George Orwell is the author, of course, Aldous Huxley.

In Brave New World, he envisions a society in which the technologies we originally created for freedom ultimately bring us coercion.

But in this book he also offers us a way out of that society, as well as the way Adam and Eve had to leave the Garden.

In Savage's words, it is possible to regain autonomy and freedom, even if the price is high.

Therefore, I believe that one of the defining battles of our time will be the battle for control of personal information, whether big data will become a force for freedom rather than a force to hide and manipulate us.

Today, many of us don't even know the battle is taking place, but like it or not, it is.

And even at the risk of playing a snake, I'm here to tell you that the tools for fighting are here, aware of what's going on, and are in your hands with just a few clicks.

thank you.

(applause)

Hetain Patel: (in Chinese) Yuyu Lau: Hello, I'm Hetain. I am an artist.

And this is Yuyu, a dancer I work with.

I asked her to translate.

HP: (in Chinese) YR: I would like to talk a little bit about myself and my work, if possible.

HP: (in Chinese) YR: I was born and raised near Manchester, England, but I don't want to speak in English because I don't want to be inferred from my Northern accent.

(laughs) HP: (in Chinese) YR: The only problem with hiding in Mandarin is that I can only speak this paragraph, which I memorized when I went to China. (Laughter) So all I can do is repeat it in a different tone and hope you don't notice.

(laughter) HP: (in Chinese) (laughter) YR: Of course, I apologize to any Chinese speakers in the audience.

As a kid, I hated being forced to wear Indian kurta pajamas. Because I didn't think it was very cool.

It felt a little girly like a dress to me, with baggy parts of the trousers that had to be tied tightly to avoid embarrassment when they slipped down.

My father never wore it, so he didn't know why I had to.

Also, when I wear it, it's a bit offensive for people to think I represent something authentically Indian. Because I don't feel that way.

HP: (in Chinese) YR: In fact, the only way I feel comfortable wearing it is in what I consider to be a kung fu warrior's robe, like Lee Mu Bai in the movie Crouching Tiger, Hidden Dragon.

(music) Okay.

So my work is about identity and language, challenging popular assumptions based on what we look like, where we come from, gender, race and class.

What is it that makes us who we are?

HP: (in Chinese) YR: I used to read Spider-Man comics, watch Kung Fu movies, and take philosophy lessons from Bruce Lee.

He said something like -- HP: Clear your mind.

(laughter) Be formless, like water.

Now put water in the cup.

becomes a cup.

If you put water in a bottle, it becomes a bottle.

If you put it in a teapot, it becomes a teapot.

Now, sometimes water flows, sometimes it crashes.

Friend, let's be water. (Applause.) YR: I'm 32 this year, the same age as when Bruce Lee died.

I was recently thinking, if he were alive today, what advice would he give me for this TED Talk?

HP: Please don't imitate my voice.

it pisses me off.

(laughs) YR: Good advice, but I still think you learn who you are by imitating others.

Who hasn't imitated their childhood heroes, or their mothers and fathers on the playground?

I have.

HP: A few years ago, to make this video for my artwork, I shaved off all my hair, just like my father had when he first moved to England from India in the 1960s.

He had a neat side parted mustache.

It worked very well at first.

Discounts are now available in Indian stores as well.

(Laughter) But soon I started to underestimate my ability to grow a mustache and it got too big.

I didn't look Indian anymore.

Instead, people from across the road yelled out -- HP and YR: Arriba! Arriba! Andale! Andale!

(laughs) HP: Actually, I don't even know why I'm saying this.

My father doesn't even have an Indian accent anymore.

He speaks like this now.

So my father wasn't the only one I imitated.

A few years ago, I went to China for a few months and was frustrated because I couldn't speak Chinese, so I wrote about this, had it translated into Chinese, and memorized it like music.

YR: This phrase is now more imprinted on my mind than my bank card PIN, so I can pretend to speak Chinese fluently.

When I learned this phrase, I had an artist over there listen to it to see how accurate it sounded.

When I said the phrase, he laughed and said to me, "Oh yeah, that's great. It's just kind of feminine."

I said, "What?"

He said, "Well, did you learn from women?"

I said, "Yes. So?"

He then explained that the difference in timbre between male and female voices is very different and distinct and that it is a female voice, although I have learned it very well.

(Laughter) (Applause) HP: Okay. Therefore, this copycat business is risky.

Even the best translators don't always go according to plan.

But I'm going to stick with it. Because unlike what we usually assume, imitating someone can reveal something unique.

So every time I fail to be like my father, I become more like myself.

Every time I failed to be Bruce Lee, I became a more authentic me.

this is my art

We strive for authenticity, even in ways we don't expect.

It's only recently that I've started to realize that being an Indian I didn't learn to sit like this.

I learned this from Spider-Man.

(laughs) Thank you.

(applause)

As you know, far from these beautiful mountains, there is a small country in the Himalayas. So the people of the Kingdom of Bhutan decided to do something different. It is to measure Gross National Happiness, not Gross National Product.

Why not?

After all, happiness is not just a privilege reserved for the lucky few, but a basic human right for all.

And what is happiness?

Happiness is freedom of choice.

Freedom to choose where to live, what to do, what to buy, what to sell, who, to whom, when and how.

Where does choice come from?

And who can express it, and how do we express it?

Well, one way to express choice is through markets.

A well-functioning market offers choice and ultimately the ability to express the pursuit of happiness.

India's great economist Amartya Sen won the Nobel Prize for proving that hunger is not a question of the availability of food supplies, but of the ability to obtain that food through the market or give oneself that right.

In 1984, nearly a million people starved to death in what can only be considered one of the greatest human crimes in Ethiopia, my country of birth.

This was not because there was not enough food, but because there was a real surplus of food in the fertile southern part of the country, and in the north people had no access to it and no right to it.

It was a turning point in my life.

Today, most Africans are overwhelmingly farmers.

And most African farmers are, by and large, smallholders in terms of the land they manage and very small in terms of the capital at their disposal.

Agriculture in Africa today is or is among the most undercapitalized in the world.

Only 7 percent of arable land in Africa is irrigated, compared with 40 percent in Asia.

African farmers use only about 22 kg of fertilizer per hectare, compared to 144 kg in Asia.

Road density in Asia is six times that of rural Africa.

Latin America has eight times more tractors than Africa and Asia has three times more.

Smallholder farmers in Africa today live with few options and therefore little freedom.

His livelihood is predetermined by his situation of extreme poverty.

He comes to the market right after the harvest, when the prices are lowest, with the slightest result of hard labor. Because you have no choice.

She returns to the market a few months later, during the so-called low season, when food is scarce, when prices are at their highest. Because I have to support my family and I have no other choice.

The real question is how can markets be developed in rural Africa to harness the power of innovation and entrepreneurship as we know it?

Another prominent economist, Theodore Schultz, won the Nobel Prize in 1974 for proving that farmers are efficient but poor.

In other words, farmers are rational and profit-seeking like everyone else.

Now, you don't need more Nobel prizes to know that farmers, like everyone else, want to be fair and make money in the market.

And one thing is clear, at least now we know Africa is open for business.

And that business is agriculture.

More than two decades ago, the world called on Africa to liberalize its markets and structurally adjust its economy.

This meant that the government decoupled itself from the business of buying and selling (which was rather inefficient) and let the private market work its magic.

So what happened in the last 25 years?

Has Africa fed itself?

Have our farmers become productive commercial actors?

Perhaps we are all in this room because we know that Africa is in fact the only region in the world where hunger and malnutrition are projected to increase over the next decade, food import costs are double what they were 20 years ago, per capita food production is stagnating, and fertilizer use is declining rather than increasing.

So why hasn't the produce market worked as expected?

The market reforms prompted by the West – and I have traveled around the continent researching agricultural markets for about fifteen years, interviewing traders in ten or fifteen countries on the continent, hundreds of traders – have tried to understand what was wrong with our market reforms.

And it seems to me that the reform threw the baby out with the bath water.

As with agriculture, African markets are highly undercapitalized and inefficient.

Through our work across the continent, we know that the transaction costs of reaching markets and the risks of trading in rural agricultural markets are very high.

In fact, only one-third of the agricultural output produced in Africa is marketed.

African markets are weak not only because of weak road and telecommunication infrastructure, but also because they are effectively lacking the necessary market institutions, such as market information, grades and standards, and reliable ways to connect buyers and sellers.

For this reason, buyers and sellers of goods typically trade in small circles within a narrow network of people they know and trust.

So every time the grain changes hands, four or five times, as I measure it, on its way from farmer to consumer, and each time I've seen this all over rural Africa, the bags change too.

And I thought that was incredibly strange.

And I really realized that it's because, as traders tell me over and over, that's the only way people know what they're getting in terms of quantity and product quality.

And it actually has a big impact on the market's ability to react quickly to situations such as price signals and deficits.

Also, the cost is very high.

By my measurement, 26% of the marketing margin is due to the fact that the bags have to be constantly replaced due to lack of grade, standard and market information.

And this leads to very high processing costs.

On the other hand, the small farmers who produce the majority of agricultural output in Africa come to the market with virtually no information, blindly believing there will be some demand for their crops, unable to negotiate better prices or mitigate risk in the only market they know – the nearest local market – and are completely at the mercy of the traders.

Speaking of risks, we found that African food crop price volatility is among the highest in the world.

Small farmers in Africa bear the brunt of this risk.

In fact, in my view, there is no place or time in the world where farmers were expected to bear market risks more than they did in Africa.

And in my opinion, nowhere in the world is growing agriculture taking the kind of risks that farmers in Africa face today.

In Ethiopia, for example, the year-to-year variation in corn prices is as high as 50%.

This kind of market risk is daunting and has a direct impact on food security as well as incentives for farmers to invest in more productive technologies such as modern seeds and fertilizers.

For example, in 2001-2002, Ethiopian maize farmers had two good years.

As a result, domestic corn prices plummeted by 80% due to a weak market system.

This has left some farmers unable to even harvest grain from their fields.

And in early 2002, it was calculated that about 300,000 tons of grain was left to rot in the fields.

Less than six months later, in July 2002, Ethiopia announced a massive food crisis on par with 1984, with 14 million people at risk of starvation.

What also happened that year was that in areas where it rained a lot and farmers had previously produced surplus grain, farmers decided to withdraw from the fertilizer market and not use fertilizer, actually reducing their fertilizer use by 27 percent.

This is a tragic example of stagnant development or a budding green revolution getting off track.

And it's not just Ethiopia, it's happening all over Africa.

Now, I am not here today to lament or wring my hands over this situation.

I am here to tell you that a change is taking place.

Africa today is not an Africa waiting for aid solutions and cookie-cutter diplomatic expert policy prescriptions.

Africa has learned, or is slowly learning, that markets do not occur in isolation.

In the 1980s, it was very fashionable to talk about setting prices right.

There was a very influential book on this, but that book was mostly about taking the government out of the market.

We now recognize that getting the market right is not only about price incentives, but also about investing in the right infrastructure and the right and necessary institutions to create the conditions for unleashing the power of innovation in the market.

We know that innovation is poised to explode in rural Africa, just like elsewhere, when the conditions are right.

Nearly three years ago, I left my comfortable job as a Senior Economist at the World Bank in Washington to return to my homeland of Ethiopia after nearly 30 years living abroad.

I did so for a simple reason.

After spending more than a decade understanding, researching, and convincing policy makers and donors what was wrong with African agricultural markets, I decided it was time to do something about it.

I am currently leading an exciting new initiative to establish the first Ethiopian Commodity Exchange (ECX) in Ethiopia.

Now, commodity exchanges themselves, the concept is not new to the world.

In fact, in 1848, 82 grain traders and farmers gathered in a small town at the intersection of the Illinois River and Lake Michigan to find ways to better trade with each other.

Of course, it was the birth of the world's most famous commodity exchange, the Chicago Board of Trade.

The Chicago Mercantile Exchange Commission was established then for the very same reasons farmers today benefit from commodity exchanges.

In the American Midwest, farmers loaded grain onto barges and shipped it upstream to the Chicago market.

But when it arrives and no buyer is found, or if the price plummets, farmers will suffer huge losses.

And in fact, we would even dump our grain into Lake Michigan rather than spend more money transporting it to farms.

These huge risks and the need to avoid huge losses gave rise to the futures market and the basic system of grading grains and issuing warehouse receipts for making trades.

From there came the biggest innovation of all on the market. Buyers and sellers can now trade grain without actually physically or visually inspecting the grain.

This means grain can be traded over long distances and even over time, up to 18 months ahead.

This innovation was central to the transformation of American agriculture, from a small provincial city to the rise of Chicago into a global market, an agricultural market, and a superpower.

Now, over the past century, we have tended to think of the commodity exchanges as the authority of the Western industrialized nations, and that the benchmark prices of cotton, coffee, cocoa, and other products produced mainly in the South are really the benchmark prices, or prices found on the organized commodity exchanges of the northern countries.

But that is really changing.

And we are seeing a shift in market dominance to emerging markets, largely driven by information technology.

And over the last decade, we can see that the share of Western exchanges, and this is the US share of exchanges in the world, has fallen by almost half in just the last decade.

Similarly, in India, for example, the use of exchanges by rural farmers has exploded, growing 270% annually over the last three years.

It leverages low-cost VSAT technology and is actively reaching out to farmers to bring it to market.

China's Dalian Commodity Exchange surpassed the Chicago Board of Trade three years ago in 2004 to become the world's second-largest commodity exchange.

Ethiopia is currently in the process of designing the first organized Ethiopian Commodity Exchange.

We are not trying to cut and paste the Chicago model or the Indian model, but to create a system that is uniquely tailored to the needs and realities of Ethiopia and Ethiopia's smallholder farmers.

Therefore, ECX is the Ethiopian exchange.

We are building systems that serve all market players, create integrity, trust, efficiency and transparency, and enable small farmers to manage the risks I have described.

In designing a commodity exchange in Ethiopia, we have done something rather unique. It's taking a unified perspective approach, or what we call the ECX Edge.

ECX Edge almost creates an entire ecosystem in which the market itself develops.

Because one thing we've learned from studying market development in Africa over the last decade is that a phased approach doesn't work.

Some contributors work on developing market intelligence, while others work on or seek to sponsor grades and standards. Another ICT, yet another donor is working on warehousing and warehouse receipts.

Our approach in Ethiopia is to bring together the entire ecosystem, or environment, in which trade takes place.

This would mean the exchange would operate a trading system, but it would initially be launched as an open protest, as the country does not consider itself ready for full electronic trading.

But at the same time, we're going to do something that no exchange in the world seems to have done, which is itself to run a kind of internet cafe in a rural area.

So farmers and small traders don't have to physically come to a terminal center (we call it a remote access terminal center) to buy a physical computer, understand how to dial up, etc., but simply see what's going on at the Addis Ababa trading floor.

At the same time, what is very fundamental to this market, which is also an innovation we designed for exchanges, is that exchanges will operate warehouses across the country where grade certification and warehouse receipts will take place.

And in turn, we operate an in-house clearing system to ensure that payments are made properly, at the right amount, at the right time, essentially creating the reliability and integrity of the system.

Clearly, we are working with exchange stakeholders to develop the exchange market itself, as well as the regulatory infrastructure and legal framework – the overarching legal framework to make this market work.

So, in fact, our declaration will be submitted to Congress next month.

What really matters is that ECX operates a market information system to disseminate real-time prices to farmers nationwide and uses VSAT technology to deliver electronic prices directly to farmers.

This fundamentally changes the relationship between farmers and markets.

In the past, farmers thought locally. This used to mean going to the nearest local market, which was on average 8-10 kilometers away, and selling whatever you happened to have without any idea of ​​what the price premium was, but now farmers know the price on the national market.

And they start thinking nationally and even globally.

They will start making planting decisions as well as commercial marketing decisions based on the information they get from the futures price market.

And they enter the market knowing what grade their product will be in terms of price premium.

So all of this will transform the farmer.

It also transforms the way traders do business.

It stops them from making simple, continuous and limited arbitrage deals, and thinking strategically about how to move grain over long distances from [surplus areas] to [shortage areas].

Can Ethiopia do the same?

Sounds very ambitious.

But it will create new opportunities.

We believe this effort will require significant political will, and will require coordination of the financial sector, the ICT sector, and indeed even the underlying legal framework.

We believe the winds of change are blowing and we can make it happen.

ECX is Ethiopia's new millennium market launching in about eight months.

The last Congress of the century opened with the President announcing to the nation that this is the most important economic endeavor for the country today.

We believe the stakes are high, but the payoff is even greater.

In addition, ECX has the potential to become a trading platform for pan-African markets in agricultural products.

Ethiopia's domestic market is worth about $1 billion.

And in the next five years, if Ethiopia can take 40 percent of the domestic market, just 40 percent, and add just 25 percent value to that market, we feel the market will double in value.

Ethiopia's agricultural market is 30% higher than South Africa's cereal production, and in fact Ethiopia is Africa's second largest maize producer.

So it is possible.

the will is there.

There is a commitment there.

Therefore, we feel we are winning a value proposition to change farmers' choices, grow agriculture and transform Africa.

So we are in the business of finding our own happiness.

thank you very much.

(applause)

I have spent my life working on sustainability.

I founded a climate change NGO called The Climate Group.

I worked on forest issues at WWF.

I worked on development and agricultural issues in the United Nations system.

About 25 years in total, and three years ago, I found myself talking to the CEO of IKEA about joining his team.

Like many people here, I want to maximize my personal impact on the world. So let me explain why I joined the team.

First, let's take three numbers.

The first number is 3, or 3 billion people.

This is the number of people who will lift themselves out of poverty and join the global middle class by 2030.

It's great for them and their families, but with the world's middle class now at 2 billion people, this swells that number to 5, a huge challenge in an already resource-poor world.

The second digit is 6. That's 6 degrees Celsius, the temperature we're heading towards with regards to global warming.

We're not heading for the 1st, 3rd, or 4th, we're heading for the 6th.

If you think about it, most of the extreme weather we've seen in recent years has been caused by just 1 degree of warming, and global CO2 emissions should peak by the end of this decade and then decline.

It is not inevitable, but we must act decisively.

The third digit is 12. This is the number of cities in the world that had a population of over one million when my grandmother was born.

I can see my grandmother there.

That was at the beginning of the last century.

So only 12 cities. She was born in Manchester, England, the ninth largest city in the world.

Today, there are nearly 500 cities with over 1 million people.

If you look at the century from 1950 to 2050, it's the century we built cities around the world, and the century we're in the middle of right now.

Bicentury is a kind of practice that sets the blueprint for how we live.

So let's think about it.

We are building cities like never before, lifting people out of poverty like never before and changing the climate like never before.

Sustainability has gone from being a “must do” to a “must do”.

It depends on what we do now, here and for the rest of our working lives.

So let's talk a little bit about what companies can do and what companies like IKEA can do. To guide our business to have a positive impact on the world, we have a sustainability strategy called 'People and Planet Positive'.

Why don't we as a business want to have a positive impact on the world?

Other companies also have sustainability strategies.

I will also refer to some of them and mention some of the efforts we got as illustrations.

But let's think about the customer first.

If you ask people who came to the United States from China, you will understand.

That the majority of people care about sustainability after having the day-to-day problem of how to get their children to school.

Can I pay my bill at the end of the month?

They also care about big issues like climate change.

But they want it to be easy, affordable and attractive, and they hope business will help, but today they're a little disappointed.

So let's take a step back and think about our first sustainable product.

There was a detergent that could wash white things to gray.

The early energy efficient bulbs we were using took 5 minutes to warm up and then looked kind of morbidly colored.

And there was also coarse recycled toilet paper.

So every time I put on a t-shirt, turn on the light, go to the bathroom, or sometimes all three together, I was reminded that sustainability is a compromise.

It wasn't a great start.

Today we have a choice.

We can make beautiful or ugly products, sustainable or unsustainable products, affordable or expensive products, functional or useless products.

Create beautiful, functional, affordable and sustainable products.

Let's take the LED.

LEDs are the next best thing after daylight.

Old-fashioned light bulbs, incandescent light bulbs—I'm not going to ask for a show of hands how many of you are still at home who are wasting energy every time you turn them on, wasting energy every time you turn them on. Or whether or not there's a lightbulb here on the TED stage -- but that old incandescent lightbulb really should have been sold as a heater.

They were mismarketed for over 100 years.

They produced heat and a little light on the sides.

Now we have added lights to the sides that produce light and a little heat.

Using LEDs saves you 85 percent of the electricity you did with your old incandescent bulbs.

And the best part is that it lasts for over 20 years.

So think about it.

You will probably change smartphones 7-8 times. For this audience, probably more.

If you have one car, you will change cars three or four times.

As your kids go to school, go to college, leave home to have kids of their own, and come back with grandchildren, you can use the same light bulb to save energy.

That's why LEDs are great.

Our decision was to keep pushing all the old bulbs, halogens, and CFLs by not selling LEDs at a premium.

We have decided to voluntarily ban Halogens and CFLs over the next two years.

I will do my best.

And this is what a business should do. I will do my best and give 100 percent. That way we can stop investing in the old, invest in the new, cut costs, leverage our supply chain and creativity to drive prices down so everyone can buy the best lighting and save energy.

(Applause.) It's not just products in people's homes.

We have to think about the raw materials that make up our products.

Clearly there are great opportunities for recycled materials and we can and will do zero waste.

And the circular economy has an opportunity.

However, we still rely on natural raw materials.

Take cotton.

Cotton is great. Many people are wearing cotton these days.

The texture is also wonderful to use.

It's really dirty during production.

It uses a lot of pesticides, a lot of fertilizer and a lot of water.

So we've worked with other companies and NGOs on the Better Cotton Initiative, working all the way back to the farm. There, the amount of water and chemical inputs can be cut in half, increasing yields. And importing chemicals can account for 60 percent of the cost of running many farms for low-income farmers.

Yields are increased and input costs are halved.

Farmers are getting out of poverty. they love it

Already reaching hundreds of thousands of farmers, 60% of the superior cotton is now traded.

Once again, we will do our best.

By 2015, it will be 100% Better Cotton.

In fact, let's think about the 100% goal.

Some people think it's difficult to achieve 100%, but we've had similar discussions in business.

In fact, it turns out that 100% is easier than 90% or 50%.

Set a goal of 90% and find out why everyone in your company is within the 10%.

If it's 100%, it's kind of clear, and business people like clarity. Because then you can get the job done.

So wood. When it comes to forestry, we know it's a choice.

We may still be illegally logging and deforestation on a large scale, or we may be doing great, responsible forestry that we can be proud of.

It's an easy choice. That's why we've worked with Forest Stewardship Councils and literally hundreds of other organizations over the years. There is an important point about collaboration here.

Hundreds of people, including NGOs, forest workers' unions and businesses, have helped set up forest management councils, which set forestry standards and check forestry health on the ground.

Through our supply chain, we have now successfully certified 35 million hectares of forest in collaboration with our partners.

It's about the size of Germany.

We have decided to double the amount of certified material we put into our operations over the next three years.

So be decisive on these issues.

Leverage your supply chain to drive good things forward.

But after that it's all about your operations.

I think a few things are certain.

We know that we will be using electricity in 20 or 30 years.

We know that in 20 or 30 years the sun will still be shining and the wind will be blowing somewhere.

So why not make energy from the sun and the wind?

And why not take control of it yourself?

Therefore, we are going with 100% renewable energy.

By 2020, we will produce more renewable energy than we consume as a business.

To date, we have installed 300,000 solar panels across all our stores, our own factories and distribution centers, and 14 wind farms we own and operate in 6 countries, but we are not done yet.

But let's think about solar panels.

Solar panels pay for themselves in 7-8 years.

Electricity is free.

Every time the sun comes out after that, the electricity will be free.

So this is good for the CFO as well as the sustainability officer.

Any company can do something like this.

But we must look beyond our business. I think we all agree that companies must now take full responsibility for their supply chain impacts.

Fortunately, many companies today have codes of conduct and supply chain audits, but not all. Far from it.

This was actually at IKEA in the 90's.

The discovery of child labor risks in the supply chain shocked industry insiders.

And it was clearly totally unacceptable. Therefore, we must act.

So a code of conduct was developed and now 80 auditors are deployed around the world every day to ensure that all factories have good working conditions, protect human rights and are child labor free.

But it's not as simple as keeping child labor free.

Today I must say that it is not enough.

I think we all agree that children are the most important people and the most vulnerable in the world.

So what can companies do today to actually leverage the entire value chain to support a better quality of life and protect children's rights?

We have worked with UNICEF and Save the Children to develop new business principles that consider children's rights.

More and more companies are signing these up, and in fact, one survey found that many business leaders said they don't think their business is child-friendly.

So what we decided to do was, together with a partner who knew more than we did, ask ourselves the hard questions about what we can do beyond our own business to improve the lives of our children.

Other foundations, working through partners, are committed to improving the lives and protecting the rights of 100 million children by 2015.

You know the saying, "What you measure, you can manage"?

Well, you should measure what you care about.

If we don't measure things, we don't care and we don't know.

Let's take an example and measure what's important in your business.

Isn't it about time that men and women lead businesses equally?

(Applause.) We know that 47 percent of the 17,000 managers across IKEA are currently women, but that's not enough, and we want to fill the gap and follow them all the way to senior management.

And we don't want to wait another hundred years.

So we are launching an open network for women at IKEA this week and will do whatever it takes to lead change.

So the message here is to measure what you care about, lead change and don't wait 100 years.

In other words, we have moved from thinking about sustainability as a “must do” to a “must do”. it is a must.

It's still good, but it has to be done.

And everyone as an individual can do something about this.

Be a discerning consumer.

Please bring your wallet and vote.

Check out the companies working on this.

However, some companies are already working.

We touched on renewable energy.

Google and Lego are 100% renewable, just like us.

Companies with really good sustainability strategies include Nike, Patagonia, Timberland and Marks & Company. Spencer.

But I don't think any of those companies are perfect. Certainly not.

We will continue to make mistakes, but the key is to set clear direction, be transparent, engage with the right partners, and choose to lead on the issues that really matter.

So if you're a business leader and haven't made sustainability a core part of your business model yet, I urge you to do so.

And together we can contribute to the creation of a sustainable world, and if done right, we can make sustainability affordable for the many rather than a luxury for the few.

thank you.

(applause)

Africa is booming.

Since 2000, per capita income has doubled and this boom is affecting everyone.

Over the past decade, life expectancy has increased by one year every three years.

So if an African child was born today instead of three days ago, it would be given an extra day at the end of its lifespan.

It's so fast.

HIV prevalence has fallen by 27%, with 600,000 fewer people living with HIV annually in sub-Saharan Africa.

The latest data from the World Bank show that the fight against malaria is being won, with malaria deaths dropping by 27 percent.

And the malarial web is really doing its job.

This is not surprising, because practically everyone grows up.

Going back to Imperial Rome in 1 AD, there was certainly not much growth for about 1,800 years.

But what the Romans would have called the Scottish barbarians, my ancestors, were actually part of the Industrial Revolution. Growth began to accelerate in the 19th century, and it has been growing faster and faster, affecting everyone.

It doesn't matter if you are in the jungle of Singapore or the tundra of northern Finland.

Everyone participates. It's just a matter of when the inevitable happens.

One of the reasons I think it's happening now is the quality of leadership across Africa.

Most people would agree that the greatest politicians in the world were Africans in the 1990s, but I have met great people all over the continent, making reforms that have changed the economic landscape of their countries.

And Western countries are also working on it.

Western countries have implemented debt relief programs that have halved sub-Saharan debt from about 70 percent of GDP to about 40 percent.

At the same time, the debt level has climbed to 120, making us all a little miserable as a result.

More debt weakens politics.

When public sector debt is low, governments don't have to choose between investing in education and health care and paying interest on that debt.

It's not just the public sector that's doing well.

So is the private sector.

Again, the West has private sector debt equivalent to 200 percent of GDP in Spain, the UK and the US.

That's a big loan.

Africa, many African countries remain at 10-30 percent of GDP.

If there is a continent that can do what China has done - China makes up about 130 percent of GDP in this graph - if anyone can do what China has done in the last 30 years, it will be Africa in the next 30.

So they have huge government budgets and huge private sector debt.

Does anyone recognize this? Indeed it is.

Foreign direct investment has flowed into Africa in the last 15 years.

In the 70's no one reached the continent by barge pole.

And this investment is actually Western-led.

We hear a lot about China, and we certainly do a lot of lending, but 60 percent of FDI in the last few years has come from Europe, the US, Australia and Canada.

10 percent come from India.

And they are investing in energy.

Africa currently produces 10 million barrels of oil per day.

Same with Saudi Arabia and Russia.

And they are also investing in telecommunications businesses and shopping malls.

And I think this very encouraging story is partly demographic-driven.

And it's not just the African demographic.

It shows the 15-24 year old population around the world, but I'd like to draw your attention to the blue line.

Ten years ago, by chance, Foxconn set up an iPhone factory.

You may choose China. China occupies most of the blue line in East Asia, with 200 million young people and growing population each year until 2010.

In other words, there will be newcomers knocking on doors saying, ``Give us a job,'' or ``We don't need a big raise, just give us a job.''

Well, that has completely changed now.

Over the next decade, China's population aged 15 to 24 will decline by 20% to 30%.

So where will you set up your new factory?

If you look at South Asia, people are.

They're looking at Pakistan and Bangladesh, and they're looking at Africa.

And they are looking at Africa because that yellow line shows that the number of young people in Africa will continue to grow for decades and decades to 2050.

Now, no matter what market you enter, there are many young people with problems, especially young men.

It's a little dangerous at times.

I think one of the important factors is how educated the demographic is.

The red line here shows that in 1975 only 9 percent of children in sub-Saharan Africa had a secondary education.

Will you set up a factory in sub-Saharan Africa in the mid-1970s?

no one else did.

They chose Turkey and Mexico instead to set up textile factories because their education level was between 25 and 30 percent.

Sub-Saharan Africa is now at the level of Turkey and Mexico in 1975.

They will lift people out of rural poverty and acquire textile jobs that will lead them on the path to industrialization and wealth.

So what is Africa doing now?

This is how I see Africa.

I'm an economist, so that's a little strange.

Each little box is about $1 billion, but you can see that I'm very focused on Nigeria where I'm sitting in the middle.

South Africa has a role to play.

But when I think about the future, I'm actually most interested in Central, West and Southern Africa.

Looking at Africa by population, East Africa stands out for its enormous potential.

And I'll use these maps to show you something else.

I show democracy and dictatorship.

Fragile democracy is beige.

Strong democracy is orange.

What we see here is that most Africans now live in a democracy.

Why is it important?

Because what the people want is what politicians try, and they don't always succeed, but they try to make it happen.

And the positive circulation is strengthened.

In the December 2012 Ghana general election, the two candidates battled over education.

One man offered free secondary education to everyone, not just 30%.

Another man was forced to say, "I am going to build 50 new schools."

He won by a narrow margin.

As such, democracy encourages governments to invest in education.

Education is driving growth and investment, which translates into budget revenue, more funding for governments, and driving growth through education.

It's a positive virtuous circle.

But I'm sometimes asked this question, and this particular question makes me very sad: it's "But what about corruption?"

How can you invest in Africa with corruption? ”

And what makes me sad is that this graph shows that the biggest correlation with corruption is wealth.

Corruption is not a top priority when you are poor.

And the countries on the right have GDP per capita. Basically, any country with a per capita GDP of say less than $5,000 has a corruption score of around 3.

3 out of 10. that's not good.

Every poor country is corrupt.

No wealthy country is relatively corrupt.

How can we move from poverty and corruption to wealth and less corruption?

We see the middle class grow.

The way to do that is to invest, but I'm not saying you shouldn't invest in that continent because there's too much corruption.

Now, I don't want to be an apologist for corruption.

I was arrested for refusing to pay a bribe, but not really in Africa.

But what I'm saying here is that we can make a difference, and we can do that with investments.

Here are a few things that are not so secret.

Economists are not good at forecasting.

Because the real question is what happens next.

Back in 2000, The Economist had a very famous cover of "The Continent of Despair". They looked at Africa's growth rate over the last decade (2 percent) and said what will happen in the next decade.

They had assumed 2%, but with a population growth rate of 2.5, it was pretty hopeless.

In the 1990s, people became even poorer in Africa.

In 2012, The Economist magazine has a new cover. What does that new cover show?

Its new cover shows that Africa is on the rise. That's because the growth rate over the past decade has been about 5.5 percent.

I'd like to see if you can become economists now, but given that the growth rate over the last decade was 5.5 percent, what do you think the IMF is forecasting for Africa's growth over the next five years?

very good. I think you're quietly saying in your head that it's probably 5.5 percent.

You are economists, and like most economists, I think you are wrong.

No offense.

What I want to do is look for countries that are doing exactly what Africa has already done. It means going from nothing for 1,800 years to suddenly popping through the roof.

India is one such example.

This is India's growth from 1960 to 2010.

Ignore the bottom scale for a moment.

In fact, India did not grow much during the first two decades of the 60s and 70s.

Population increased by 2% when population growth was about 2.5.

If it's familiar, that's exactly what happened in sub-Saharan Africa in the '80s and '90s.

And in 1980 something happened.

boom! India has exploded.

It wasn't about "Hinduism's growth rate" or "democracy can't grow". In fact, India can do it.

And when you layer Sub-Saharan growth onto India's growth story, it's strikingly similar.

A trend line showing 20 years of sluggish growth and indeed sub-Saharan Africa's growth is marginally better than India's.

And if you superimpose the development of Asia on top of this, they say that India is 20 years ahead of Africa, and that Asia is 10 years ahead of India, so we can come up with a projection for the next 30 to 40 years, which I think is better than looking back.

This means Africa will grow from a $2 trillion economy today to a $29 trillion economy by 2050.

This is more than the current sum of Europe and America combined.

Life expectancy is expected to increase by 13 years.

As the population doubles from 1 billion to 2 billion, household income will increase sevenfold over the next 35 years.

And when you put this in Africa, Nairobi, Lagos, Accra, one question comes up.

"Charlie, why are you so pessimistic?"

And what do you know?

In fact, I think they have a point.

Am I really saying that we can learn nothing from the positive aspects of Asia and India?

Perhaps Africa can avoid some of the mistakes that have been made so far.

Surely some of the technology we're talking about here last week could perhaps help further accelerate growth in Africa?

And I think we can play a role here.

Because technology helps you.

Now you can download great African literature from the Internet.

No, not right now. Only 30 seconds.

You can go shopping for great songs.

My iPod is full of them.

buy african products

Go on vacation and see for yourself what's going on.

invest.

Perhaps hire people and give them skills to bring back to Africa and their companies will grow much faster than most companies here in the West.

Then you and I can help make the 21st century the African century for Africa.

thank you very much.

(applause)

An elderly woman named Rosalie was sitting in a nursing home when her room suddenly came to life with spinning cloths.

Through elaborate draping, she could recognize animals, children and costumed characters.

Rosalie was alarmed, not by the intrusion, but by knowing that the entourage was a highly detailed hallucination.

She had excellent cognitive function and was not taking drugs that could cause hallucinations.

Strangest of all, if a crowd of circus performers had actually broken into her room, she would not have seen them. She was totally blind.

Rosalie had developed a condition known as Charles Bonnet Syndrome. In this syndrome, vision-impaired or blind people suddenly develop general hallucinations of bright colors.

These hallucinations may appear suddenly and may last for minutes or recur for years.

We still don't fully understand what causes it to come on and off, and why some people get it when others don't.

We know from fMRI studies that these hallucinations activate the same brain areas as vision, areas not activated by imagination.

Many other hallucinations, including smells, sights and sounds, also involve the same brain regions as real sensory experiences.

For this reason, the cerebral cortex is believed to be involved in hallucinations.

This thin layer of gray matter covers the entire brain, and different areas process information from each of our senses.

But even in people with perfectly intact senses, the brain constructs the world we perceive from imperfect information.

For example, our eyes have a blind spot where the optic nerve blocks part of the retina.

As the visual cortex processes light to produce coherent images, it fills in these blind spots with information from surrounding areas.

Sometimes we notice glitches, but most of the time we are not smart.

Even if the visual cortex is temporarily deprived of input from the eye, the brain will still try to create a coherent image, but the limits of its ability become more apparent.

An example is the full-blown hallucinations of Charles Bonnet syndrome.

Because Charles Bonnet syndrome only occurs in people who had normal vision but subsequently lost it, not people who were born blind, scientists believe that the brain uses stored images to compensate for the lack of new visual inputs.

And the same applies to other senses.

People with hearing loss often hallucinate music and voices, sometimes as detailed as the cacophony of an entire marching band.

In addition to sensory deprivation, recreational and therapeutic drugs, disorders such as epilepsy and narcolepsy, and psychiatric disorders such as schizophrenia are among the many known causes of hallucinations, with new ones still being discovered.

Some of the most notorious hallucinations are associated with drugs such as LSD and psilocybin.

Its notable effects include making dry objects feel wet and surfaces breathing.

At higher doses, the visual world can appear to melt, spiral, or burst into fractal-like patterns.

There is evidence to suggest that these drugs also act on the cerebral cortex.

However, visual disturbances usually cause only visual hallucinations and hearing loss, whereas substances like LSD cause perceptual disturbances across all senses.

That's probably because it activates receptors in a wide range of areas of the brain, including all sensory cortical areas.

Both LSD and psilocybin act like serotonin in the brain, specifically binding directly to certain types of serotonin receptors.

The role of serotonin in the brain is complex and poorly understood, but it is thought to play an important role in integrating information from the eyes, nose, ears, and other sensory organs.

Therefore, there is a theory that LSD and psilocybin cause hallucinations by interfering with signaling involved in sensory integration.

Hallucinations associated with schizophrenia may share similar mechanisms with hallucinations induced by LSD and psilocybin.

People with schizophrenia often have elevated serotonin levels in their brains.

And antipsychotics reduce symptoms of schizophrenia by blocking the same serotonin receptors that LSD and psilocybin bind to.

In some cases, these drugs can even relieve hallucinations in people with Charles Bonnet syndrome.

We still have a long way to go in understanding all the different causes and interconnected mechanisms of hallucinations.

However, it is clear that hallucinatory experiences are much more closely tied to ordinary perception than we once thought.

And by studying hallucinations, we can learn a lot about how our brains construct the world we see, hear, smell, and touch.

The more you learn, the more you will come to understand how subjective and individual each person's island universe of perception really is.

Since the time of Homer, ancient tales have been told where fierce warriors from the far reaches of the Mediterranean world terrorized the most powerful empires of antiquity.

Their feat was recounted by many epic poets.

They fought in the legendary Trojan War, and a large army invaded Athens.

Jason and the Argonauts pass the shore, narrowly dodging deadly arrows.

These fearsome warriors faced off against the greatest champions of mythology: Hercules, Theseus and Achilles.

And these warriors were all women.

The war-loving Amazons, "equal to humans" in courage and skill, were well known to everyone in ancient Greece.

Battle scenes from the Amazons graced the Parthenon on the Acropolis of Athens. Temples and public spaces were decorated with Amazonian paintings and statues.

Little girls played with Amazon dolls, and Amazons were a favorite subject of Greek vase paintings.

In Greek art and literature, they were portrayed as daring and desirable, as well as terrifying and deadly, doomed to death at the hands of Greek heroes.

Was the Amazon just a mythical character, or was it something more?

For a long time they were thought to be as imaginary as the cyclops and centaurs.

Strangely enough, though, Amazon-like warrior women also appear in stories from ancient Egypt, Persia, the Middle East, Central Asia, India, and China.

And the Amazons were not just a myth, they were also mentioned in ancient historical accounts.

Writers such as Herodotus, Plato, and Strabo never doubted its existence.

So who was the true identity of the female warrior known as the Amazon?

Ancient historians traced the home of the Amazon to Scythia, a vast territory that stretched from the Black Sea across the steppes of Central Asia.

This vast region was inhabited by nomadic tribes whose livelihood revolved around horses, archery and warfare.

Their culture flourished for about 1,000 years, starting around 800 BC.

Feared by the Greeks, Persians and Chinese, the Scythians left no written record. But clues can be found not only in archaeology, but also in how their neighbors described them.

The ancestors of the Scythians were the first to ride horses and invented the reflex bow.

And since female mount shooters can be as fast and deadly as males, all children were trained to shoot on horseback.

Women hunted alongside men and fought using the same weapons.

The harsh landscape and their nomadic life created a unique form of equality.

This surprised the ancient Greeks, where women led a restricted life indoors.

The first stories about Scythians and Amazons may have been exaggerated rumors.

However, once the Greeks began trading around the Black Sea and further east, their depiction became more realistic.

Early depictions of Amazons depicted them wearing Greek weapons and armor.

However, in later representations they carried bows and battleaxes, rode horses, and wore pointed hats and patterned trousers characteristic of steppe nomads.

Until recently, no one was sure how strong the connection was between the Scythians and the Amazons of Greek mythology.

However, recent archaeological discoveries have provided sufficient evidence.

Over 1,000 ancient Scythian kurgans, or burial mounds, have been excavated, containing skeletons and weapons.

Archaeologists previously believed that weapons belonged only to male warriors.

But so far, modern DNA analysis has revealed that about 300 human bones buried with weapons belonged to women between the ages of 10 and 45, and more are discovered each year.

The woman's skeleton showed combat injuries, with her ribs slashed by a sword, her skull smashed by a battle-axe, and arrows stuck in her bones.

In classical art and writings, the fearsome Amazon has always been portrayed as brave and heroic.

But in the male-dominated Classical Greece, the very idea of ​​a strong woman who boasted of freedom and war aroused mixed feelings.

Nevertheless, the Greeks were also attracted to egalitarian ideals.

Could it be that the mythical world of Amazon thrilling stories was a way of imagining women and men as equal companions?

Come with me to visit the most beautiful spots of cities around the world. Spanish Steps in Rome. Historic districts of Paris and Shanghai. The rugged landscape of Central Park. Close-knit neighborhoods in Tokyo and Fez. The steeply sloping streets of Rio de Janeiro's favela. A dizzying stepwell in Jaipur. Arched pedestrian bridge in Venice.

Now let's go to some new cities.

Six downtowns built on six continents in the 20th century.

Why don't these places have any of the charming features of old cities?

Or visit the six suburbs built on six continents in the 20th century.

Why do none of them have the lyrical quality associated with the places we hold most dear?

Now, maybe you think I'm just nostalgic -- why does it matter?

Who cares if a creeping sameness is rampant on our planet?

Well, it's important because most people around the world gravitate towards urban areas globally.

And how we design those urban areas can determine whether we thrive as a species.

So, we already know that people who live in transportation-rich areas and who live in apartments have a much lower carbon footprint than those in suburban areas.

So maybe one of the lessons to be learned from it is that if you love nature, you shouldn't live in it.

(Laughter) But I think the dry stats of what is known as transportation-oriented development are only part of the story.

Because in order for a city to attract people, it has to be great.

These should be strong magnets with a unique appeal to attract new green city-dwellers.

Mind you, this is not just an aesthetic issue.

This is an issue of international impact.

Because today literally hundreds of thousands of people migrate every day, mostly to cities somewhere in the global South.

And when you think about it, are they condemned to live in the same mediocre city we built in the 20th century, or can we offer them something better?

To answer that question, we need to clarify how we got here in the first place.

Mass production first.

Just like consumer goods and chain stores, we mass-produce glass, steel, concrete, asphalt, and drywall, deploying them around the globe in the same mind-boggling ways.

Second: regulation.

For example, consider a car.

The car travels very fast.

It is susceptible to human error.

So when we as architects are asked to design a new road, we have to look at drawings like this. You know what curb height you want, pedestrians here, vehicles there, loading zones here, and drop offs there.

What the automobile really did in the 20th century was create this carved and isolated landscape.

Or take a ride on a ladder fire engine. A large ladder truck used to rescue people from burning buildings.

These have very wide turning radii, requiring huge amounts of asphalt pavement to be deployed to accommodate them.

Or take a wheelchair which is very important.

Wheelchairs require landscapes with minimal incline and redundant vertical circulation.

Therefore, wherever there are stairs, there must be an elevator or a ramp.

Don't get me wrong. I am all for pedestrian safety, fire safety and of course wheelchair access.

Both of my parents were in wheelchairs at the end of their lives, so I know how hard it was.

But we must also admit that all these well-intentioned rules have had the unintended and grave consequences of making the way we used to build cities illegal.

likewise illegal. At the end of the 19th century, shortly after the elevator was invented, we built these fascinating urban buildings, these beautiful buildings, all over the world, from Italy to India.

And they probably had 10 or 12 apartments.

It had a small elevator, a staircase that wrapped around it, and bright lights.

And they were not only attractive, cost-effective buildings, but also communal. I ran into my neighbor in the stairwell.

Well, you can't build it either.

By contrast, today, when we have to build a big new apartment somewhere, we have to build a bunch of elevators and fire escapes, and connect them with these long, anonymous, brooding corridors.

Now, when faced with the cost of all the common infrastructure, developers want to build bigger buildings because they need to spread that cost over more apartments.

The result is the dull thud of the same apartments being built in every city in the world.

And this not only creates physical identities, it creates social identities. Because these buildings were expensive to build, they have contributed to an affordability crisis in cities around the world, including places like Vancouver.

Now, I said there is a third reason for all this sameness, and it is really psychological.

It's the fear of difference, and architects are always told by their clients. "Will I be sued if I try the new idea?"

Will I be ridiculed?

Cane before falling. "

And all this conspires to cover our planet with homogeneity, which I think is very problematic.

So how can we do the opposite?

How can we get back to building cities that are both physically and culturally diverse?

How can we build a city with a difference?

I would argue that you should start by injecting the locals into the globals.

This is already happening with food, for example.

Just look at how craft beer has taken over corporate beer.

Or how many people are still eating Wonderbread?

I'm sure most people don't.

And you probably won't because you don't want processed foods in your life.

So why would you want a processed city if you don't want processed food?

Why would you want the mass-produced, bleached-out place where we all have to live and work every day?

(Applause.) So technology was a big part of the 20th century problem.

When we invented the automobile, what happened was that the whole world turned to it.

And we recreated the landscape around it.

In the 21st century, technology can be part of the solution to meet the world's needs.

So what does that mean?

Get in a self-driving car.

I don't think self-driving cars are funny because they are self-driving cars.

For me, it just means more traffic on the roads, frankly.

The interesting thing about self-driving cars, and I want to emphasize the word promise, given the recent accident in Arizona, is the promise that we can have small urban vehicles that can pass safely with pedestrians and cyclists.

Then we will be able to design humane roads again, curbless roads, perhaps like the tree sidewalks on Fire Island.

Or maybe we can design our streets with 21st-century cobblestones that capture kinetic energy, melt snow, and help keep us healthy as we walk.

Or do you remember that big ladder fire engine?

What if they and all the asphalt that goes with them could be replaced by drones and robots that can rescue people from burning buildings?

And if you think that's wacky, you'd be surprised to learn how much of that technology is already being used in rescue operations today.

But imagine it with me now.

Imagine designing a hovercraft wheelchair.

right?

This invention will not only allow equal access, but will also enable the construction of Italian hill cities in the 21st century.

You'd be surprised to learn that just a few of these inventions that serve human needs will completely change the way cities are built.

Now, you're probably thinking: "We don't yet have cobblestones to exercise on or flying wheelchairs, so what can we do about this problem with today's technology?"

And my inspiration for that question comes from a completely different city, the city of Ulaanbaatar in Mongolia.

Some of my clients have been asked to design a 21st century open-air village in the heart of downtown that will be sustainably heated using today's technology.

And that's to deal with the frigid winters.

And this project is both poetry and prose.

The poem is really about understanding how to evoke the local: the mountainous terrain, use color to capture the spectacular light, and interpret the nomadic traditions that bring the nation of Mongolia to life.

Prose is the development of a fairly affordable catalog of small building buildings using local construction materials and techniques that can provide new forms of housing, new workspaces, new shops, and cultural buildings like theaters and museums, and even haunted houses.

While working on this in our office, we found ourselves building on the work of colleagues, including Tatiana Bilbao, an architect working in Mexico City. Pritzker Prize winner Alejandro Aravena in Chile. And recent Pritzker laureate Balkrishna Doshi works in India.

And all of them are not only building great new forms of affordable housing, but they are also building cities that are different because they are building cities that respond to local communities, local climates and local construction methods.

We are further enhancing that idea and researching new models for growing cities under the pressure of gentrification. It can be built on a late 19th century model with its central core, but the prototype can be transformed according to local needs and local building materials.

To me, all these ideas are nostalgic.

They all teach us that we can build cities that can grow, but grow in a way that reflects the diverse population that lives in them. You have to grow up in a way that accommodates every income group, every skin color, creed, and gender.

We can stop sprawl and build great cities that actually protect nature.

We can grow high-tech cities, but we can also serve the timeless cultural needs of the human spirit.

We believe we can build cities of difference that will help create the global mosaic that many of us desire.

thank you.

(applause)

So when I was eight, a new girl came to class. As new girls always do, she was very impressive.

She had a huge amount of very shiny hair and a cute little pencil case and was very strong in the capital and had great spelling.

And that year I was just frozen with jealousy until I devised an evil plan.

So one day, I stayed a little late after school and, a little too late, hid in the girls' bathroom.

When the shore cleared, I came out, sneaked into the classroom, and took the report card from the teacher's desk.

And I did it.

We just demoted some of our A's by tweaking our rivals' grades a bit.

All these A's. (Laughter.) And I got ready to put the book back in my drawer, but wait, some of my other classmates did amazingly well too.

So I fixed everyone's marks like crazy, not by imagination.

I gave everyone a D column and myself an A column. Just because I was there, it could be the same.

And I am still baffled by my actions.

I don't know where that idea came from.

I don't know why I felt so great doing it.

It felt great.

I don't understand why they weren't caught.

I mean, it should have been so blatantly obvious.

I never got caught.

But what puzzles me more than anything is why this little girl, this little girl spelling so well, bothered me so much.

Jealousy baffles me.

It's so mysterious, so penetrating.

We know babies struggle with jealousy.

We know primates do. Bluebirds are actually very prone.

We know that jealousy is the number one cause of spousal murder in the United States.

Nevertheless, I have never read a study that could make sense of its loneliness or longevity or its terrifying thrills.

For that, you have to go to the novel. Because the novel is a laboratory that has studied jealousy in every possible configuration.

In fact, I'm not sure it's an exaggeration to say, "Would there be literature if there were no jealousy?"

Well, no Helen without faith, no "Odyssey".

No jealous kings, no "Arabian Nights".

No Shakespeare.

Because I also have my high school reading list, missing The Sound and the Fury, Gatsby, The Sun Also Rises, Madame Bovary, and Anna K.

No jealousy, no Proust. Now, I know it's fashionable to say Proust has all the answers, but when it comes to jealousy, he kind of has the answer.

This year marks the 100th anniversary of his masterpiece In Search of Lost Time, the most thorough study of sexual jealousy and just normal competitiveness, and what we can expect. (Laughter.) And we think about Proust and we think about the sentimental part, right?

We are thinking of a little boy trying to sleep.

Think of madeleines soaked in lavender tea.

We forget how harsh his vision was.

We forget how ruthless he is.

So these are the books that Virginia Woolf said were tough as cat guts.

I don't know what cat gut is, but let's assume it's a scary thing.

Novel and Jealousy, Jealousy and Proust, let's see why the two get along.

Is it something as obvious as jealousy that boils down to people, desires, and obstacles, and is that a solid narrative foundation?

don't know. Consider what happens when you feel jealous.

When we feel jealous, we tell ourselves stories.

We tell ourselves stories about other people's lives, but these stories make us feel terrible because they are designed to make us feel terrible.

As storytellers, and as spectators, we know what details to include to stick our knives.

Jealousy makes us amateur novelists, and that's what Proust understood.

In the first volume of the book series, "Swan's Way", one of the main characters, Swan, is in bed and misses his mistress very much and thinks how wonderful she is. And suddenly, in the middle of a few sentences, which is as long as a river because this is a Proustian sentence, you suddenly wince in the middle of a few sentences and realize, "Wait a minute, everything I love about this woman, other people will love her."

Anything she does that gives me joy is likely giving joy to someone else right now. ”

And this is the story he began to tell himself, and since then, Proust writes, he adds to his "collection of private torture-chamber instruments" each time Swann finds a new fascination with his mistress.

Now, I have to admit that Swann and Proust were notoriously jealous.

As you know, Proust's boyfriends have to leave the country if they want to break up with Proust.

But you don't have to be too jealous to admit that it's hard work. right?

Jealousy is exhausting.

It's a feeling of hunger. must be fed.

And what does jealousy prefer?

Jealousy likes information.

Jealousy likes details.

Jealousy likes a lot of shiny hair and a cute little pencil case.

Jealousy likes photography.

That's why Instagram is so popular. (Laughter) Proust actually combined the word envy with scholarship.

When Swann is tormented by jealousy and suddenly eavesdrops at the door or bribes his mistress's servants, he defends these acts.

He says, "Look, I know you find this offensive, but it's no different than interpreting ancient texts or looking at monuments."

"These are scientific investigations of real intellectual value," he said.

Proust tries to show us that jealousy is intolerable and seems absurd, but at its core, it is a quest for knowledge, a quest for truth, a painful truth, and indeed, when it comes to Proust, the more painful the truth, the better.

Grief, humiliation, loss: these were the paths to wisdom for Proust.

He said, "A woman who torments and needs us draws out of us a full range of emotions far more deeply and vividly than the genius man who interests us."

Is he telling us to go find a cruel woman?

No, I think he means that jealousy reveals us.

And are there any other emotions that open our hearts in a specific way like this?

Are there other emotions that reveal our aggression, fearful ambitions, entitlements?

What other emotion teaches you to see with such a unique intensity?

Freud will write about this later.

One day, Freud was visited by a very anxious young man who was obsessed with the idea that his wife was cheating on him.

And Freud says, "There's something wrong with this man, because he doesn't see what his wife is doing."

because she is innocent. everyone knows it.

This poor creature is only suspected for no reason.

But he is looking for unintended actions that his wife is doing without realizing it.

Is she smiling too brightly here, or did she accidentally bump into a man there?

[Freud] states that the man is becoming the unwitting custodian of his wife.

This novel is excellent in this respect.

This novel very well depicts how jealousy trains us to look intensely, not accurately.

In fact, the more intense our jealousy, the more illusion we become.

That's why I think jealousy doesn't just cause us to commit violence or illegal acts.

Jealousy pushes us to act in very original ways.

Now I'm thinking about my 8 year old self, I admit it, but I'm also thinking about this story I heard on the news.

A 52-year-old Michigan woman has been arrested after creating a fake Facebook account from which she sent herself vile and horrifying messages for a year.

1 year. one year.

And she was trying to fit her ex-boyfriend's new girlfriend, and I must confess I just had an admiring response when I heard this.

(Laughter) Because let's be honest.

What a colossal creativity, if misguided. right?

This is something out of a novel.

This is a passage from a novel by Patricia Highsmith.

Highsmith is now my favorite.

She is a very bright and strange woman in the American literary world.

She is the author of Strangers on a Train and The Talented Mr. Ripley. These books are about how jealousy can confuse our minds, and how once you enter that realm of jealousy, you can instantly break through the barrier between what is and what could be.

Take her most famous character, Tom Ripley, for example.

Now Tom Ripley has gone from wanting you and wanting what you have to being you and getting what you used to have, and you're under the floor, answering your name, wearing a ring, emptying your bank account.

That's one way.

But how? We can't go the Tom Ripley way.

Some days I can't give the world as much D as I would really like.

It's a shame because we live in enviable times.

We live in jealous times.

I mean, we're all good citizens of social media amidst the envy of currencies, right?

Will the novel show us the way out? don't know.

So let's do what characters usually do when they're unsure, when they have a mystery.

Go to 221B Baker Street and ask for Sherlock Holmes.

When you think of Holmes, people think of his nemesis Professor Moriarty, yes, the mastermind behind this crime.

But I've always preferred Inspector Lestrade, the rat-faced Scotland Yard director who desperately needs Holmes, needs Holmes' genius, but hates Holmes.

Oh that sounds so familiar to me.

Lestrade therefore needs his help, resents him, and is bitter about the progress of the mystery.

But as they worked together, something began to change, and when Holmes finally came along and surprised everyone with his solution in The Adventures of the Six Napoleons, Lestrade turned to Holmes and said: "We are not jealous of you, Mr Holmes.

we are proud of you ”

And no man in Scotland Yard wouldn't want to shake Sherlock Holmes' hand, he says.

It's one of the few scenes in a mystery that really moves Holmes, and I think it's very moving. This little scene is also a mystery.

You seem to treat jealousy as a matter of geometry rather than emotion.

See, Holmes will be on the other side of Lestrade in a moment.

The next moment they are on the same side.

Suddenly Lestrade decided to admire this heart that he resented.

Is it that simple?

What if jealousy is actually a matter of geometry, of what position we are allowed to take in relation to others?

Then you may not need to resent someone's excellence.

We were able to match that too.

But I like contingency plans.

So while we wait for that to happen, let's remember we have fiction to comfort us.

Jealousy is easy to understand even in fiction alone.

Only fiction tame it and invite it to the table.

The gentle Lestrade, the terrifying Tom Ripley, the insane Swan, and Marcel Proust himself.

we are great friends.

thank you.

(applause)

So, on Independence Day last year, the Higgs boson was discovered in an experiment at the Large Hadron Collider.

It was a historic day.

From now on, there is no doubt that Independence Day will be remembered not as the day of the Declaration of Independence, but as the day of the discovery of the Higgs boson.

Well, at least here at CERN.

But the biggest surprise of the day for me was that there were no big surprises.

In the eyes of theoretical physicists, the Higgs boson is a sensible explanation of how some particles gain mass, but it appears to be a rather unsatisfactory and incomplete solution.

Too many questions remain unanswered.

The Higgs boson does not share the beauty, symmetry, and grace of other particle worlds.

For this reason, the majority of theoretical physicists believe that the Higgs boson is not the whole story.

We expected new particles and new phenomena associated with the Higgs boson.

So far, however, measurements from the LHC have shown no sign of new particles or unexpected phenomena.

Of course, the verdict is not final.

In 2015, the LHC will nearly double the energy of colliding protons, and these more powerful collisions will allow us to explore the particle world even more and learn even more.

But so far, no evidence of the new phenomenon has been found, so let's assume that the particles we know today, including the Higgs boson, are the only elementary particles in nature, even at energies much greater than anything ever investigated.

Let's see where this hypothesis leads us.

You will find surprising and interesting results about our universe. To explain what I mean, let me first explain what Higgs is. To do that, we have to go back to ten billionths of a second after the big bang.

And according to the Higgs theory, at that moment something dramatic happened in the universe.

Space-time undergoes a phase transition.

It was a phenomenon very similar to the phase transition that occurs when water turns into ice at temperatures below zero.

However, in our case, phase transitions are not about changes in the way molecules are arranged inside the material, but about changes in the space-time structure itself.

During this phase transition, the empty space was filled with what is now called the Higgs field.

And although this substance may seem invisible to us, it has a physical reality.

It surrounds us all the time, just like the air we breathe in this room.

And some elementary particles interact with this matter, gaining energy in the process.

And this intrinsic energy is what we call the particle's mass, and the LHC conclusively proved this matter to be real with the discovery of the Higgs boson. Because it is the material of the Higgs boson.

In a nutshell, this is the essence of Higgs' story.

But this story is much more interesting than that.

By studying the Higgs theory, theoretical physicists used the power of mathematics rather than experiments to discover that the Higgs field does not necessarily exist only in the form observed today.

Just as matter can exist as a liquid or a solid, so too can the Higgs field, the matter that fills all spacetime, exist in two states.

Besides the known Higgs state, there could be a second state in which the Higgs field density is billions of times higher than the state observed today, and the mere existence of another state of the Higgs field could pose a potential problem.

This is because, according to the laws of quantum mechanics, transitions between two states are possible even when there is an energy barrier separating them, a phenomenon aptly called quantum tunneling.

Thanks to the Quantum Tunnel, I could disappear from this room and virtually pop through the wall to reappear in the next room.

But don't expect me to actually perform the trick in front of you. Because the odds of me breaking through the wall are ridiculously low.

We'll have to wait a very long time for that to happen, but believe me, quantum tunneling is a real phenomenon and has been observed in many systems.

For example, tunnel diodes, components used in electronics, work thanks to the quantum tunneling effect.

But let's go back to the Higgs field.

In the presence of an ultra-dense Higgs state, quantum tunneling could cause a bubble of this state to suddenly appear at a particular location in space at a particular time, similar to what happens when boiling water.

Vapor bubbles form in the water and then expand, turning the liquid into a gas.

Similarly, quantum tunneling can lead to ultra-dense Higgs-state bubbles.

The bubble then expands at the speed of light, invading all space and transforming the Higgs field from the familiar to the new.

Is this a problem? Yes, it is a big problem.

You may not notice it in your daily life, but the strength of the Higgs field is important for the structure of matter.

If the Higgs field were just a few times stronger, atoms would shrink, neutrons would be observed to decay inside the nucleus, the nucleus would be observed to decay, and hydrogen would be the only possible chemical element in the universe.

And the Higgs field in the ultra-dense Higgs state is several times, even billions of times stronger than it is today, and if space-time were filled with this Higgs state, all atomic matter would collapse.

There is no molecular structure, no life.

So, could the Higgs field undergo a phase transition in the future, transforming it into this nasty ultra-dense state via quantum tunneling?

In other words, I ask myself, what is the fate of the Higgs field in our universe?

And the key factor needed to answer this question is the mass of the Higgs boson.

And experiments at the LHC found that the mass of the Higgs boson is about 126 GeV.

This is very small in familiar units, as it is equal to something like 10 minus 22 grams, but is large in particle physics units, as it is equal to the weight of an entire molecule of DNA building blocks.

Armed with this information from the LHC, I worked with my colleagues here at CERN to calculate the probability that the universe could be quantum tunneled into the ultra-dense Higgs state, and found very interesting results.

Our calculations show that the measurement of the mass of the Higgs boson is very special.

It has just the right amount of value to keep the universe in a state of instability.

The Higgs magnetic field is an unstable structure that will continue for now but will eventually collapse.

So by these calculations, we're like campers who accidentally set up their tents on the edge of a cliff.

And eventually, the Higgs field undergoes a phase transition and matter collapses into itself.

Then, will the human race disappear as it is?

i don't think so.

According to our calculations, quantum tunneling of the Higgs field is unlikely to occur within the next 10 to 100 years, which is a very long time.

Even longer than it takes Italy to establish a stable government.

(Laughter) But by then we won't be around anymore.

In about 5 billion years, our Sun will become a red giant star as big as the Earth's orbit, and the Earth will disappear. In 100 billion years, if dark energy continues to fuel the expansion of the universe at its current rate, everything around you will be expanding faster than the speed of light, and you won't be able to see the tip of your foot.

Therefore, it is highly unlikely that we will witness the collapse of the Higgs field.

But the reason I'm interested in the evolution of the Higgs field is because I want to address the question of why the mass of the Higgs boson is so special.

Why is it right to keep the universe on the edge of a phase transition?

Theoretical physicists always ask the question "why".

Theoretical physicists are always more interested in why phenomena work the way they do than in how they work.

We hope that these "why" questions give us some hints about basic principles of nature.

And indeed, the possible answers to my question literally open up new worlds.

It has been speculated that our universe is just a bubble in a multiverse like a soap made up of many bubbles, each bubble being a different universe with different fundamental constants and different laws of physics.

And in this context we can only talk about the probability of finding a certain value of the Higgs mass.

The key to the mystery, then, may lie in the statistical nature of the multiverse.

It would be similar to what happens in the dunes of the coast.

In principle, you could imagine finding dunes of any slope on a beach, but dunes usually have a slope of about 30-35 degrees.

The reason is simple. This is because the wind causes the sand to pile up and gravity causes the sand to fall.

As a result, most of the dunes have a tilt angle close to the critical value and are in a state close to collapse.

And something similar could happen to the Higgs boson mass in the multiverse.

In much of the bubble universe, as in sand, two competing effects could put the Higgs mass near the critical value, close to the cosmic collapse of the Higgs field.

There is no end to my story, because I don't know the end of the story yet.

This is a work in progress science and more data is needed to solve the mystery. Hopefully the LHC will add new clues to this story soon.

We can learn a lot from just one number, the mass of the Higgs boson.

I started with the hypothesis that the known particles are all there is in the universe, beyond the realms explored so far.

From this, I discovered that the space-time permeating Higgs field could be standing on the edge of a knife, ready for cosmic collapse, and that this could be a hint that our universe is nothing more than a gigantic beach, a grain of sand in the multiverse.

But I'm not sure if my hypothesis is correct.

This is how physics works. A single measurement can open the door to new understandings of the universe, or lead us to a dead end.

But whatever the outcome, one thing I am sure of. It means that this journey will be full of surprises.

thank you.

(applause)

My work focuses on the connection between thinking of our community life as part of the environment in which architecture grows from local natural conditions and traditions.

As an example today, I introduced two recent projects.

Both projects will be in emerging countries, one in Ethiopia and one in Tunisia.

They also have in common that different analyzes from different perspectives become an important part of the final architectural work.

The first example started with an invitation to design a high-rise shopping mall in Addis Ababa, the capital of Ethiopia.

And this is the type of building that was shown to my team and me as an example of what we had to design.

My first thought was that I wanted to escape.

(Laughter) After seeing some of these buildings, I realized that there are a lot of them in the city, but these buildings have three very big points.

First, these buildings are mostly empty because they have very large stores and people cannot afford to buy things.

Second, it requires a lot of energy to play because the glass skin treatment generates heat internally and requires a lot of cooling.

This should not be the case in the city, which enjoys a very mild climate with temperatures of 20 to 25 degrees Celsius year-round.

And thirdly, their image has nothing to do with Africa or Ethiopia.

In a place with such rich culture and traditions, this is a shame.

Also, when we visited Ethiopia for the first time, I was really fascinated by the old Mercato. This mercato is this outdoor structure where thousands of people go every day to buy things from small merchants.

There are also ideas for public spaces that use the outdoors to create activities.

So I decided that what I really wanted to design was not a shopping mall, but this one.

But the question was, how could a high-rise modern building be built on these principles?

The next challenge was when we looked at the site, a really growing area of ​​the city where most of the buildings in the image weren't there.

And it's also between two parallel roads that aren't connected by hundreds of meters.

So the first thing we did was place all the building entrances to create a connection between these two streets.

And this continues to the sloping atrium, which creates an open-air space within the building, the shape of which protects you from the sun and rain.

And around this cavity, we arranged the idea of ​​a market with small shops that change from floor to floor depending on the shape of the cavity.

I also thought, how do you close the building?

And I really wanted to find a solution that could handle the local climate conditions.

And I started thinking about shell-like textiles made of perforated concrete that let in air and light, but in a filtered way.

And the inspiration came from the beautiful patterns of Ethiopian women's dresses.

It has fractal geometric properties, which helped shape the entire façade.

We build it using small prefabricated pieces that act as windows that bring air and light into the building in a controlled way.

And this is complemented by these small pieces of colored glass that utilize the light from inside the building to illuminate the building at night.

It wasn't easy to convince the developers about these ideas at first. Because they were like, "This is not a shopping mall. We don't want that."

But then we all realized that this marketplace idea just so happened to be much more profitable than the shopping mall idea, basically because there are more stores to sell.

The façade idea was also much cheaper compared to glass, not only because of the convenience of the material, but also because it eliminated the need for air conditioning.

So we saved the budget and used it to carry out the project.

And the first implementation was to figure out how to be energy self-sufficient in buildings in a city with almost daily power outages.

So we created a huge asset by installing solar power on the roof.

And under those panels, we thought of the roof as a new public space with gathering areas and bars that create this urban oasis.

And these porches in the roof collect water and reuse it for internal sanitary facilities.

Because by the beginning of next year, hopefully, we will already be living on the fifth floor of the building.

A second example is a master plan for 2,000 apartments and facilities in the city of Tunis.

And to do such a big project, the biggest project I have ever designed, I had to understand not only the city of Tunis, but also its environment, traditions and culture.

During that analysis, I paid particular attention to Medina. This 1,000-year-old structure was once walled off and opened by 12 different gates connected in a nearly straight line.

When I went to the site, the first design work we did was to extend the existing street and create 12 initial blocks similar in size and character to the courtyards found in Barcelona and other European cities.

I then selected some strategic points that reminded me of this gate idea and connected them with straight lines to modify this initial pattern.

And the final task was to think of cells, small cells in projects like apartments, as an important part of the master plan.

So I wondered what would be the best orientation for building an apartment in a Mediterranean climate.

The reason for the north-south orientation is that there is a temperature difference between the two sides of the house, creating natural ventilation.

So we layer the pattern so that most of the apartments face that direction completely.

And this is the result of combining a European bloc with an Arab city.

There is a block with a courtyard and all connections for pedestrians on the ground floor.

It also complies with local regulations requiring higher density on upper floors and lower density on ground floors.

And it also reinforces the idea of ​​this gate.

This volume has this connecting shape that shades three different types of apartments and brings light to the ground floor in a very dense area. The courtyard also houses various facilities such as a gym and a kindergarten, and a series of commercial [spaces] nearby bring the ground floor to life.

My favorite space in this project, the rooftop, is like giving back to the community the space taken away by construction.

And that's where all the neighbors go up to socialize and do activities like running two kilometers in the morning or jumping from one building to another.

These two examples have a common approach in the design process.

We also literally see cities growing in emerging countries.

In these cities, the impact of architecture on people's lives today and in the future will change communities and economies at the same speed as buildings grow.

For this reason, I believe it is even more important to focus on architecture that finds simple yet affordable solutions aimed at strengthening the relationship between communities and the environment and connecting people with nature.

thank you very much.

(applause)

Have you ever asked yourself why companies like Apple, Google, Facebook, really cool companies, innovative companies, creative new economy companies come from a particular country, the United States?

Whenever I say this, someone usually says "Spotify!"

That's Europe." But yeah.

It didn't have the impact that these other companies had.

Well, I'm an economist who really studies the relationship between innovation and economic growth at the corporate, industry and national level, working with policy makers all over the world, not only in the European Commission, but more recently in interesting places like China. You could say this question is on the tip of their tongue. "Where is Google in Europe?"

What is the secret behind Silicon Valley's growth model that they understand is different from this old economic growth model?

And what's interesting is that even though we live in the 21st century, we often end up with the idea of ​​the market versus the state.

This is told in a modern way, but somehow the secret behind a place like Silicon Valley is actually different kinds of market-forming mechanisms, private initiatives, whether it's about a dynamic venture capital sector that can actually provide these innovative companies with high-risk loans, or something called the Gazelle that traditional banks fear, or that allows these companies to bring these great inventions and products to market and actually get through this really scary era of Death Valley actually. It is about successful commercialization policies of various kinds. Instead, many companies fail.

But what really interests me is the language, the stories, the discourses, the images, the actual words that are used, especially in light of what is happening politically today and around the world.

So it is often said that the private sector is more innovative because it can think outside the box.

they are more dynamic.

Consider Steve Jobs' truly inspirational speech to Stanford graduates in 2005. So he said he had to stay innovative, he had to stay hungry, he had to stay stupid.

right? I mean, they're kind of hungry, stupid, and colorful, right?

And in places like Europe, maybe it's fairer, maybe we dress a little better and eat better than in America. But the problem is this damn public sector.

That's a little too big and doesn't really allow things like dynamic venture capital and commercialization to actually be as fruitful as possible.

And even in the really good newspapers, in the newspapers that I actually subscribe to, the words that are used there, you know, are nations like this Leviathan. right?

This monster with big tentacles.

In these editorials they state very clearly.

They say, "When there are various kinds of negative externalities such as the state, public goods and pollution, we need to fix these small market failures. But what will be the next big revolution after the Internet?"

We all want it to be green, or like nanotech, but for that to happen,' they say -- this was a special issue on the next industrial revolution -- they say, 'the nation just sticks to the basics, right?

Fund the infrastructure. Fund the school.

Funding even basic research is, in fact, generally perceived as a large public good that private companies are reluctant to invest in.

Leave the rest to the revolutionaries. ”

Colorful, unconventional thinkers.

They are often referred to as "garage tinkers" because, although some make it up, some actually did things in the garage.

So what I want to do with you in just 10 minutes is to take this juxtaposition seriously again. Because this actually has huge implications beyond innovation policy. Because it also happens to be an area I often discuss with policy makers.

This, of course, has a huge impact that outsourcing is on the rise because of this juxtaposition, even including this whole notion of where, when and why public spending and different types of public services should actually be cut.

right? So perhaps the reason we need free schools and charter schools is to make them more innovative without being burdened by national curricula and such.

Words like this appear all over the place, not just in innovation policy.

Think again, there is no reason to believe me. Think of some of the smartest innovations you might want to keep in your pocket and take out without powering it on. It's an iPhone.

Ask who really funded something really cool and revolutionary for the iPhone.

Basically, what makes your phone a smart phone instead of a stupid phone?

The Internet allows you to surf the web anywhere in the world. GPS: Know your location virtually anywhere in the world. The touchscreen display makes the phone very easy to use for everyone.

These are some very smart and revolutionary parts of the iPhone, and they're all government-funded.

And, importantly, the Internet was funded by DARPA (the United States Department of Defense).

GPS was funded by the military's Navstar program.

Siri was actually funded by DARPA as well.

Funding for the touchscreen display was provided by two public grants from the CIA and NSF to two public university researchers at the University of Delaware.

Now, you might think, "She just threw up the words 'defense' and 'military'," but what's really interesting is that this actually applies to any department, any department.

The pharmaceutical industry is personally very interesting to me because I've had the good fortune to really dig into it quite a bit, but it's nice to ask this question about the revolutionary and non-revolutionary parts. Because each drug can actually be classified according to whether it is truly revolutionary or evolutionary.

So a new molecular entity that is prioritized is a revolutionary new drug, but a slight variation of an existing drug (Viagra, different colors, different doses) is less revolutionary.

And it turns out that 75 percent of the new molecular entities that are prioritized are actually funded by boring Kafkaish public sector labs.

This doesn't mean big pharma isn't investing in innovation.

I will. They spend money on the marketing part.

They spend on the D part of R&D.

They spend huge amounts of money repurchasing their own shares and this is very problematic.

In fact, companies like Pfizer and Amgen spend more money these days on stock buybacks to boost their stock prices than on R&D, but that's a whole different TED talk, and one day I'd love to talk about it.

Now, what's interesting about all of this is that in all these instances the state was doing more than just fixing market failures.

It was really shaping and creating the market.

It funded not only basic research, which is also a typical public good, but also applied research.

No way, even being a venture capitalist was the same.

Therefore, these SBIR and SDTR programs, which provide early-stage funding to SMEs, are not only very important compared to private venture capital, but are becoming increasingly important.

why? Because, as many of us know, V.C. is actually pretty short-lived.

They want profits in 3-5 years.

Innovation takes much longer than that, 15 to 20 years.

So this whole concept -- so that's the point, right?

Who is actually funding the hard work?

Of course, it's not just states.

The private sector is doing many things.

But the narrative we've always been told is that the state, while fundamentally important, doesn't really serve up such high-risk, revolutionary ideas straight out of the box.

In all these areas, from internet funding to spending, the investment conception and strategic vision was also really happening in the state.

The nanotechnology sector is very interesting to study this as the word nanotechnology itself originated within the government.

And this has big implications.

First of all, of course I'm not a market-versus-state outdated person.

We all know that what we really need in dynamic capitalism is public-private partnerships.

But the point is, I think, by constantly painting the state part as necessary, which is actually kind of a bit boring and often a bit dangerous Leviathan, we've really hindered the possibility of building these public-private partnerships in a really dynamic way.

Even the “P” part of public-private partnerships, the term we often use to justify the public part, is in terms of risk mitigation. Well, both are P.

What the public sector has done in all these examples I just gave is more than just mitigating risk, there is much more that I and my colleagues have explored.

I'm taking that kind of risk. bring it on.

In fact, this is an out-of-the-box thinking.

But I'm sure you've also worked in local government, regional government, and central government, and you're probably thinking, "I've met that Kafka-esque bureaucrat."

The juxtaposition of that whole is something of a kind.

Well, there are self-fulfilling prophecies.

Talking about the state as irrelevant and boring can actually create such an organization.

So really what we have to do is build these entrepreneurial national institutions.

DARPA, which funded the Internet and Siri, really thought hard about how to welcome failure because it's going to fail.

Innovative things fail.

1 out of 10 experiments will succeed.

And VC. People know this and can actually fund the losses of others with the success of that one.

And this, in fact, probably makes the most sense to me. And this has big implications beyond innovation.

If the state was actually a market maker, not just a market adjuster, and in doing so had to bear this enormous risk, what would the payoff be?

As anyone who has taken a finance course knows, the first thing they teach is something like the relationship between risk and reward. So some people are stupid enough or smart enough to actually invest in stocks if they have time to wait. Because stocks are riskier and offer greater rewards over time than bonds, the whole risk/reward relationship.

So what's the payoff for a nation stupid enough to take on these gigantic risks and actually do the internet?

The internet was crazy.

It really was. In other words, the probability of failure was very high.

You had to be completely insane to do that, but luckily they were.

Now, we don't even get to this question of reward without actually portraying the state as this risk taker.

And the problem is that economists often think the state pays off. It's a tax.

As you know, businesses pay taxes, and the jobs they create generate growth, and those people with increased income from those jobs will come back to the state through the tax system.

Unfortunately that is not true.

Well, that's not true. This is because most of the jobs that are created go abroad.

Globalization, that's all. We must not become nationalistic.

Perhaps let the work go where it has to go.

So you can take a stand on it.

However, these companies also really benefit greatly from the state. Apple is a great example.

They also got their first funding. Not the first, but half a million dollars actually went to Apple through this SBIC program, which predates the SBIR program. Also, as I said before, we have all the technology behind the iPhone.

But we know that, like many other businesses, they pay very little tax, legally.

So what we really need to rethink is, shouldn't there be a much more direct revenue-generating mechanism than taxes? why not?

It could possibly happen through equities.

By the way, the countries that are really thinking about this strategically, like Finland in Scandinavia, but also China and Brazil are holding capital for these investments.

Sitra funded Nokia, kept its stake, and made a lot of money. It is the Finnish public funding agency that funded Nokia's next round.

The Brazilian Development Bank is currently providing huge amounts of funding for cleantech, having just announced a $56 billion program for the future in this regard, and is holding capital for these investments.

To put it provocatively, if the U.S. government had thought about this and perhaps revived what is called the Innovation Fund, if even a meager 0.05 percent of the profits generated by the Internet had gone back into that innovation fund, there is no doubt that there would be much more money available for green technology today.

Instead, much of the national budget that theoretically tries to do so is constrained.

But perhaps more importantly, we've heard about 1 percent and 99 percent before.

Because if the state, as one of the key players in the value creation mechanism, can be thought of in a more strategic way, then that's what we're talking about, right?

Who are the different actors in value creation in the economy? And is the role of the state neglected as if it were a backseat subject?

If we can actually get something out of having a broader theory of value creation and actually acknowledging what the state has been doing, that could be in the next round, and I'm all hopeful that the next big revolution will actually be green, that the growth phase will be smart and innovation driven, not just green, but more inclusive, and that public schools in places like Silicon Valley can actually benefit from that growth, just as public schools can really benefit from that growth.

thank you.

(applause)

I was in New York during Hurricane Sandy and this little white dog named Maui was with me.

Half of the city was black because of the power outage, and I was living in the dark.

Well Maui was scared of the dark so I had to take him up the stairs for a walk, actually down the stairs first and then bring him up.

I used to carry gallons of water up to the 7th floor every day.

During all this I had to hold a flashlight between my teeth.

Nearby stores were out of flashlights, batteries and bread.

I walked 40 blocks to the gym branch to take a shower.

However, these were not the main concerns of my day.

It was equally important to me to be the first person to enter a nearby cafe with extension cords and chargers for using multiple devices.

I started looking for plug points under bakery benches and pastry shop entrances.

I wasn't the only one.

Even in the rain, people stood under umbrellas between Madison and Fifth Avenue, charging their phones from street outlets.

Nature had just reminded us that nature is more powerful than any of our technology, yet we here were obsessed with being wired.

I don't think there is anything more important than a crisis to communicate what really matters and what doesn't. Thanks to Sandy, we know that devices and their connectivity are important to us in close proximity to food and housing.

I believe that the self we once knew no longer exists and that the abstract digital universe has become part of our identity. I would like to talk about what I think that means.

I'm a novelist, but I'm interested in self because self and fiction have a lot in common.

Both are stories and interpretations.

You and I can experience things without stories.

Running up the stairs too quickly can leave you out of breath.

But the larger, more abstract sense we have of our lives is indirect.

Our life stories are based on direct experience, but dramatized.

Scene by scene is needed to build a novel, and our life stories need arcs as well.

It will take months and years.

The individual moments of our lives are the chapters.

But this story is not about those chapters.

It's the whole book.

It's not just about heartbreak and happiness, triumphs and disappointments. It is because of them, and sometimes more importantly, in spite of them, that we find our place in the world, change it, change ourselves.

Therefore, our story needs two dimensions of time. That is, the long arc of time that is our lifespan and the time frame of immediate experience that is the moment.

Now, the directly experiencing self can only exist in the moment, but the speaking self needs a series of moments. That is why our full sense of self requires both an immersive experience and the flow of time.

Now, the flow of time is embedded in everything, from the erosion of a grain of sand to the budding of a small rosebud.

Without it, we wouldn't have music.

Our own emotions and mental states often encode time, regrets and nostalgia about the past, and hopes and fears about the future.

I think technology has changed the flow of time.

The overall amount of time we can spend on a story, or lifespan, is increasing, but the smallest measure, the moment, is decreasing.

It has shrunk partly because our equipment allows us to have smaller and smaller units of time, which in turn allows us to understand the physical world in greater detail, and this detailed understanding generates vast amounts of data that our brains can no longer comprehend, which requires increasingly complex computers.

All of this suggests that the gap between what we can perceive and what we can measure continues to widen.

Science can do things in picoseconds, but you and I will never have an inner experience of a millionth of a second.

Both you and I respond only to the rhythms and currents of nature, the sun, the moon and the seasons. That's why we need the long stretches of past, present, and future to separate the signal from the noise, and the self from the sensations, in order to see things as they really are.

We need the arrow of time to understand the cause and effect of our own intentions and motives, not just the material world.

What happens when the arrow misses?

What happens when time warps?

Today, so many of us have the feeling that the arrow of time is pointing anywhere and at the same time nowhere.

This is because time does not flow in the digital world the way it does in the natural world.

We all know that the Internet has reduced not only time but also space.

That far away place is now here.

Whether you are in New York or New Delhi, news from India will flow through your smartphone app.

That's not all.

Your last job, last year's dinner reservation, your former friend lies flat with today's friend. The Internet also archives and distorts the past.

With no distinction between past, present, future, here or there, we will call this moment, this moment everywhere, the Digital Now.

How do you prioritize in the digital landscape?

This digital now is not the present. Always a few seconds ahead of us with already trending Twitter streams and news from other time zones.

It's not about that moment in your leg that hurts, or the moment you nibbled at a pastry, or the three hours you were engrossed in reading a great book.

This currently has little to do with our own condition, physically or psychologically.

Instead, it focuses on distracting us at every turn of the road.

Every digital landmark is an invitation to leave what you are doing and go somewhere else and do something else.

Have you read the author's interview?

Why don't you buy his book? Tweet me. share it.

nice. Find more books like him.

Find other people reading those books.

Traveling can be liberating, but when it's constant, it can make us a restless perpetual exile.

Choice is free, but not if it is always for its own sake.

Not only is digital far from the present, it is in direct competition with digital. It's because not only am I moving away from digital, but you are moving away from digital too.

Not only are we not participating, but so are others.

And there lies its greatest convenience and fear.

Order a foreign language book in the middle of the night, buy Parisian macaroons, or leave a video message to receive later.

I can always act at a different rhythm and pace than you, all the while maintaining the illusion that I am connected to you in real time.

Sandy reminded us of how such illusions can be shattered.

Some had power and water, some didn't.

Some have returned to their normal lives, while others are still living as evacuees after months.

Somehow technology seems to perpetuate the illusion that everyone does, to those who have it, but like an ironic slap in the face, it makes it a reality.

For example, it is said that more people in India can use mobile phones than toilets.

There is already a huge chasm in many parts of the world between the lack of infrastructure and the proliferation of technology, and if this chasm is not somehow bridged, there will be a chasm between the digital and the real.

For those of us who live digitally today and spend most of our waking moments digitally, the challenge for us as individuals is to live in two parallel, near-simultaneous streams of time.

How do people survive in distractions?

You might think that people younger than us, born into this environment, are more naturally adapted.

It probably reminds me of my childhood.

I remember my grandfather reviewing the capitals of the world with me.

Buda and Pest were separated by the Danube, and Vienna had a Spanish riding school.

If I were a kid today, I could easily learn this information with apps and hyperlinks, but it really wasn't the same. Much later, when I went to Vienna and attended a riding school in Spain, I could feel my grandfather by my side.

Each night he would shoulder me out onto the terrace and point me to Jupiter, Saturn, and Ursa Major.

And here, too, looking at the big bear brings back that feeling of childhood hanging over his head and trying to balance on his shoulders.

What I exchanged with my grandfather was wrapped in information, knowledge and facts, but it was much more than information, knowledge and facts.

Time warp technology challenges our deepest core. Because even though the present moment becomes more and more unmemorable, we can archive the past, making it harder to forget parts of it.

We want to hold onto, but instead remain held onto a series of still moments.

It's like a soap bubble that disappears when touched.

If you archive everything, you think you can save it, but time is not data.

It cannot be stored.

You and I know exactly what it means to be truly present in this moment.

It may have happened while we were playing an instrument or staring into the eyes of someone we knew for a long time.

In such moments our self is perfected.

The self who lives in the long story and the one who experiences the moment become one.

The present contains promises for the past and the future.

The present is added to the flow of time before and after.

The first time I experienced these feelings was with my grandmother.

I wanted to learn to skip, but she found an old rope, hoisted the sari up, and jumped over it.

I wanted to learn to cook, but she had me standing in the kitchen for a month chopping, dicing, and chopping.

My grandmother taught me that things happen over time, that time is irresistible, and that time passes, so we owe it all to the present moment.

Attention is time.

One of my yoga instructors said, "Love is attention," and no doubt my grandmother told me that love and attention are the same thing.

The digital world cannibalizes time, but in doing so, I would say that it is our own integrity that it threatens.

It threatens the flow of love.

But you don't have to allow it.

You can also choose other methods.

We've seen time and again how creative technology can be. We can choose solutions, innovations and moments in our lives and actions that restore rather than fragment the flow of time.

We can slow down and tune in to the ebb and flow of time.

We can choose to turn back time.

thank you.

(applause)

Three years ago I was standing about 100 yards from Chernobyl Reactor 4.

The Geiger counter dosimeter, which measures radiation, went out of control, and the closer it got, the more frantic it became, half-crazed. my god.

As you can see from the expression on my face, I reluctantly went to cover the 25th anniversary of the world's worst nuclear accident, and there was a good reason for that. A nuclear fire that lasted for 11 days in 1986 released 400 times more radiation than the atomic bomb dropped on Hiroshima, and the sarcophagus covering Reactor 4, hastily constructed 27 years ago, is now cracked, rusted and leaking radiation.

That's why I was shooting.

I just wanted to finish my work and leave as soon as possible.

But when I looked in the distance, I could see smoke coming out of the farmhouse, and I wondered who the hell lived here.

So, after all, Chernobyl's soil, water and air are among the most highly polluted on earth, its reactors sit at the heart of a highly regulated exclusion zone or dead zone, and it is a nuclear police state complete with border guards.

You have to hold a dosimeter at all times and click and release, you need a government watchman, there are strict radiation controls and continuous contamination monitoring.

Importantly, humans should not live near dead zones.

But they are.

An unlikely community of approximately 200 people was found to live within the zone.

They are called self-settlers.

And almost all of them are women, with men having shorter lifespans, if not radiation, but partly due to excessive alcohol and tobacco consumption.

Hundreds of thousands of people were evacuated at the time of the accident, but not everyone accepted their fate.

The women in the area, now in their 70s and 80s, are the last survivors of a group that defied authorities and perhaps common sense and returned to their ancestral homes in the area.

They did so illegally.

A woman said to a soldier who tried to take refuge for the second time, "Shoot me and dig a grave.

Otherwise go home. ”

Now, why would they return to such dangerous soil?

So were they unaware of the risks, were they crazy enough to ignore them, or both?

The problem is that they see their lives and the risks they take distinctly differently.

Chernobyl is now dotted with eerily quiet, strangely charming, idyllic, and thoroughly polluted haunted villages.

Many were bulldozed down at the time of the accident, but some are left like this, a quiet vestige of the tragedy.

There are several inhabitants living inside, and sometimes one or two 'babushka' or 'babas', which means grandmother in Russian and Ukrainian.

Another village may have six or seven inhabitants.

So this is a strange demographic of this zone, all together in isolation.

And when I turned to the plumbing chimney that I saw in the distance, I saw Hannah Zavorotnya and met her.

She is the self-proclaimed mayor of Kapavati Village, population 8.

(Laughter.) And when I asked the obvious, she said, "Radiation doesn't scare me. Hunger does."

And remember, these women have survived some of the worst atrocities of the 20th century.

Millions of Ukrainians were murdered in Stalin-enforced Holodomor famines in the 1930s, and confronted the Nazis in the 40s, slashing, burning and raping them. In fact, many of these women were sent to Germany as forced labor.

So when Chernobyl happened decades into Soviet rule, they were unwilling to flee in the face of an invisible enemy.

There they return to their villages, where they are told that they will soon fall ill and die, but their logic says that five happy years are much better than 10 years locked up in a high-rise outside Kiev where you can hear the whispering of stork feathers on spring afternoons, separated from the graves of mothers and fathers and babies.

For them, environmental pollution may not be the worst kind of destruction.

It turns out that this also applies to other species.

Wild boars, lynx, elk, they are all returning to the region en masse, and the very real and very negative effects of radiation trump the good news of a mass exodus of humans.

It turns out that the dead zone is teeming with life.

And there is a certain heroic resilience, a certain palpable realism in those who start their day at 5 am.

He pumps water from the well, and when he's finished pumping it at midnight, he's ready to hit the bucket with a stick, scare away any wild boars that might ravage his potatoes, and just take a sip of his homemade moonshine vodka.

And there is a patina of simple defiance in them.

"They said our feet would hurt, and they do. So what?"

I mean, what about their health?

While benefiting from a hardy, physical life, the environment is toxic by a complex and little-understood enemy: radiation.

It's incredibly hard to parse.

Health surveys in the region are inconsistent and problematic.

The World Health Organization estimates that Chernobyl-related deaths will eventually reach 4,000.

Greenpeace and other groups estimate the number to be in the tens of thousands.

Everyone now agrees that the incidence of thyroid cancer is very high, and that Chernobyl evacuees suffer from migrant trauma everywhere: high levels of anxiety, depression, alcoholism, unemployment and, importantly, the collapse of social networks.

Now, like many of you, I've moved probably 20-25 times in my life.

A home is a temporary concept.

I have a deeper connection with my laptop than any dirt.

So, it's hard for us to understand, but for the rural grandmother, home is the whole universe, and the connection to the land is clear.

And perhaps because these Ukrainian women were educated under the USSR and are familiar with Russian poets, maxims about these ideas constantly spill out of their mouths.

"If you leave, you will die."

"For those who left, the situation is now even worse.

They die of grief. ”

"A motherland is a motherland. I will never leave."

What sounds like faith, soft faith, may actually be true. Because the astonishing truth is – there is no research. But the truth is that these women, who have returned home and lived in some of the most radioactive lands on earth for the past 27 years, appear to have actually lived longer than those who accepted the emigration, with some estimates up to 10 years.

how can i do this?

Here's a theory. Could it be that ties to ancestral soil, the soft variables reflected in their maxims, actually influence longevity?

Homeland power, so fundamental to that part of the world, seems like a mitigating one.

Homes and communities are as powerful as radiation.

Radioactive or not, these women are nearing the end of their lives.

Within the next decade, this zone will be devoid of human inhabitants and revert to wild radioactive sites with only animals and sometimes bold and dismayed scientists.

But the spirit and presence of Babushka, halved in number in the three years I have known them, will leave us with a powerful new template for thinking about and working with the relative nature of risk, the transformative connection to home, and the grand tonic of individual agency and self-determination.

thank you.

(applause)

When I was about ten years old, my father and I were on a camping trip in the Adirondack Mountains, a wilderness area in upstate New York.

It was a very nice day.

The forest was sparkling.

The sun made the leaves shine like stained glass, and if it weren't for the path we're following, we could act like we were the first humans to walk the land.

We arrived at the campsite.

It was while I was leaning over a cliff overlooking a beautiful, crystal clear lake that I discovered my horror.

Behind the ramp was a dump, perhaps 40 feet square, filled with rotten apple cores, tumbled aluminum foil, and dead sneakers.

And I was surprised, very angry and deeply confused.

Campers who are troublesome to take out what they brought in, who would have thought they would clean up after themselves?

That question has stuck with me and has been simplified a bit.

who will clean up after us?

No matter how it is configured or where it is located, who will clean up for us in Istanbul?

Who will clean up after us in Rio, Paris, or London?

Here in New York, the Sanitation Department is cleaning up after us, producing 11,000 tons of trash and 2,000 tons of recyclables every day.

I wanted to know them as individuals.

I wanted to understand who was taking the job.

What is it like to wear a uniform and carry that burden?

So I started a research project with them.

I learned a lot by riding trucks, walking routes, and interviewing people in offices and facilities around town, but I was still an outsider.

I had to go deeper.

So I got a job as a cleaner.

It's not just about being on the track now. I drove a truck

And I operated a mechanical broom and shoveled the snow.

It was an amazing privilege and a great education.

Everyone asks about the smell.

It exists, but it's not as prevalent as you might think, and even on really bad days, you get used to it quickly.

It takes time to get used to the weight.

I knew people who had been in this job for years and whose bodies were still used to the burden of putting tons of trash on them each week.

Then there are dangers.

Sanitation work is one of the top 10 most dangerous occupations in the country, according to the Bureau of Labor Statistics, and now we know why.

There are cars coming and going all day long, cars rolling around you.

Drivers often don't pay attention because they're just trying to pass you.

That's really bad for workers.

And the trash itself is fraught with danger, often flying off the track and causing terrible harm.

I also learned about the relentlessness of trash.

When you step off the curb and look out over the city from the back of your truck, you realize that trash is a force of nature unto itself.

it never stops.

It's also kind of like breathing and circulation.

must be in constant motion.

And then there's the stigma.

Wearing a uniform makes you invisible until someone gets mad at you for some reason, like blocking traffic in a truck, resting near your house, or having coffee at a diner. Then they will come and say they despise you and don't want you anywhere near.

I find this stigma particularly ironic. Because I strongly believe that sanitation workers are the most important workforce on the streets of the city. There are three reasons.

They are public health's first guardians.

Without efficient and effective garbage collection on a daily basis, garbage overflows containment and the dangers inherent in garbage threaten us in a very real way.

Diseases that we have been guarding against for decades and centuries begin to reappear and start harming us.

the economy needs them.

If we can't throw away the old, there will be no room for the new, and the economy's engine will start to shut down when consumption is undermined.

I'm not defending capitalism, I'm just pointing out its relationship.

And then there's what I call average and necessary everyday speed.

All I'm saying here is how fast we are used to moving these days.

We generally don't tend, fix, clean, or carry around coffee cups, shopping bags, and water bottles.

We use them, throw them away, and forget them because we know there is a workforce out there who wants to take them all.

So today I would like to propose some ways to think about sanitation that will help rectify this prejudice and engage people in this debate on how to build sustainable and humane cities.

I think their work is kind of liturgical.

They are out on the streets rhythmically every day.

They wear uniforms in many cities.

I know when they happen.

And thanks to them we are able to work.

They are almost a form of reassurance.

The current they maintain protects us from ourselves, our wreckage and discarded things. That flow must always be maintained no matter what.

The day after September 11, 2001, I heard the roar of garbage trucks on the street, so I ran downstairs with my young son in my arms and saw a man who was recycling paper every Wednesday.

And I tried to thank him for working all day, but I started crying.

And he looked at me and just nodded and said:

we're fine ”

Some time after I started studying hygiene, I met the man again.

His name is Paulie and we have worked together a number of times and have become good friends.

I want to believe that Pauly was right.

fine.

But any effort to reframe how we exist on this planet as a species must take into account all costs, including the actual human cost of labor.

We will also reach out to the people involved in the work and get enough information to get their expertise on how to think about sustainability and how to build systems. It will take us from the 40 years of spectacularly successful recycling on the road in the United States and countries around the world, and lift us to a broader perspective looking at other forms of waste that can be reduced from manufacturing and industrial sources.

Municipal waste, which we think of when we think of garbage, accounts for 3% of the country's waste stream.

A statistic worth noting.

So next time in the flow of your day, in the flow of your life, you see someone whose job is to clean up after you, take a moment to acknowledge that person.

Please take a moment to express your gratitude.

(applause)

In December 2010, the town of Apatzingan, in the coastal state of Michoacan, Mexico, was awakened by the sound of gunfire.

For the second day in a row, the city turned into a savage battlefield between federal forces and a well-organized group, possibly from the local criminal gang "La Familia Michoacan" or from the Michoacán family.

Citizens experienced a true battlefield-like situation, with not only constant gunfire, but also explosions throughout the city and burning trucks used as barricades.

Two days later, during a particularly fierce battle, the leader of La Familia Michoacana, Nazario Moreno, was presumed killed.

In response to this horrific violence, Mayor Apatzingan decided to call on citizens to march for peace.

The idea was to call for a more flexible approach to criminal activity within the state.

And on the day of the scheduled procession, thousands of people gathered.

As the mayor was preparing his opening speech, he realized that while half the participants were dressed in appropriate white and were carrying banners calling for peace, the other half were actually marching in support of a criminal organization and its now-defunct leader.

The shocked mayor decided to step aside rather than join or lead the procession ostensibly supporting organized crime.

So his team stepped aside.

The two marches merged and continued toward the capital.

The story of this horrific violence and the subsequent fumbling approach of the federal and local governments to involve civil society, which is heavily linked to criminal gangs, is a perfect metaphor for what is happening in Mexico today. There we find that our current understanding of drug violence and what it leads to is perhaps at least incomplete.

For example, if you decide to spend half an hour trying to understand what is going on with Mexico's drug violence, just by looking online, the first thing you will find is that the law states that all Mexicans are equal, but some are more equal than others, and some are not. Because we can quickly see that between 60,000 and 100,000 people have died in drug-related violence in the last six years.

To put these numbers into perspective, this is eight times the number of casualties in the wars in Iraq and Afghanistan combined.

It's also surprisingly close to the number of people who died in the ongoing Syrian civil war.

This is happening just south of the border.

But as you read it now, you'll be amazed at how quickly the number of dead will go numb. Because it turns out that these are abstract figures of the dead, faceless and nameless.

Implicitly or explicitly, there is a story that all dying people were involved in some form of the drug trade, and it is speculated that this is because they were either tortured or executed in a professional manner, or perhaps both.

And by the way they died, they were clearly criminals.

And narratively, somehow, these people got what they deserved.

They were one of the bad guys.

And it creates some form of comfort for many.

But it's easy to think that we, the citizens, the police and the military, are the good guys and they, the drug cartels and the cartels, are the bad guys, but when you think about it, the latter are just servicing the former.

Like it or not, the United States is the world's largest market for illicit drugs, accounting for more than half of global demand.

It shares a border with Mexico for thousands of miles, which is the only access route from the south, so Mexico's former dictator Porfirio Diaz used to say, "Poor Mexico, so far from God, so close to America."

The United Nations estimates that there are 55 million people who use illegal drugs in the United States.

Using very conservative assumptions, we find that the annual retail pharmaceutical market is between $30 billion and $150 billion.

Assuming that drugs only have access to the wholesale portion, which we know is wrong, still leaves us with $15 billion to $60 billion in annual revenue.

To put these numbers into perspective, Microsoft's annual revenue is $60 billion.

And it just so happens that this is a product that, by its very nature, the business model that caters to this market needs to assure the producer that the product will reach the market where it will be consumed.

And since this is illegal, the only way to do this is to have absolute control over the geographic corridors used to transport drugs.

That is why violence is born.

If we look at the map of cartel influence and violence, we can see that it almost perfectly matches the most efficient transportation route from South to North.

All the cartels are doing is trying to protect their business.

This is not only a multi-billion dollar market, it is also complex.

For example, the coca tree is a fragile plant that can only grow at certain latitudes. Therefore, a business model to serve this market requires decentralized international production. It also requires good quality control. Because people need enough non-lethal uplifting and it will be delivered when they need it.

This means we need to ensure production and quality control in the south, and we need to ensure efficient and effective distribution channels in the markets where these medicines are consumed.

I don't want to get into trouble, so just a little please. Ask around how difficult it is to get the medicines you want anywhere, anytime, anywhere in America. You might be surprised to learn that many retailers offer a service that guarantees delivery of medicine within 30 minutes of sending a text message.

Let's think about this for a moment.

Consider the complexity of the distribution network discussed earlier.

It's very hard to reconcile this with the image of faceless ignorant thugs just shooting each other.

Now, as a business professor, and as any business professor will tell you, an effective organization needs an integrated strategy that includes good organizational structure, good incentives, a strong identity, and good brand management.

This brings us to the second thing we learn in our 30-minute exploration of Mexico's drug violence.

Because you'll quickly notice that there are three organizations that are always mentioned in the article, and you'll probably be confused by that fact.

We would like to hear about the Templar Los Zetas, the new brand of Familia Michoacana that I mentioned at the beginning, and the Sinaloa Federation.

Los Zetas, an anti-social group that terrorizes the cities they enter and silences the press, will read to some extent true, or almost true.

But this is the result of very careful branding and business strategy.

As you know, Los Zetas weren't just this random bunch of individuals, they were actually founded by another criminal organization, the Gulf Cartel, that controlled Mexico's Eastern Corridor.

When that corridor was contested, they decided they wanted to hire a professional enforcement department.

So they recruited the entire elite paratroopers of the Mexican Army, Los Zetas.

They were so competent as enforcers of the Gulf Cartel that at some point they decided to take over the operation. That's why tigers grow up and should never be kept as pets.

Because the Zetas organization was founded on treason, it lost some of its ties to production and distribution in the most profitable markets like cocaine, but what they did have, again based on their military origins, was a fully structured chain of command with very clear hierarchies and very clear career paths that allowed them to oversee and operate very effectively across so many markets, and this is the essence of what the chain of command is about.

And because they didn't have access to the more profitable drug market, this drove them in and gave them the opportunity to diversify into other forms of crime.

It includes kidnapping, prostitution, local drug dealing, and human trafficking, including immigration from the South to the United States.

So what they are running now is quite literally a franchise business.

They have focused most of their recruitment into the military, openly promoting better salaries, better benefits, better career paths, and not to mention better food than what the military can offer.

Their method of operation is that when they arrive in an area, they let people know they are there, go to the most powerful local gang, and say, "I offer to be the Zeta brand's regional representative."

I don't want to know what happens if they agree and if they don't, but in exchange for a rental fee, they train and oversee how to run the most efficient criminal operations in that town.

This kind of business model obviously relies entirely on having a highly effective brand of terror, so Los Zetas deliberately staging an act of violence that is inherently spectacular, especially if it's the first to arrive in the city, but again, it's just branding strategy.

I'm not saying they aren't violent, but what I'm saying is that even if you read that they're the most violent of all, if you count them, if you count the bodies, they're really all the same.

In contrast to them, the Templars established in Michoacan emerged in response to the Zeta invasion of Michoacan.

Michoacan is a geographically strategic state. This is because Michoacán has Mexico's largest port and has a direct sea route to central Mexico, from where it has direct access to the United States.

The Templars quickly realized that they could not counter the Zetas with violence alone and developed their strategy as a social enterprise.

They claim to represent and protect Michoacán residents from organized crime.

Their social enterprise brand means they require a lot of public involvement, so they invest heavily in combating domestic violence, tracking petty offenders, treating addicts, providing community services like keeping drugs out of local markets, and of course protecting people from other criminal gangs.

Now they are killing a lot of people too, but when they kill them they very carefully provide stories and explanations as to why they did what they did, through newspaper inserts, YouTube videos, billboards, etc., explaining that those killed were killed not as an organization but of course because they were a threat to us citizens.

So we are actually here to protect you.

Like social enterprises, they have created and promoted moral and ethical codes and employ very strict recruitment practices.

And here are the kinds of explanations they offer for some of their actions.

In fact, they retain access to the lucrative drug trade, but the way they do it is because they control all of Michoacan and they control the port of Lázaro Cardenas, using it to trade, for example, Michoacan copper that is legally manufactured and legally extracted using illegal ephedrine from China, a key precursor to the methamphetamine they produce, and then partnering with large organizations like the Sinaloa Federation to bring their products to the domestic market. I'm putting usa

Finally, there is the Sinaloa Federation.

When you read about them, you often read them with respect and admiration. Because they are the most integrated and largest of all the organizations in Mexico and, as many claim, of the world.

They started out as something of a shipping organization that specialized in smuggling between the United States.

But now it has grown into a truly integrated multinational with partnerships in production in the South and partnerships in global distribution around the globe.

They have cultivated a brand of professionalism, business acumen and innovation.

They designed new drugs and new pharmaceutical processes.

They designed drug tunnels across the border, but you can tell these aren't the "Shawshank Redemption" type.

They have invented drug submarines and boats that are invisible to radar.

They invented things like drones and catapults to transport drugs.

One of the leaders of the Sinaloa Federation actually made it onto the Forbes list.

[#701 Joaquín Guzman Loera] Like other multinational corporations, they have focused exclusively on the most profitable parts of their business: high-margin drugs such as cocaine, heroin and methamphetamine.

They manage their business through family ties, as traditional Latin American multinationals do.

When entering a new market, send a family member to oversee it, or when partnering with a new organization, establish family ties through marriage or other types of ties.

Like other multinationals, they protect their brands by outsourcing the more questionable parts of their business model. For example, if they have to do violence against other criminal organizations, they hire gangs and other small organizations to do the dirty work, separate their activities from violence, and try to be very careful about this.

To further strengthen their brand, they actually have a professional PR firm that determines how the press talks about them.

We have a professional videographer on staff.

They have an incredibly productive relationship with the security services on both sides of the border.

So, differences aside, what these three organizations share is, on the one hand, a very clear understanding that institutions are not imposed from above, but rather are built bottom-up, interacting one at a time.

They have created a very coherent structure that they use to show the government's policy contradictions.

There are three things I want you to remember from this talk.

The first is that drug violence is actually the result of a huge market demand and an institutional setting that requires violence to guarantee delivery routes to service this market.

The second thing to remember is that these are sophisticated and consistent organizations that are business organizations, and analyzing them and treating them as such is probably a much more useful approach.

Third, remember that even though we are accustomed to thinking of “them”, a set of bad guys cut off from us, in reality we are their accomplices either through our direct consumption or by embracing the contradiction between prohibitive policies and actual permissive behavior and even encouragement of consumption.

Because these organizations serve, recruit, and operate within communities, they are inevitably much more integrated within them than we realize.

So for me the question is not whether these dynamics will continue.

It turns out that the nature of this phenomenon warrants them to do so.

The question is whether we are willing to continue to support a failed strategy based on stubborn blissfully spontaneous ignorance at the cost of thousands of young deaths.

thank you.

(applause)

I am a neuroscientist with a background in both physics and medicine.

My lab at the Swiss Federal Institute of Technology focuses on spinal cord injuries. Spinal cord injuries affect more than 50,000 people worldwide each year and have a dramatic impact on those affected, literally ruining their lives in seconds.

And for me, the man who has most raised my awareness of the pain of spinal cord injuries is Christopher Reeve, the Man of Steel.

Thus began my own journey in this area of ​​research in collaboration with the Christopher & Dana Reeve Foundation.

I still remember this defining moment.

It had just ended a normal day of work at the Foundation.

Chris said to us scientists and experts: "We have to be more realistic.

When you leave the lab tomorrow, stop by the rehab center to see injured people struggling to take a step forward as they struggle to maintain their core.

And when you get home, think about what you'd change in your studies the next day to make their lives better. ”

These words stuck in my mind.

This was over a decade ago, and since then my lab has taken a hands-on approach to spinal cord injury recovery.

And my first step in this direction was to develop a new model of spinal cord injury that more closely mimics some of the key features of human injury while providing well-controlled experimental conditions.

For this purpose, two half-sections were placed on opposite sides of the body.

They completely cut off communication between the brain and spinal cord, resulting in complete and permanent paralysis of the legs.

However, as has been observed, recovery occurs mediated by intact nerve tissue after most injuries in humans.

But how do we make it happen?

The classical approach consists of applying interventions that promote growth of cleaved fibers to their original target.

I know this is the key to therapy, but it seemed very complicated to me.

It was clear that we needed to think about the problem differently in order to achieve clinical results quickly.

More than 100 years of research into spinal cord physiology, beginning with Nobel laureate Sherington, has shown that the most undamaged part of the spinal cord contains all the necessary and sufficient neural networks to coordinate movement, but is cut off from input from the brain, leaving it in a kind of non-functional state of dormancy.

My idea: we wake up this network.

At the time, I was a postdoctoral fellow in Los Angeles after completing my PhD. Independent thinking is not always encouraged in France.

(Laughs) I was scared to talk to my new boss, but I mustered up the courage to do so.

I knocked on my wonderful advisor Reggie Edgerton's door to share a new idea.

He listened to me carefully and answered me with a smile.

"Would you like to try it?"

And I promise, this was a very important moment in my career when I realized that great leaders believe in young people and new ideas.

And this was the idea. I use a simplified metaphor to explain this complex concept.

Imagine your motion system as a car.

Its engine is the spinal cord.

Transmission is interrupted. Engine is stopped.

How can I restart the engine?

First, we need to provide fuel. Then step on the accelerator pedal. Third, steer the car.

It turns out that there are known neural pathways from the brain that perform just this function during locomotion.

My idea is to replace this missing input and provide the spinal cord with interventions like the brain naturally does for walking.

To this end, I draw on the last 20 years of research in neuroscience. First, they replaced the missing fuel with a drug that primed neurons in the spinal cord to fire, then used electrical stimulation to mimic an accelerator pedal.

So now imagine an electrode implanted behind the spinal cord to provide painless stimulation.

It took many years, but they eventually developed an electrochemical neuroprosthesis that transformed the neural network in the spinal cord from a resting state to a highly functional state.

A paralyzed rat can quickly stand up.

As soon as the treadmill belt starts moving, the animal shows coordinated leg movements, but no brain.

This is where what I call the “spinal brain” cognitively processes the sensory information coming from the moving leg and determines how to activate the muscles to stand, walk, run, and even stand up as soon as the treadmill stops moving, even when sprinting here.

This was amazing.

I was totally fascinated by this brainless move, yet so frustrated at the same time.

This movement was completely involuntary.

This animal had little control over its legs.

The steering system was apparently missing.

And it became clear to me that I needed to move away from the classic rehabilitation paradigm of stepping onto the treadmill and create conditions in which the brain would spontaneously start controlling the legs.

With this in mind, we developed a completely new robotic system that supports rats in all directions in space.

Imagine, this is really great.

So imagine this 200kg robot with a small 200g mouse attached to its tip. However, rats do not feel the robot's presence.

The robot is transparent, like holding a young child as he takes his first uneasy steps.

Let's summarize: Rats received a paralytic injury to the spinal cord.

Electrochemical neuroprostheses have enabled highly functional states of spinal motor networks.

The robot provided a safe environment in which the rat could try anything to move its paralyzed leg.

And for motivation, I used what I consider to be Switzerland's most powerful pharmacology: fine Swiss chocolate.

(Laughter) Actually, the initial results were very, very disappointing.

This is my best physiotherapist, completely failing to encourage a rat to take a step, whereas 5 minutes before that same rat was walking beautifully on the treadmill.

We were so frustrated.

But as you know, one of the most important qualities a scientist has is patience.

we insisted. We refined the paradigm so that, after months of training, the paralyzed rats could stand, and whenever they decided to do so, they would put on their full weight and start locomotion and sprint towards the reward.

This is the first time that spontaneous recovery of leg movement has been observed after an experimental spinal cord injury that resulted in complete and permanent paralysis.

Actually -- (Applause) Thank you.

In fact, rats could not only initiate and maintain locomotion on the ground, but even coordinate leg movements to resist gravity, for example, to climb stairs.

I can assure you that this was a very moving moment in my lab.

It took ten years of effort to reach this goal.

But the question that remained was, how?

I mean, how is that possible?

And here, what we discovered was quite unexpected.

This new training paradigm prompted the brain to make new connections. Several relay circuits relay information from the brain across the injury and restore cortical control over motor networks beneath the injury.

Here you can see one such example. Fibers from the brain are labeled in red.

This blue neuron is connected to the motor center, and this cluster of synaptic contacts means that the brain is reconnecting to the motor center with just one relay neuron.

However, remodeling was not confined to the lesion area.

This occurs throughout the central nervous system, including the brainstem, and was observed to increase fiber density from the brain by up to 300 percent.

Although we did not aim to repair the spinal cord, we were able to promote one of the more extensive remodeling of axonal processes previously observed in the adult mammalian central nervous system after injury.

And behind this discovery, a very important message is hidden.

These are the achievements of a young team of highly talented people: physiotherapists, neurobiologists, neurosurgeons, engineers of all kinds, who together have achieved what they could not do individually.

This is truly an interdisciplinary team.

Because they work in close proximity to each other, horizontal movement of DNA occurs.

We are training the next generation of doctors and engineers who can communicate their discoveries from the bench to the bedside.

And, I?

I am only the maestro who arranged this beautiful symphony.

Now, you may be wondering, "Will this save the injured person?"

I am every day.

The truth is, we don't know enough yet.

While this is certainly not a cure for spinal cord injury, I am beginning to believe that this may lead to interventions to improve recovery and people's quality of life.

Would you like to dream with me too?

Imagine someone who has just had a spinal cord injury.

After several weeks of recovery, a programmable pump is implanted to deliver a personalized pharmacological cocktail directly to the spinal cord.

At the same time, we implant a second skin-like electrode array overlying the spinal cord region that controls leg movements. The array is attached to an electrical pulse generator that provides stimulation tailored to the person's needs.

This defines an individualized electrochemical neuroprosthesis that enables locomotion during training using a newly designed support system.

And my hope is that after a few months of training, the residual connections may be sufficiently modified to allow locomotion without robots, perhaps without pharmacology or stimulation.

My hope here is to be able to create individualized conditions for enhancing brain and spinal cord plasticity.

And this is a radically new concept that could be applied to other neurological disorders, what I called "personalized neuroprostheses," implanted throughout the nervous system, brain, spinal cord, and even peripheral nerves, based on the patient's specific impairment, by sensing and stimulating neural interfaces.

But not to compensate for lost function, but for the brain to help itself.

We hope it will inspire your imagination. Because I can promise you that this is not a question of if this revolution will happen, but of when it will happen.

And remember, our greatness is as big as our imagination, our dreams.

thank you.

(applause)

The two greatest inventions of our generation are the Internet and mobile phones.

they changed the world.

But to our great surprise, they also turned out to be the perfect tool for a surveillance state.

Basically all of us, and our ability to gather data, information, and connections about all of us, turns out to be exactly what we've been hearing about all this summer through revelations and leaks about Western intelligence agencies, mostly US intelligence agencies, monitoring the world.

We have heard about these from the June 6th Revelation.

We started learning about PRISM, XKeyscore, and more when Edward Snowden started leaking top-secret classified information from US Intelligence.

And these are examples of the kinds of programs that US intelligence agencies are currently running against the rest of the world.

And if we look back at George Orwell's predictions about surveillance, we can see that George Orwell was an optimist.

(Laughter) We are now witnessing a much larger-scale tracking of individual citizens than he ever imagined.

And here is the infamous NSA data center in Utah.

Scheduled to open soon, it will be both a supercomputing center and a data storage center.

Basically you can imagine that you have a large hole filled with hard drives that store the data you are collecting.

And it's a pretty big building.

how big is it? Well, I can give you a number of 140,000 square meters, but that alone doesn't tell you much.

It might be good to compare and imagine.

You think of the biggest IKEA store you've ever been to.

This is 5 times as big.

How many hard drives can the IKEA store hold?

right? It's pretty big.

We estimate that the electricity bill alone to run this data center costs tens of millions of dollars per year.

And this kind of mass surveillance means they can collect our data and store it basically forever, for long periods of time, years, decades.

And this poses a whole new kind of risk for all of us.

And what this means is that it's a massive, comprehensive surveillance of everyone.

Not necessarily everyone, because US intelligence agencies only have the legal right to monitor foreigners.

You can monitor foreigners when their data connections reach or pass through the United States.

And spying on foreigners doesn't seem so bad until you realize I'm a foreigner and you're also a foreigner.

In fact, 96 percent of the people on Earth are aliens.

(laughs) Right?

So this is massive, comprehensive surveillance for all of us, all of us who use telecommunications and the Internet.

But don't get me wrong. In fact, some types of monitoring are okay.

I love my freedom, but I also agree that a certain amount of surveillance is fine.

Whether law enforcement is trying to find a killer, catch a drug lord, stop a school shooting, or have a clue and a suspect, it's perfectly fine for the police to tap the suspect's phone or intercept his internet communications.

I'm not arguing that at all, but programs like PRISM aren't like that.

They are not intended to monitor people who have reason to suspect any wrongdoing.

They are meant to spy on people they know are innocent.

There are four main arguments in favor of such oversight. First of all, whenever we start discussing these revelations, there will always be naysayers who will try to minimize the significance of these revelations. "We already knew all this, we knew it was happening, nothing new here," he argues.

that's not true. We didn't know this yet, so don't let anyone tell you that we already knew this.

This may have been what we feared the most, but we didn't know it was happening.

Now we know the fact that it is happening.

we didn't know about this. We didn't know about PRISM.

I didn't know about XKeyscore. I didn't know about Cybertrance.

I didn't know about DoubleArrow.

We didn't know about Skylighter. All these various programs were run by US intelligence agencies.

But now it does.

And I didn't know that US intelligence agencies were taking extreme actions such as infiltrating standards bodies and intentionally sabotaging cryptographic algorithms.

What that means is that if you encrypt one file using something secure, a very secure encryption algorithm, no one can decrypt it.

Even if you used every computer on earth to crack that one file, it would take millions of years.

So basically it's completely safe and uncrackable.

It takes something very good and deliberately weakens it, ultimately making us all less safe.

The real-world equivalent would be for intelligence agencies to enforce a secret PIN on every home alarm, allowing them to break into every home. Because bad people might have home alarms, but that ultimately makes us all less safe as well.

Backdoor encryption algorithms are just confusing.

But, of course, these intelligence agencies are doing their job.

That's what it's all about: running signal intelligence, monitoring telecommunications, and monitoring internet traffic.

That's what they're trying to do, and since most, very large portions of internet traffic today is encrypted, they're trying to find ways to get around it.

One way is to interfere with the encryption algorithm. This is a perfect example of how the US intelligence community is running amok.

They are completely out of control and need to be brought back under control.

So what do we actually know about the leak?

All based on files leaked by Snowden.

The first PRISM slides in early June detail the collection program where data is collected from service providers, and you will visit and name your service provider.

There are even specific dates when data collection began for each service provider.

For example, Microsoft's collection started on September 11, 2007, Yahoo's collection started on March 12, 2008, and other collections are named Google, Facebook, Skype, Apple, and so on.

And all these companies are in denial.

They all claim that this is not true at all and does not allow backdoor access to your data.

These files still exist.

So is one of the parties lying, or is there another explanation?

And there could be an explanation that these parties, service providers, are not cooperating.

Instead, they were hacked.

That would explain. they are not cooperative. they are hacked.

In this case they are being hacked by their own government.

It may sound strange, but there have already been instances of this happening. For example, the Flame malware instance, which is strongly believed to have been created by the US government, subverted the security of the Windows Update network by spreading. So here it means that the company was hacked by their own government.

And there is even more evidence to support this theory.

Germany's Der Spiegel has leaked further information about operations by elite hacker units operating within these intelligence agencies.

Within the NSA, this division is called TAO (Tailored Access Operations), and within the UK equivalent of GCHQ, it is called the NAC (Network Analysis Centre).

And these three recent leaks of slides detail an operation carried out by the British GCHQ intelligence agency that targeted a telecommunications company here in Belgium.

And what this really means is that the EU's intelligence services are compromising the security of telecommunications equipment in EU member states. They're talking about it in the slides quite casually, as usual.

This is the primary target, here is the secondary target, here is the teaming.

They'll probably have team building in the pub on Thursday night.

They may even use cheesy PowerPoint clip arts like "success" when accessing such services.

what the hell?

And yes, yes, this may be happening, but again, there is an argument that other countries are doing it as well.

Every country is a spy.

And maybe it's true.

Not all countries do spying, but let me give you an example.

Consider Sweden, for example.

I'm talking about Sweden because Sweden has laws that are a bit similar to the US.

If data traffic passes through Sweden, Swedish intelligence services have the legal right to intercept that traffic by law.

got it. How many Swedish decision makers, politicians, and business leaders use US-based services every day, whether they run Windows or OSX, use Facebook or LinkedIn, store data in the cloud like iCloud, Skydrive or DropBox, or use online services like Amazon Web Services or sales support?

The answer is that all Swedish business leaders do it every day.

And turn it around.

How many American leaders use Swedish webmail or cloud services?

And the answer is zero.

So this is out of balance.

It's never balanced, nor even close to it.

And although there have been occasional success stories in Europe, even those have generally ended up being sold to the United States.

Similarly, Skype used to be secure.

It used to be end-to-end encrypted.

It was then sold to the United States.

Today it is no longer safe.

So, again, we take something safe and make it deliberately less secure, which in turn makes us all less safe.

And the claim that the United States is only fighting terrorists.

It's a war on terrorism.

Don't worry.

Well, this is not a war on terror.

Yes, part of it is the war on terrorism and yes there are terrorists and they certainly kill and hurt and we have to fight them. Through these leaks, however, we know that they used the same techniques to wiretap European leaders' phones, wiretap emails of residents of Mexico and Brazil, and decrypt email traffic within the UN Headquarters and the EU. Congress, and I don't think they are trying to find terrorists from within the EU. Parliament, right?

It's not a war on terrorism.

It may be part of it, and there are terrorists, but do we really consider terrorists to be such an existential threat that we are willing to do anything to combat them?

Are Americans ready to scrap the Constitution and throw it in the trash just because it has terrorists?

And the same goes for the Bill of Rights and all the Amendments, the Universal Declaration of Human Rights and the EU. What about the Convention on Human Rights, Fundamental Freedoms and Press Freedom?

Do we really think terrorism is such an existential threat, and are we ready to do anything?

But people fear terrorists and think surveillance might be okay because they have nothing to hide.

If you find it useful, please feel free to fill out a survey.

And those who say they have nothing to hide simply haven't thought about this long enough.

(Applause.) Because we have something called privacy. And if you think you really have nothing to hide, let it tell me first. Because I know I shouldn't trust you with any secrets. Because obviously you can't keep secrets.

But people are brutally honest with the internet, so many people asked me about this when these leaks started.

And I have nothing to hide.

I am not doing anything wrong or illegal.

But I have nothing in particular to share with intelligence agencies, especially foreign intelligence agencies.

And if we really want a Big Brother, I'd rather have a domestic Big Brother than a foreign Big Brother.

And when the leak began, the first thing I tweeted about this was the comment that using a search engine could potentially leak all of it to US intelligence.

And two minutes later, I received a reply from someone named Kimberly from the United States who challenged me, "Why am I so worried about this?"

What should I send to worry about this? Are you sending naked pics or something?

And my answer to Kimberly was that what I am sending is none of your business and should not be the business of your government.

Because that's what it is. It's about privacy.

Privacy is non-negotiable.

It should be built into every system we use.

(Applause.) And one thing we all need to understand is that we're brutally honest with search engines.

Show me your search history and I'll find something incriminating or embarrassing in five minutes.

We are more loyal to search engines than to our families.

Search engines know more about you than your family knows about you.

And this is all of the information that we are providing and that we are providing to the United States.

And surveillance changes history.

We know this through the example of corrupt presidents like Nixon.

Imagine if he had the monitoring tools available today.

And let me actually quote the words of the President of Brazil, Ms. Dilma Rousseff.

She was one of the NSA's targets.

Her email was read, and she delivered a speech at United Nations headquarters stating that "without the right to privacy there can be no true freedom of expression and opinion, and therefore no effective democracy."

That's it.

Privacy is the foundation of democracy.

And, in the words of fellow security researcher Marcus Lanham, the United States now treats the Internet like one of its colonies, he said.

In short, we are going back to the days of colonization, and we, as foreign users of the Internet, need to think of Americans as our masters.

Mr. Snowden, he is accused of many things.

With these revelations, some have accused Snowden of causing trouble for the U.S. cloud industry and software companies, but blaming Snowden for causing trouble for the U.S. cloud industry would be the same as blaming Al Gore for global warming.

(Laughter) (Applause) So what do we do?

Should I worry? No need to worry.

We should be angry because this is wrong, disrespectful and shouldn't be done.

But that doesn't change the situation much.

What will change the situation for the rest of the world is trying to distance themselves from the system built in the United States.

And that is easier said than done.

How do you do that?

No single country, no single country in Europe, can replace or build a replacement for US-made operating systems or cloud services.

But you may not have to do it alone.

It may be good to cooperate with other countries.

This solution is open source.

By building an open, free and secure system together, we can avoid this kind of scrutiny and no one country has to solve the problem alone.

You just have to solve one small problem.

And, in the words of fellow security researcher Harun Meer, it is enough for one country to raise a small wave, but together those small waves will become a tide that will lift all ships at once, and a tide that builds on safe, free and open source systems will be a tide that lifts us all from the surveillance state.

thank you very much.

(applause)

So why do we learn mathematics?

Essentially for three reasons. Calculation, application and finally, unfortunately the least in terms of time is inspiration.

Mathematics is a science of patterns and we study mathematics to learn how to think logically, critically and creatively, but too much mathematics in school does not provide effective motivation and when students ask, "Why are you learning this?"

And we often hear that you will need it for your next math class or future test.

But wouldn't it be nice to do math once in a while, simply because it's fun, beautiful, or just because it excites you?

Now, since many of you haven't had a chance to understand how this happens, let me give you a quick example using my favorite collection of numbers, the Fibonacci numbers. (Applause.) Yes! We already have a Fibonacci fan here.

That is wonderful.

These numbers can now be evaluated in a number of ways.

From a computational standpoint, it's as easy to understand as 1 plus 1 plus 2.

Then 1 plus 2 is 3, 2 plus 3 is 5, 3 plus 5 is 8, and so on.

In fact, the man we call Fibonacci is actually named Leonardo of Pisa, and these numbers appear in his book Liber Abaci, which taught the Western world the methods of arithmetic we use today.

From an applied point of view, the Fibonacci sequence appears surprisingly frequently in nature.

The number of petals in flowers is usually a Fibonacci number, and the number of helices in sunflowers and pineapples also tends to be a Fibonacci number.

In fact, there are many other applications of the Fibonacci sequence, but what inspires me the most about the Fibonacci sequence is the beautiful number patterns it displays.

Let me introduce you to one of my favourites.

Let's say you like squaring numbers. Frankly, who wouldn't? (Laughter) Let's look at the first few squared Fibonacci numbers.

So 1 squared is 1, 2 squared is 4, 3 squared is 9, 5 squared is 25, and so on.

Now, it's no surprise that adding consecutive Fibonacci numbers gives us the next Fibonacci number. right?

That's how it's made.

But you wouldn't think that adding squares would do anything special.

But check this out.

1 plus 1 becomes 2 and 1 plus 4 becomes 5.

And 4 plus 9 is 13, 9 plus 25 is 34 and yes the pattern continues.

Actually, there is another one.

Suppose we want to consider adding the squares of the first few Fibonacci numbers.

Let's see what we can get there.

So 1 plus 1 plus 4 is 6.

Add 9 to it and you get 15.

Add 25 to get 40.

Adding 64 gives 104.

Now look at these numbers.

These are not Fibonacci numbers, but if you look closely you can see that they have Fibonacci numbers embedded within them.

can you see I'll show you that.

6 is 2 x 3, 15 is 3 x 5, 40 is 5 x 8, 2, 3, 5, 8, thank who?

(laughs) Fibonacci! of course.

Now, discovering these patterns is a lot of fun, but understanding why they are true is even more satisfying.

Let's look at the last equation.

Why is the sum of the squares of 1, 1, 2, 3, 5, and 8 equal to 8 x 13?

I will draw a simple picture to show you.

Place one square first, then another square next to it.

Together they form a 1-by-2 rectangle.

Place a 2x2 square below it, a 3x3 square next to it, a 5x5 square below it, and an 8x8 square to create one giant rectangle.

Let me ask you a quick question here. what is the area of ​​the rectangle?

Well, on the one hand, it's the sum of the areas of the squares in it, right?

just like we made it.

1 squared plus 1 squared plus 2 squared plus 3 squared plus 5 squared plus 8 squared. right?

That's the area.

On the other hand, since it is a rectangle, its area is equal to its height multiplied by its base, so the height is clearly 8 and the base is 5 plus 8, or 13, the next Fibonacci number.

So the area is also 8 × 13.

Since you have correctly calculated the area two different ways, they should be the same number. So the sum of the squares of 1, 1, 2, 3, 5, and 8 is 8 times 13.

Continuing with this process will generate rectangles of the form 13 x 21, 21 x 34, etc.

Go ahead and check this out.

Dividing 13 by 8 gives 1.625.

And as you divide larger numbers by smaller numbers, these ratios get closer and closer to about 1.618, known to many as the golden ratio. This number has fascinated mathematicians, scientists, and artists for centuries.

Now, I bring all this to you because, like so much mathematics, there is a beautiful side to it that I fear is not getting enough attention in schools.

We spend a lot of time learning to compute, but let's not forget the application that involves learning to think, perhaps the most important of all applications.

If I were to summarize this in one word, it would be: Mathematics isn't just about solving x, it's about figuring out why.

thank you very much.

(applause)

So I got off the bus and headed back to the corner to head west on my way to my Braille training session.

It was the winter of 2009 and I had been blind for about a year.

Things were going pretty smoothly.

We made it safely to the other side, turned left, pressed the automatic button on the pedestrian signal and waited our turn.

I took off and arrived safely on the other side.

As I stepped onto the sidewalk, I heard the sound of steel chairs sliding across the concrete sidewalk in front of me.

I knew there was a cafe on the corner and there were chairs in front of it so I adjusted left to get closer to the street.

As I did, I slid the chair.

Thinking I failed, I turned right and slid the chair in perfect timing.

Now I'm getting a little uneasy.

I strayed back to the left, so I slid my chair out of the way.

Well, I'm officially freaking out.

So I yelled, "Who the hell is there? What's going on?"

Just then, behind my cries, I heard something else. It's a familiar rattling sound.

It sounded familiar, so I immediately thought of other possibilities, and as my fingers rubbed against some fuzzy thing, I reached out with my left hand and found an ear, a dog's ear, possibly a golden retriever's ear.

The leash was tied to the chair when my husband went for coffee. She may have had a scar behind her ear, but she was relentlessly trying to greet me.

Perhaps she volunteered for service.

(Laughter.) But this little story is really about the fear and misconceptions that come with the idea of ​​navigating a city without sight, oblivious to the environment and the people around you.

So let me step back and set the stage a little.

On St. Patrick's Day 2008, I went to the hospital to have surgery to remove a brain tumor.

The operation was successful.

After 2 days my vision started to go down.

By the third day it was gone.

Immediately, I felt an incredible sense of dread, confusion, and defenselessness, like everyone else.

But when I had time to stop and think, I began to realize that I actually had a lot to be grateful for.

In particular, I remembered my father, who died of complications from brain surgery.

he was 36 years old. I was seven years old at the time.

So I had good reason to fear what was about to happen, I had no idea what was going to happen, but I was alive.

The son still had a father.

Besides, I'm not the first to lose my sight.

I knew I needed all kinds of systems, techniques and training to live a full, meaningful and active life without my sight.

So by the time I was discharged from the hospital a few days later, I set off with a mission to get out of the hospital as soon as possible, get the best training possible, and start rebuilding my life.

Within six months I was back at work.

My training has started.

I started riding tandem bikes with my old cycling buddies, walked around town alone, and took the bus to work.

It was a lot of work.

But what I didn't expect through all that rapid change was the incredible experience of juxtaposing the tangible experience of the same place and the same people with the intangible experience of the same place and the same people in a short period of time.

From there came many of the insights, or insights, insights that I have learned since I lost my sight.

These insights ranged from the trivial to the profound, from the mundane to the humorous.

As an architect, juxtaposing my short-term visual and non-visual experiences of the same place and the same city gave me all sorts of amazing perspectives on the city itself.

Chief among them was the realization that cities are, in fact, wonderful places for the blind.

And I was also amazed by the city's tendency towards kindness and consideration, as opposed to indifference and more.

Then I started to realize that visually impaired people seemed to have a positive impact on the city itself.

It was of little interest to me.

Let's take a step back and see why this city is so good for the blind.

Training to recover from vision loss requires learning to rely on the senses other than sight, all the things you might otherwise ignore.

It feels like a whole new world of sensory information has been opened.

I was really struck by the symphony of subtle sounds heard all over the city. By listening to and manipulating this sound, you can understand where you are, how you need to move, and where you need to go.

Similarly, just by holding a cane, you can feel the contrasting textures of the floor below, building a pattern of where you are and where you are going over time.

Similarly, just the sun warming one side of your face or the wind hitting your neck can give you cues about your alignment, progress within blocks, and movement in time and space.

But also the sense of smell.

Some regions and cities have their own unique smells, just like the places and things around them, and if you're lucky, you might end up at the new bakery you've been looking for.

All this really surprised me. Because I began to realize that my non-visual experiences were much more multisensory than my previous visual experiences.

What also surprised me was how much the city around me was changing.

Seeing makes everyone stick to their own things and care about themselves.

Losing your sight, however, is a completely different story.

And I don't know who's watching who, but I suspect many are watching me.

I'm not paranoid, but everywhere I go I get all sorts of advice: "Go here, move there, watch out for this."

A lot of information is good.

Some are helpful. Many are reversed.

We need to understand what they actually mean.

Some are wrong and some are useless.

But in the big picture it's all good.

But one time I was walking along Broadway in Oakland and came to a turn.

I was waiting to hear the pedestrian traffic light, it went out and I was about to go out into the street when suddenly the man grabbed my right hand and he pulled my arm and dragged me to the crosswalk and across the street while speaking to me in Mandarin.

(Laughter) It's like there was no escape from this man's hold of death, but he got me there safely.

What can you do?

But believe me. There are more polite ways to offer assistance.

I don't know if you're there, but it's kind of nice to say hello first.

"Could you help me?"

But while I was in Auckland, I was really struck by how my loss of sight had changed the city of Auckland.

I like the way it looks. I was fine.

It's an absolutely wonderful city.

But as I lost my sight and walked down Broadway, I was blessed at every block of the road.

"Bless you, dear."

"Do your best, brother."

"god bless you."

I couldn't see it.

(Laughter) Even if you don't have sight, you don't know that in San Francisco.

And I know it's not just me, it's bothering some of my blind friends too.

It is often thought of as an emotion that arises out of pity.

I tend to think it comes from our shared humanity and togetherness, and I think that's pretty cool.

In fact, when you're feeling down, going to Broadway in downtown Oakland and taking a walk will instantly make you feel better.

But it also shows how disability and blindness cross ethnic, social, racial and economic lines.

Disability is an equal opportunity provider.

Everyone is welcome.

In fact, I've heard it said in the disability community that there are only two types of humans. People with disabilities and people who have not yet found their disability.

We think about it differently, but I think it's beautiful in a way. Because it is certainly far more inclusive than us vs. them, or able-bodied vs. disabled, and far more honest and respectful of the transience of life.

Finally, I would like to say to everyone that this city is not only good for the blind, but the city needs us.

And because I am convinced of that, I would like to propose to you today that the blind should be seen as typical urban dwellers, not as people who are conceived after the mold has already been cast, when imagining the new and wonderful city.

It's too late then.

Therefore, designing a city with the blind in mind creates a rich and walkable network of sidewalks, all available at street level, providing a wealth of choice and choice.

When designing a city with the blind in mind, sidewalks are predictable and forgiving.

The space between buildings will be a space where people and cars are well balanced.

Actually, a car, who needs it?

You cannot drive if you are blind. (Laughter) They don't like you driving. (Laughter) When you design a city with the blind in mind, you are designing a city with a robust, accessible, well-connected mass transit system that connects all parts of the city to the surrounding areas.

Designing cities with the blind in mind will create more jobs.

Visually impaired people also want to work.

they want to make a living.

So I hope you start to realize that in designing a city for the blind, it actually becomes a more inclusive, fairer, fairer city for all.

Based on my experience with sight so far, whether you're blind, disabled, or haven't found your disability yet, this city seems like a very nice city.

thank you.

(applause)

I want to tell you a story about a small town kid.

I don't know his name, but I know his story.

He lives in a small village in southern Somalia.

His village is near Mogadishu.

The drought drives small villages to poverty and the brink of starvation.

With nothing left there, he leaves for a big city, in this case Mogadishu, the capital of Somalia.

When he arrives, there is no chance, no job, no way forward.

He will live in a tent city on the outskirts of Mogadishu.

A year has probably passed without anything.

One day he was approached by a gentleman who offered to take him out to lunch, dinner and breakfast.

He meets this dynamic group of people and is given a break.

He gave himself a little money to buy new clothes and money to send his family home.

He was introduced to this young lady.

he eventually gets married.

He begins this new life.

he has a purpose in life.

On a beautiful day in Mogadishu, under a deep blue sky, a car bomb exploded.

That small-town kid with big-city dreams was a suicide bomber, and that dynamic group of people was al-Shabaab, a terrorist organization linked to al-Qaeda.

So how does a story about a small town kid trying to thrive in the city come to him blowing himself up?

he was waiting

He was waiting for an opportunity, waiting for the future to begin, waiting for a way forward, and this was the first to appear.

This was the first event that took him out of the so-called waiting state.

And his story is repeated in urban centers around the world.

This is the story of a disenfranchised, unemployed urban youth who riots in Johannesburg, riots in London, and reaches out for something other than waiting.

For young people, the promise of cities, the dream of big cities bring opportunities, jobs and wealth, but young people do not share the prosperity of their cities.

Young people often suffer the highest unemployment rates.

By 2030, three in five people living in cities will be under the age of 18.

Without engaging young people in urban growth and providing opportunities for them, the story of waiting, the gateway to terrorism, violence and gangs, will become the story of City 2.0.

And in my native Mogadishu, 70 percent of young people suffer from unemployment.

70% are not working or attending school.

they do very little.

I returned to Mogadishu last month and visited the Madina hospital where I was born.

I remember standing in front of a bullet-riddled hospital and wondering what would have happened if I hadn't left the hospital.

What if I'm stuck in the same waiting state?

Would I have become a terrorist?

I don't really know the answer.

The reason I was in Mogadishu that month was actually to host a youth leadership and entrepreneurship summit.

I have assembled about 90 young Somali leaders.

We sat down and brainstormed solutions to the biggest challenges facing their city.

One of the young men in the room was Aden.

He attended and graduated from a university in Mogadishu.

There were no jobs, no opportunities.

I remember him telling me that he was a college graduate, unemployed and dissatisfied, making him an easy target to be recruited by al-Shabaab and other terrorist organizations.

They searched for someone like him.

But his story takes a different route.

In Mogadishu, the biggest barrier to getting from point A to point B is the road.

A 23-year civil war has completely destroyed the road network, making motorbikes the easiest way to get around.

Aden saw an opportunity and grabbed it.

He founded a motorcycle company.

He started renting bikes to locals who usually couldn't afford one.

With the help of family and friends, he has purchased 10 bikes and hopes to eventually have hundreds within the next three years.

How is this story different?

What makes his story different?

I believe in his ability to find and seize new opportunities.

It's entrepreneurship, and I believe entrepreneurship can be the most powerful tool against waiting.

It empowers young people to be creators of the very economic opportunities they desperately need.

And we can train young people to become entrepreneurs.

I would like to tell you about a young man named Mohammed Mohamud, a florist, who attended one of my meetings.

He helped teach some of the young people attending the summit about entrepreneurship and how to be innovative and create a culture of entrepreneurship.

In fact, he's the first florist Mogadishu has seen in over 22 years, and until recently, until Mohammed came along, when he wanted flowers for his wedding, he used plastic bouquets sent from abroad.

When I asked someone, "When was the last time you saw fresh flowers?"

For many who grew up in a civil war, the answer would be "never."

So Mohammed saw an opportunity.

He founded a landscaping and floral design company.

He set up a farm just outside Mogadishu and began growing tulips and lilies that could withstand the harsh Mogadishu climate.

He started delivering flowers to weddings, creating gardens for homes and businesses across the city, and is currently working on creating Mogadishu's first public park in 22 years.

Mogadishu has no public parks.

He wants to create a space where families and young people can gather and smell the proverbial rose.

By the way, he does not grow roses. Because roses use too much water.

So the first step was to inspire the young people and in that room the presence of Mohammed had a really deep impact on the young people in that room.

They never thought of starting a business.

They considered working for an NGO or working for the government, but his story, his innovation, had a strong impact on them.

He forced them to see their city as a place of opportunity.

He empowered them to believe they could be entrepreneurs, change-makers.

By the end of the day, they had come up with innovative solutions to some of the biggest challenges facing their city.

They came up with entrepreneurial solutions to local problems.

So inspiring young people and creating a culture of entrepreneurship is a very nice step, but young people need capital to bring their ideas to life.

You need expertise and guidance to guide your business development and launch.

Connecting young people with the resources they need and providing them with the support they need to move from idea to creation can create catalysts for urban growth.

For me, entrepreneurship is more than just starting a business.

It's about creating social impact.

Mohammed doesn't just sell flowers.

I believe he sells hope.

His Peace Park, as he calls it, actually changes the way people look at the city when it is created.

Aden hired street children to help rent and maintain the bikes.

He gave them a chance to escape the paralysis of waiting.

These young entrepreneurs are making a huge impact on their cities.

So my suggestion is to turn young people into entrepreneurs, nurture and nurture their inherent innovation, and we'll talk more about flowers and peace parks than about car bombs and waiting times.

thank you.

(applause)

How many of you have been to Oklahoma City?

Please raise your hand. yes?

How many people have never been to Oklahoma City and don't know who I am? (Laughter) Most people. Let me give you a little background.

Oklahoma City started out in the most unique way imaginable.

One day in the spring of 1889, the federal government held what was called a land run.

They literally lined up the settlers along an imaginary line and fired their guns. Then the settlers roared and laid stakes in the countryside, and wherever they put the stakes, that was their new home.

And at the end of day one, Oklahoma City's population went from zero to 10,000, and our planning department still pays for it.

On the first day, residents gathered to elect a mayor.

and they shot him.

(Laughter) It's not that funny -- (Laughter) -- but it gives me an idea of ​​what type of audience I'm dealing with, so I appreciate the feedback.

The 20th century was pretty kind to Oklahoma City.

Our economy was based on commodities: the price of cotton, the price of wheat, and ultimately the price of oil and natural gas.

And in the process, we've become a city of innovation.

The shopping cart was invented in Oklahoma City.

(Applause.) Parking meters invented in Oklahoma City.

you're welcome.

But running an economy tied to commodities can have some ups and downs, and it certainly has in Oklahoma City's history.

Our economy soared in the 1970s when energy prices seemed unlikely to recede, but then plunged sharply in the early 1980s.

Energy prices fell.

Our bank started to fail.

By the end of the decade, 100 banks had failed in Oklahoma.

No remedy was in sight.

Our banking, oil and gas, and commercial real estate industries were all at the bottom of the economy.

Young people left Oklahoma City in droves and headed to Washington, Dallas, Houston, New York, Tokyo, wherever they could find a job that matched their education. Because there were no good jobs in Oklahoma City.

But at the end of the 80's, an enterprising businessman named Ron Norick became mayor.

Ron Norick eventually realized that the secret to economic development was not to encourage businesses up front, but to create places where they wanted to be, and pushed forward an initiative called MAPS, which basically put a penny-on-a-dollar sales tax to build a lot of stuff.

We built a new sports arena, a new canal downtown, a performing arts center, a new ballpark downtown, and many other things to improve the quality of life.

And indeed, the economy appeared to be starting to boom.

The next mayor has arrived.

He started MAPS for Kids, restructuring the entire city center school system and building or renovating all 75 buildings.

And in 2004, in this rare lack of judgment that bordered on civil disobedience, the people elected me mayor.

Now that the city I took over is on the brink of getting out of its sluggish economy, for the first time we're starting to make the list.

Now you know the list I'm talking about.

The media and internet love to rank cities.

Oklahoma City has never had us on the list before.

So I thought it was kind of cool that they put out a positive list and we were on it.

We weren't anywhere near the top, but we were on the list, and we were something.

The best city to find a job, the best city to start a business, and the best city to downtown - Oklahoma City.

And then came the list of the most obese cities in the country.

and there we were.

Now, I want to point out that there were a lot of really great places on that list.

(Laughter) Dallas, Houston, New Orleans, Atlanta, Miami.

You know, these cities are usually the ones you're not ashamed to associate with.

But in spite of that, I didn't like being on the list.

And around that time, I stepped on the scale.

And I weighed 220 pounds.

Then I went to this federally-sponsored website, entered my height and weight, hit enter, and it came back and said "overweight."

I thought, "What a stupid site."

(Laughter) "I'm not obese. I can tell if I'm obese."

And I started to be honest with myself about my lifelong battle with obesity and noticed a pattern of gaining about 2-3 pounds each year and then losing 20-30 pounds about every 10 years.

And I would like to do it again.

And although my huge closet was full of clothes, I could only wear a third of it at a time, and only I knew which part of the closet I was wearing.

But when I went through it, everything seemed normal.

Well, I finally decided that I needed to lose weight. And since I had done so many times before, I knew I could, so I simply stopped eating so much.

I exercised all the time.