Bill Butow, now at Intel, is doing his doctoral dissertation and wondering if instead of getting bigger and bigger chips, we could make them smaller, put them in a viscous medium, and pour computers out in units of weight and area.

I thought I couldn't pour it out

On the left is postscript generated on a conventional computer, and on the right is generated from our first prototype. There are no framebuffers or I/O processors or anything like that. It's just the physical stuff.

Unlike the dots lined up on the screen, it's raw materials Unlike the dots lined up on the screen, it's raw materials

If you double the amount, you get a display that's twice as wide.

It's okay to shoot through the middle

If you need more computer resources, just add more.

This is the next step in "computers as raw materials."

So far, it's still a conventional bit, and beyond that, this is an early prototype footage played in slow motion.

It's about using bits as bubbles to bring chemistry into the computation.

This is how the bits are made. In slow playback, the bits are interacting with each other, logic, multiplexing, and demultiplexing.

In other words, you can "process materials" as well as "process information." And eventually, computing, as you can see in the early slides of this research, becomes a computational process where bits are quantum-mechanically stored in atomic nuclei, where programs change the structure of molecules.

This kind of research continues to evolve, and as the name of the lab suggests, it integrates bits and atoms, leading to the next thought.

What was the digital revolution?

Shannon brought this change in the '40s, from a speaker-wire-like phone that degraded with distance, to the Internet. In his first limiting theorem, he proved that adding information to a signal and removing it can produce perfect results, even from imperfect equipment.

and the internet was born

Von Neumann did the same thing for computing in the '50s, showing that even an unreliable computer could be restored to perfection. This was the last big analog computer at MIT. This differential analyzer got worse and worse the more it was moved.

After von Neumann, now we have the Pentium, and you can trust any of the billion transistors on the Pentium.

But modern manufacturing is all in the bottom left corner.

A state-of-the-art airplane factory might just spin metal wax on a fixed metal and melt a little bit of plastic, and a $10-billion chip factory uses a technique that even craftsmen in the village know.

The brain is outside the system, the material has no information.

Yesterday there was a talk about molecular biology, which is basically computing and building.

Information processing system

The digital revolution has happened in communications and computing, but the ideas and mathematics of Shannon and von Neumann haven't happened in the physical world yet. That's what the Center for Bits and Atoms at MIT has turned to. I've solidified the model of station, that compared to that model, nature is a much more powerful computer.

I have a Saul Griffith talk tomorrow, and he was the first batch of students on this program.

We started thinking about how to make things with computation.

He used tiles to prove this possibility, where the magnetic interactions where he wrote the code determined the structure much like a protein folds.

It's the same with protein manufacturing that the material itself determines the structure without being evaluated by metrology, and there's a lot more you can do.

Works in 2D and 3D

I can't show you the video on the top right, but due to time constraints, it's self-replicating by making a template of making a tool to make something. We're probably doing it a billion times more now, but these ideas have been used to show more precisely how DNA builds organisms.

From laser precision processing machines to 3D printers that digitally create functional systems, we build structures without blueprints by embedding building codes into parts.

This is an early example from the lab, a future technology that will digitize fabrication, not the computer that controls the tool, but the computer that is the tool itself, moving atoms as well as bits as the output of the program.

That's why I bought these machines with your tax dollars, thank you very much, and I asked the NSF for a place where you can build anything at any scale, because digital fabrication can't be divided into disciplines and scales.

We built a system of nanobeam writers, waterjet cutters and excimer precision machines.

Teaching students how to use these machines was time-consuming and problematic, so I decided to start teaching them.

It wasn't meant to be flashy, it was called "How to Build Almost Anything," understatedly, for a few cadets.

But on the first day of class, hundreds of

A student asked me, "I've been waiting for a class like this. I'll do anything to take it."

"Could you teach me at MIT? It would be very useful."

They said, "Can you teach me at MIT? That's going to be very useful."

The purpose of the course was to make things, not research.

They had no practical experience, but by the end of the semester,

Possessed comprehensive technology

I'm going to show you an old video, Kelly is a sculptor, and this is what she made for a class assignment.

Kelly: I'm Kelly This is my Scream Body

Have you ever experienced something like this? Have you ever found yourself in a situation where you want to scream from the bottom of your heart, but you're at work, you're in class, you're taking care of your kids, you just can't scream?

Scream Body is a portable space to scream

When the user shouts into the Scream Body, the scream is silenced

Since the voice is recorded, the user can later choose the place, time and method to freely release it (shouting).

(Screams) (Laughter) (Applause) Einstein would have loved it.

This student built a parrot browser that allowed them to browse the web and talk to parrots This student built a parrot browser that allowed them to browse the web and talk to parrots

This student made an alarm clock, you have to fight to stop it, this is a dress that protects your personal space.

It's not about communicating, it's about avoiding it.

This is a device that visualizes music.

It's a machine that builds machines. It's made out of Lego blocks that do computing.

What I've learned over the years is that the allure of personal fabrication is that it's a product for the one-man market.

It's not about making things you can buy at Walmart, it's a way to express yourself.It's not about making things you can buy at Walmart.It's a way to express yourself.

"There's no reason for an individual to have a computer at home," is Ken Olsen's famous myth.

It's not for inventory management or payroll. DEC has gone bankrupt twice.

It's a way of making it unique, like personalizing it.

Twenty million dollars today can do this, and in 20 years time, we'll build a Star Trek replicator that can do anything.

All the machines we bought were hijacked for personal fabrication of our students.

When you spend a lot of your tax money like this, the government asks you to promote the program in your local schools and on your website as a social service.

It's boring to just talk, so we negotiated with the NSF to give people tools.

It shouldn't have been a big deal, but we've set up a few fab labs, 20,000-dollar gear that's similar in functionality and direction to the 20-million-dollar ones.

Laser cutters for 2D-to-3D press-fit assembly Sine cutters for processing copper plates for electrical circuits Numerically controlled milling machines for 1-micron-scale accurate structures Numerical-controlled milling machines for 1-micron-scale accurate structures Sub-dollar programming tools 100-nanosecond microcontrollers Micron-nanosecond microcontrollers have rapidly spread around the world.

From the original low-income neighborhoods of Boston, to Poval, India, to Sekondi-Takoradi, along the coast of Ghana, to Sausangube, the black townships of South Africa, and far north in Norway, the digital divide has spread out, revealing the digital divide.

In rural villages, children don't just get information from screens, they have to judge and change the world.

The gap between production technology and equipment ownership is much wider than the digital divide.

It is not the spread of IT that fills the gap, but the spread of IT development.

In many places, the same thing happened, setting up fab labs in different geographies that weren't planned, which was really not what I expected.

That's what drew me in and opened the lab, and my first job was empowerment.

You can tell by their confident smiles

This girl had a high-tech bespoke craft sale at a community center in a low-income Boston neighborhood.

And from there, it's followed by informal, hands-on, hands-on technical education outside of school.

Coming children are taking a long time to come home Coming children are taking a long time to come home

There was a girl who said she would stay late at night and wouldn't listen Child: I love fab labs

She stayed in the lab until the first night trying to make a sensor.

She insisted on building a circuit board, learning how to assemble it and program it. Although she didn't fully understand the process and purpose, she was nervous and excited and couldn't stop.

It was eleven o'clock in the morning, and I think I was the only one who was surprised when the first thing she built started working.

If you show it to the engineers of a large company, they all take off their hats. They can do well in each process, but as a whole, they are accustomed to distributed division of labor, like this girl in rural Ghana.

Girl: My name is Valentina Coffey and I'm 8 years old

made a stacking board

I just did this because it was fun.

And then, gradually, we started to tackle the real problem: instrumentation for agriculture in India, energy conversion steam turbines in Ghana, high-gain antennas for thin-client computers, and all this stuff.

A manufacturing business was born A manufacturing business was born

Finally the lab started inventing

There is much more to learn than to teach

When I was teaching my kids how to use the fab lab

They invented a cardboard box building kit, and as you can see, it's become a business. Their design was better than Saul's design at MIT, and now three students at MIT are writing a paper evaluating the work of eight-year-olds.

Real inventions are born in fab labs.

Over the past year, every time I have met and talked to government, military, and tribal chiefs who are interested in the current lab, I have learned that there is still a long way to go in 20 years.

I've been stressing that I can do anything

It wasn't until recently that I finally found out what was going on. This is Kernighan and Ritchie working on UNIX at PDP.

mainframe and minicomputer

The middle-of-the-road PDP, which was expensive and difficult to use at the time, made computers ubiquitous in the workplace, and everything we do today was born there.

Current fab labs are expensive and complex like PDPs.

You can't predict the future by looking at digital fabrication, just like in the era of PDPs.

I used to whisper about great discoveries back then.

It was very chaotic and unclear what was going on.

Likewise, we are now in the age of minicomputers in digital fabrication.

The only problem with that is that it breaks everyone's boundaries.

In Washington, I go and talk to every agency that listens, and in the Bay Area, I go wherever I can think of. People want to talk, but labs don't fit the norms of an organization.

This problem is so serious that I was amazed by what this community invented. This is "social engineering." This is a lab in the far north of Norway. It's too high a latitude, and the satellite dish is pointing not in the sky, but in the direction of the satellite, which is the ground.

The little barn lab we built to look for mountain livestock got too small, so we built this wonderful village for the lab.

This isn't a university, it's not a company. It's really a village of inventions, a community of weird people.

The program is currently being run on a separate basis and the NGO Fab Foundation will support its dissemination.

Micro VC funds of retail finance and VC mix help fan-out Micro VC funds of retail finance and VC mix help fan-out "A machine that builds a machine needs a business that creates a business," the operators say very well.

I'll end with two thoughts.

Aid has changed a lot in recent years, because we've found that it's more effective to support bottom-up, grassroots microfinance than large-scale, top-down projects. But when it comes to technology.

still thought of in a top-down fashion

Computing, communications, global energy, etc., are these kinds of top-down mega-projects.

If this roomful of heroes were clever, they might be able to solve the problem.

What we've learned from the progress of fab labs is that the remaining five billion people on the planet aren't just technology wasters, they're sources.

The real opportunity lies in harnessing the world's ingenuity to solve local problems, designing and manufacturing them locally.

I expected this to happen 20 years from now, but it's happening now.

it breaks the boundaries of any organization

The most difficult part is the wall between social engineering and organizational engineering, but we're making steady progress in solving local problems.

Finally, no discussion of the future of computing would be complete without mentioning Moore's Law. This is my favorite version of Gordon Moore's original paper, but what happened was that it just kept growing year after year.

But as we moved from 2D to 3D, from bit to atom programming, people began to appreciate that the shrinkage limit of Moore's Law could become a trait rather than the ultimate bug.

We're right on the cusp of the digital revolution in fabrication, where the output of computation programs the physical world.

At the same time, these two projects tell us something, as the example of a class at MIT shows, is that what is driving the proliferation of personal fabrication in developed countries is the ability to create things for one person.

And in other parts of the world, disparities in equipment and manufacturing technology are what drive adoption, the appeal of being able to solve local problems locally. Thank you.

It's my great honor today to introduce you to the Digital Universe, which was created to help us understand where we are in the universe.

let's stream the video

[The Himalayas] (music) Carter-Emmert: The flat horizon that existed with the evolution of mankind symbolized infinity: limitless resources and unlimited capacity to dispose of waste.

But when humans left the Earth for the first time and saw the horizon bend from outer space, they became aware of the Earth's finiteness.

Production of the Digital Universe Atlas began 12 years ago at the American Museum of Natural History.

And by continuing to maintain it and putting it together as a project, we were able to visualize the universe at all scales.

What you're seeing right now is a satellite orbiting the Earth and the Earth correctly registered to space.

Twelve years ago, NASA helped us open this project to the world as part of the renovation of the Hayden Planetarium.

Digital Universe is the core of our main space show production at the dome.

But what you see here is the result of an internship in partnership with Linkoping University in Sweden.

We had 12 students work on this as their graduation project, and the result was this software called Uniview and a Swedish company called SCISS.

This software is interactive, and this actual flight path and the video we're seeing are live, unedited footage.

This video was captured on my laptop at a cafe called Earth Matters on the east side of Manhattan where I live, and it was created as a joint project with the Rubin Museum for an exhibition on comparative cosmology.

By moving out like this, you can see galaxies that are far away from Earth, and by traveling at the speed of light, you can feel how far you've come.

Further out, the light of these distant planets begins to essentially travel back in time because it's been taking so long.

By going back so far in time, we can finally see a sort of enveloping structure -- the afterglow of the Big Bang.

This is where you can see the microwave background radiation from WMAP.

Now to see this structure, go around the perimeter.

If you ever get out of here, you're in a pre-time state, so it's pretty much pointless.

This is the structure of our visible universe

It turns out that the universe is bigger than we imagine

If you rush back, you can see the sphere that we first popped out of, and this is the most recent exoplanet position we've mapped, and you can see the Sun and the rest of the solar system.

From here we have to dive in pretty quickly, and zoom in a few orders of magnitude so that we can see the solar system. These are the trajectories of Voyager 1 and 2, Pioneer 10 and 11, the first four spacecraft to leave the solar system.

We approached and captured the Earth. We confirmed the Earth in the orbit of the Moon.

This map can be updated and new data can be added

An acquaintance of mine, Dr. Carolyn Porco,

I'm in charge of the Cassini project's camera department.

Here you can see the intricate trajectories of the Cassini program, colored by mission, elaborately engineered to divert during the various mission phases to approach Titan, the largest moon larger than Mercury, 45 times.

This software brings us closer to these things.

Because this software can network between domes

We're expanding our user base Not just connecting domes

You can also connect the dome and the classroom

We've actually shared Space Odyssey with the first sub-Saharan planetarium in Ghana, and we've also shared Space Odyssey with a newly built library in a slum in Colombia and a high school in Cambodia.

Cambodian students actually operated the Hayden Planetarium from their high school

This is an image taken by the Aqua satellite on Sunday and projected by Uniview.

What you are seeing is the edge of the earth

this is nepal

This is Lhasa Valley, this is Tibet.

Below, in India, you can see the fire haze of the Ganges Valley.

This is Nepal and Tibet

I'd like to conclude by telling you about this beautiful world we live in. It's got a little bit of snow here, but I think some of you left here. What I want to say to you is that what the world needs now is the ability to look at ourselves on a larger scale, to think about our homes on a bigger scale.

Our home is the universe and we are part of the universe

this applies to everyone

Looking at our situation at all scales should help us understand where we are and who we are in the universe.

thank you

(applause)

Why raise a house? because you can

America has long been traumatized

there's a reason for that okay

A car or house that closely resembles a Mac addict

As an architect, this is a problem that cannot be ignored.

What kind of technology contributes to the construction of huge houses?

Has been used for about 2500 years

It's a technique called grafting that joins trees seamlessly together.

We're doing things a little differently than we used to

Create a framework with a computer and grow plants in any arrangement to create a Fab Tree Hab

Familiar with nature This is itself part of nature

You're melting into the scenery, aren't you?

You can grow any number of these houses, and the great thing is that they absorb carbon.

it is perfect

It's possible for huge numbers of people to live and move from the suburbs, because it's a part of nature, it's a home.

Think of it as a growing village, and in seven to ten years, everything will be green.

I'm not just building a green house, I'm building a muscle house. I'm doing research in Brooklyn, and I have the first architectural firm to have a molecular and cellular biology lab, where I'm experimenting with regenerative medicine and tissue engineering, thinking about the future where architecture and biology come together.

I've been working on it for the last few years, and this is the lab.

We're culturing porcine extracellular matrix.

Design the shape of it using a modified inkjet printer.

We're designing industrial shapes like handbags, leather belts, shoes, because we're using cultured meat.

nothing is harmed

We finally have to apply our theory to that house.

Here's a drawing of a typical stud in a building. Here's a cross-section of our proposed muscle house, which uses fat cells for insulation, cilia for wind resistance, and sphincters for doors and windows.

(Laughs) We also recognize that it is quite harsh.

We could have done it in the Tudor or Spanish colonial style, but we chose this shape.

This is part of a little development

There was a big exhibition in Prague, and we decided to put this in front of the cathedral, so that religious people could face the house of flesh.

The house should grow Thank you

(applause)

Which of these people finds sea creatures attractive?

wonderful

Now what have we done?

If you change your point of view

The simple act of one person raising his hand prompted many others to do the same.

Individuals within a social network have common priorities and often benefit from emulating each other.

At school, imitating cool friends' clothes and thinking I'm "cool" too

But imitative behavior is also common in wild animals.

For example, some birds imitate the alarm calls of other birds to let others know that predators are approaching.

But can mimicry behaviors in wildlife affect entire ecosystems on which we humans depend?

When I was researching coral reefs, I came up with this question: Coral reefs support our livelihoods through fishing and tourism, here in Africa and around the world.

But coral reefs depend on fish, and fish play an important role in eating algae.

Algae, if left unchecked, can kill corals and take over entire reefs, because once these environmental changes occur, they are difficult, even impossible, to reverse.

So, to understand how the fish could prevent this, I decided to surreptitiously monitor the fish as they fed on the algae, which is difficult in exposed areas where natural predators can find them.

(Laughter) So, clearly, eating out is scary for reef fish.

But I wanted to understand how fish behave in dangerous situations.

My colleagues and I set up giant camera stands on coral reefs to remotely monitor entire feeding grounds, where algae grow abundantly and are easy for predators to find.

In this top-down view, you can see the foraging behavior and fine movements of the various fish in the colored dots.

And by analyzing the movements of thousands of fish as they make their way to and from their feeding grounds, they found patterns.

The fish were a mix of species, and even though they weren't swimming in groups, they mimicked each other.

Also, the more fish that were foraging around, the longer they stayed and the more they ate.

It's possible, because even the simple movements of a single fish can unintentionally convey vital information.

For example, just one fish seeing a predator and fleeing can communicate danger to many other fish.

Also, if one fish safely enters a feeding ground, it tells other fish that it's a safe zone.

So even though the fish may be of different species, they're still connected to each other in social networks that give them information about when it's safe to eat.

Our analysis also suggests that more than 60 percent of fish forage may be due to imitation behavior within social networks, which may be a crucial factor in how energy and resources flow within coral reef ecosystems.

But these findings also show that when overfishing, a common problem on coral reefs, not only causes the loss of fish, but also disrupts the social networks of the remaining fish, the fish are deprived of important information, tend to hide and eat less algae.

This would make coral reefs even more vulnerable than currently projected.

Taken together, the social networks of fish are amazing, because the actions of one fish can spread to many and affect entire coral reefs, which underpin all of our food and the global economy.

Now, our findings show us how to manage coral reefs more sustainably, but that's not all. It also shows that we humans are not only influenced by the behavior of other humans, but also by the behavior of a single fish, which is a simple fish mimicry that occurs on a distant reef.

thank you

(applause)

New York City, 1969. In a third-grade music class, our teacher took us into a room with nothing but a piano and a chair.

The teacher called us one by one and told us to play middle C and sing it.

(Singing) And we're told to go to the right or left side of the room.

(Laughter) And when all 35 of us had finished that, those of us on the left side of the room were told to stand up and go back to the classroom.

(Laughter) And none of them ever took music class again in elementary school.

It was decided whether you were a member or not, but at the time, I didn't even know what the placement test was.

A few years later, in a Japanese class...

(Laughter) The first assignment of the new semester came out, and it was returned with a C+ grade, and a comment saying, "You did what you expected."

(Laughter) I honestly didn't care if it was a C+.

I was happy because it wasn't C- or D.

But the comment "It works as expected"...

Even when I was younger, I thought something was wrong.

I felt like I was being forsaken

How many of you have similar experiences? At school or at work?

I have a friend

And I think it's kind of ironic, but my whole life was headed by writing and composing for the Blue Man Group. (Laughter) And then I started school.

(Laughter) But school was torture for me.

I was a person who didn't like studying by nature, and the teachers didn't seem to understand me.

And so I started thinking, at the time, if these environments were too much for people who didn't fit the norm, why not change the way they existed and make them play to their strengths?

I've come to believe that what we need is to create safe and supportive spaces where new and innovative ideas can thrive.

As you know, humans are innately innovative, and if we weren't, we would be using the same arrowheads we used 10,000 years ago.

So one of the things I started asking was, is there an easier way to innovate more often?

"Aha!" experiences are random, occasional breakthroughs, but is there a way to intentionally make them happen more often?

When we started The Blue Man Group in 1988, we had no Off-Broadway experience.

I almost never acted on stage.

But we knew what we wanted to be passionate about. It's something we've never seen on stage before. Art and pop culture and technology and sociology and anthropology and percussion and comedy and the pursuit of bliss.

The rule we set was that we couldn't do something that we'd seen before on stage. We wanted to evoke creativity and connection in ourselves and in the audience.

I wanted to create an environment where people treat each other just a little bit better, a little bit more respect and care in the office than they do outside.

And so iteratively, we kept looking for ways to work together to create something that no one had ever seen before.

Over time, I've found the perfect conditions for creating this kind of creative, innovative environment: clear intention, purpose, passion, which works well when you're working on something bigger than you are.

Honesty as a person, matching words and deeds

Be honest with yourself in all relationships

Direct communication and clear expectations, even when the challenges are difficult.

Persistence and tenacity Repeat, repeat, repeat

Building a team that works together

Building up deep trust and mutual respect

everyone is a member of the team

There are no non-members

We go through ups and downs as a team.

Accepting Diverse Viewpoints

Every opinion matters, every feeling matters

Address disagreements head-on

so that everyone feels recognized and heard

take risks and celebrate failure

It's a mandatory attitude for an organization to keep learning, always trying to keep the curve of innovation and learning spiraling upwards.

Then there is no two sides to what you say

This may be the tying together of all the conditions I've listed above.

When you're talking about someone who isn't there, you speak exactly as you would when that person was there.

This seems like a basic thing, but it's an ambitious practice that can help you deal with difficult situations in a more respectful way.

Incorporating this practice can go a long way toward raising the bar, strengthening mutual respect and trust, while reducing the problems of gossip and power struggles in offices and classrooms, and reducing the barriers to innovation.

At the Blue Man Group, repetition was integral to the creative process.

When we were writing a piece, we wanted it to show the audience about the cycle of consumption and waste in a way that was fun and creative and surprising.

If you're willing to try the same thing yourself, here's a big time saver for you.

Let me tell you, oatmeal, jellies, creamy cereals, slimes, puddings, clays, tapioca, shapeshifting silicones, and tomato pastes don't work well through tubes that are coiled under the costume, they were supposed to come out through a hole in the chest and shoot at the audience.

Can not do that

(Laughter) After months of trial and error, it finally happened --

Bananas. (Laughter) Who knew that bananas were the perfect fit, because when you pneumatically push them out of a tube, they stay solid, but they come out in a dramatic way, and the impact is exactly what you're looking for.

(Laughter) This has become a classic blue man show.

But we didn't completely ignore the rules of theater production.

I designed the stage set, I designed the lighting,

There was also a stage manager who ran the show.

But I'm pretty sure that ours is the first show in history to respectfully hang the audience upside down in order to connect with them. (Laughter) We dipped the audience in paint and slammed them against the canvas.

(Laughter) And also, we didn't do unnecessary rework.

(Laughter) Years later, with all this learning, we founded a school. We built the school we wanted to go to for our kids.

At Blue School, teachers, parents and children work together as equals to create a safe space that fosters a lifelong, joyful passion for learning.

Again, we didn't do unnecessary rework.

We don't shy away from the traditional way of doing things, for example, when direct instruction is the best way to learn.

But I balance that with integrated learning across all subjects, and balance is important.

In fact, the Blue School was founded on a balance between academic achievement and thinking creatively and understanding ourselves and others.

This may sound like common sense, but for some people, it's radical.

(Laughter) And it's these qualities that got Blue School a lot of attention, a truly innovative school.

Almost a decade later, we announced that we were expanding this to create a secondary school.

A teacher asked sixth-grade elementary school students to think together about the values ​​of junior high school.

It all started with one question: what does this school need to be for happy, productive days?

The children spent six weeks working individually and collaboratively, refining their ideas and coming to consensus, and the lists they came up with were pretty amazing.

Engage with each other properly and wholeheartedly

Respect and support the needs of others to learn

Make sure that diverse people feel part of the school, even if they look different, think differently, act differently.

Make it a place to get to know yourself and to get to know others

Take pride in fun and joy, and have that kind of time

Challenge yourself Be okay Don't be afraid to fail Support each other through it all

Look, 11-year-olds came up with this idea.

Children put into words what we discovered over the course of 20 years.

One of the big by-products of creating this vibrant community is that it's attracted people who want to embrace these values.

People who want to think it's more important than money, authority, tradition.

We can work in the same direction, and each of you has your own set of values ​​in your company, and in your community and your family as well.

For us, or at least for me, we believe that children's voices matter most, and we want to give them the tools to help build a harmonious and sustainable world.

We invite you all to join us on this exciting journey full of passion and joy.

When we do it together, "doing what is expected" is immense, because that expectation is to reshape the environment in which we live and change the world.

thank you

(applause)

Thank you very much

Please let me sit down. I'm old.

(Laughter) The topic I'm going to talk about is kind of unusual in some ways, because it's very old.

Roughness is part of human activity, and ancient scholars have been writing about it all along.

Roughness is something you can't control at all.In a way, roughness seems very complicated.It's just messy and messy.

There are all kinds of messy states

In fact, by sheer chance, many years ago, I jumped into this world of complexity. To my great surprise, I found a clue, a very sure clue, an order of roughness.

Today I want to show you some examples of what this means.

I like the word rough more than the word irregular, because irregular means the opposite of regular to someone who, like me when I was young, has studied Latin.

but it's not

Regularity is the opposite of roughness, because the very basics of the world are so rough.

let me show you some pictures

Some of these are man-made

Others are very real in some ways.

this is real vegetable cauliflower

So why did I show you this common and ancient vegetable, this cauliflower?

The reason may be old, but it's because this vegetable is so complex and so simple, both.

When you weigh a cauliflower, of course, it's very easy to do. And when you eat it, weight is important.

it's very funny

If you cut off a cauliflower bud with a sharp knife, it looks like a small cauliflower.

Cut more, cut more, cut, cut, cut more and more, but there's another little cauliflower.

In human experience, shapes with these unusual characteristics are always present, and each part is similar to the whole shape, but smaller.

So what did humans do with this feature?

really just a little

(Laughter) What I actually did was study this problem, and I made some really surprising discoveries.

We can measure roughness by numbers 2.3 1.2 sometimes even higher.

One day, one of my friends brought me a picture to annoy me and said, 'How rough is this curve?'

I replied, "Yeah, maybe a little less than 1.5."

it was 1.48

It doesn't take long

I've been researching things like this

These numbers are numbers that describe the roughness of these surfaces.

I must say that these surfaces are completely artificial.

These were created by a computer, and all you had to do was enter numbers, and these numbers were the roughness.

For the photo on the left, I used the roughness I got from a lot of landscape photography.

I used a higher roughness for the photo on the right.

After a while, the eye becomes very good at distinguishing between the two.

Man had to learn to measure roughness

This is very rough, this is smooth, this is perfectly smooth, and so on.

Only a few things are really smooth

So let's ask the question, what is the surface area of ​​a cauliflower?

I will measure over and over and over again

And if you do it more precisely, the answer will be bigger every time, if you take very small intervals.

What is the length of the shoreline of this lake?

A more precise measurement would make it longer.

The definition of coastline length, which seems so natural because there are so many examples, is actually a completely wrong idea. There is no such thing.

you have to measure it differently

what do you do knowing this

It's amazing how many things you can do

First of all, the artificial landscape, which is somewhat of my invention, is used throughout the film.

You can see the mountains in the distance

It may be a mountain, but it may be a lot of equations.

You can easily

It used to eat up time, but now it doesn't matter

So let's take a look at this, real lungs.

the lungs are a very strange organ

We know very well that the lungs are very light.

The volume of the lung is very small, so what about the surface area of ​​the lung?

Anatomists debate this all the time.

Some people say that a normal man's lungs are about the size of a basketball court.

Some people say, 'No, it's five basketball courts.'

that's a big difference

How does this happen, because the surface area of ​​the lungs is not well defined.

The branching bronchi divides and divides and divides, and the end of the branching is determined not by any laws, but by physical reasons, the mucus in the lungs.

What's happening is that humans have large enough lungs, and if lungs were finely branched, a whale's lung, a human's lung, plus a small mouse would all have the same length.

What's the advantage of having such lungs?

Surprisingly, very surprisingly, until very recently, anatomists had a vague idea of ​​the structure of the lung.

My mathematical methods have, surprisingly, played a huge role, because surgeons, who study lung disease and kidney disease, have these branching shapes that they can't understand structurally.

In other words, we created geometry, which is to say, we invented geometry for objects that have no geometry.

One of the surprising aspects of this is that this law of geometry is very short.

when you have a long formula

I will try to expand

Sometimes over and over again, the same repetition

You will eventually get something like this

This cloud is completely 100% artificially created.

99.9%

The only natural thing in all of this is the cloud roughness number, a number given to us by the natural world.

Complex things like clouds are unstable and changeable, but they have simple rules behind them.

This simple rule is not meant to explain clouds.

Weather forecasters must heed that rule

I don't know how advanced these paintings are, but they are old.

I was very much involved in this, but I began to look at other phenomena as well.

Now this is even more interesting

One incident that destroyed mathematics was not welcomed by many in the history of mathematics, but it happened about 130 or 145 years ago.

Mathematicians began to create shapes that could not exist in nature.

Mathematicians began to congratulate themselves, and to some extent, it was amazing that even nature didn't know that humans could produce it.

In particular, I created something like this, a curve that fills a plane.

A curve is a curve A plane is a plane The two never mix

they combined it

A person named Giuseppe Peano defined a curve like this, and it turned out to be a very interesting figure.

That was very important, and interesting because it was the boundary between mathematics, the mathematics that we've seen so far, which was created out of reality, and the new mathematics, which was created purely by human thought.

I'm sorry to point out this, but pure human thinking is ultimately based on what we've seen for a long time.

And this is what I introduced, a set of flows of plane filling curves (Peano curves).

The same explanation holds for itself

The years 1875 to 1925 were such an amazing time when mathematics suddenly began to create mathematics itself from all over the world.

And for example, when I was still a child and a student, there was this kind of object of study between mathematics and the real world, and I did a lot of research around these things.

I used a very complex natural principle to explain this.

In 1919, a man named Felix Hausdorff introduced a number just as a mathematical joke, and I discovered that this number was a good indicator of roughness.

When I told my mathematician friends about it, they said, 'Don't be silly. It's just a number,' he said.

Actually I wasn't stupid

The painter Hokusai knew this very well.

algae on the ground

I don't think he knew math, it didn't even exist.

And he was Japanese and had no connection to the West.

But ukiyo-e has long had the same properties as fractals.

i can talk about it

The Eiffel Tower also has fractal properties

I read Gustave Eiffel's book about the Eiffel Tower, and I was really surprised at how well he understood it.

This is a very messy trajectory of Brownian motion.

One day, midway through my academic career, I had too much work on my hands, so I decided to test myself.

Can I just see what everyone has been looking at for so long and find something new in leaps and bounds?

And I was looking at these trajectories, called Brownian motion, that just seemed to wander.

I played a prank on it for a while and put it back together.

And I said to my assistant, "I can't see anything. Can you draw?"

He drew it, which means he painted it all over, and he said, 'Well, this is how it turned out.'

I can see the island

I was surprised

Brownian motion was moving around with a roughness value of 2.

I measured 1.33

Measured more times

After a long measurement, the big Brownian motion was 1.33.

A math problem arises how to prove

It took my friends 20 years to do it.

3 of them were incomplete proofs

I put it together and got the proof

They won the prestigious prize in mathematics, the Fields Medal, and one of them got the prize for proving something that I couldn't prove.

Now people ask me, 'How did you start doing that?

How did you get involved in such a strange problem?”

What made me do that is that I'm also a mechanical engineer, a geographer, a mathematician, and a physicist.

It's actually because, strangely enough, I started studying the stock market.

And here I made a theory, and I wrote a book about it, about increasing financial prices.

In the upper left is the long-term data

At the top of the right hand side, you'll see a theory that's very trendy.

It's so easy that you can write a lot of books very quickly.

(Laughter) There are a lot of books about this.

Now let's compare that to the real price increase.

What is the actual price increase?

These other graph lines contain data for some real price increases and data that I made up.

What does that graph say about the idea there is that you can model price movements.

it worked well 50 years ago

For 50 years people were making fun of me because they made it easier.

But at the moment we're talking, you're listening to me.

(Laughter) These two lines represent the average. The blue line is Standard & Poor's. The red line is Standard & Poor's with five discontinuities that don't contribute.

Discontinuity is a nuisance, and in many price studies it is removed.

"It's God's work.

When you remove it, it becomes something that makes little sense

God's work. In this graph, five God's works are as important as everything else.

In other words, the act of removal is not the work of God.

That's the point and the problem

If you're savvy with these things, you'll be able to control the price.

this is the graph for that

So let's get down to the last problem, a set named after me.

In a way it's my life

My adolescence was spent in France-occupied Germany.

I had very big dreams because I thought that in a day or a week I would be gone.

After the war, I met my uncle again.

My uncle, a very eminent mathematician, said to me, "Look, here's a problem that I couldn't solve 25 years ago, and no one can solve it.

This is the construction problem of Gaston Julia and Pierre Fatou.

If you can discover something new, you can create your own work.”

it was a very simple problem

I looked at the problem, but didn't find anything, as many people have tried before.

After a while, computers came along, and I decided to apply it to computers. It's not a new problem in mathematics, but if you shake it up, it's a new problem, and I applied it to an old problem.

And then we expanded from the real number of the points on the solid line to the imaginary number, which is the point on the plane, where it should be, and this shape appeared.

this is a very unusually complex shape

The equation is hidden here Mapping from z to square plus c

very simple and no frills

not so funny

Turn the crank once, twice, twice, and a strange shape will appear.

this is what appeared

I don't want to say too much about these shapes.

This shape appeared, this also appeared

Such a complex, harmonious and beautiful figure.

this appears over and over again

One of my major findings is that these islands are pretty much the same thing as a bunch of large figures.

And these very strange decorations are everywhere.

All of this comes from this short formula, which has only five symbols.

Look at this

Coloring was added for two reasons

The first is that these shapes are so complex that we can't understand what the numbers mean.

When you try to make a drawing, you have to choose a format.

My policy is to represent shapes, always in different colors, because coloring emphasizes and impresses shapes.

it's very complicated

(Laughter) In 1990, I was in Cambridge, England.

Three years later, pilots were flying over an area to receive an award from the university, and they found this.

where did this come from

Clearly from extraterrestrial life

(Laughter) A Cambridge newspaper wrote an article about the "discovery," and the next day I received over 5,000 letters saying, "That's just a very large Mandelbrot set."

so let's finish

I got this diagram from my training in pure mathematics.

Infinite wonders are born from simple rules and repeat endlessly

Thank you very much

(applause)

I start with a story, Seth Godin's way, when I was 12.

I got a blue sweater from my uncle Ed, a very nice sweater.

A furry zebra crossed his belly, and Mount Kilimanjaro and Mount Meru were on his chest, and it was also furry.

I wore it every chance I got, and it was my favorite

One day in my first year of high school, when I was with the football players

My body was visibly transformed, and my high school nemesis, Matt Mussolina, yelled, "You don't have to go far on a ski trip because you can ski on Novogratz."

(Laughter) I was embarrassed and humiliated, and flew home and accused my mother of wearing a ugly sweater.

I took my sweater to Goodwill, I threw it in as a ritual, I thought I'd never remember or see this sweater again.

Eleven years later, I'm a 25-year-old kid.

I work in Kigali, Rwanda, and I was jogging down a steep hill when a little boy -- an 11-year-old -- ran up to me in my sweater, about three meters ahead.

i think i'm that stupid

But out of curiosity, I ran to the kid -- which, of course, frightened him a lot -- and I grabbed him by the collar and turned it inside out, and there was my name on it.

This story has symbolic meaning that tells me how we are all connected on this planet.

We don't think about the impact our actions or inactions have on strangers.

This story also gives us a broader context of what aid is and what it can be.

My sweater made the journey from Goodwill, Virginia, to a large industry that was then sending tens of millions of tons of used clothing to Africa and Asia.

It's good to offer clothes at low prices

But at the same time, especially in Rwanda, it hit local retailers.

I'm not saying it can't be done, but we should do a good job of answering the questions that need to be considered when we think about impacts and responses.

Back in Rwanda, around 1985, 1986, I was doing two things.

I started a bakery with 20 unmarried mothers.

We were called "Kanbare Bears" and we were going to monopolize the snack food business in Kigali.

We have a good business model, and we've achieved it, and we've seen these women change on a micro level.

Around the same time, I also started microfinance banking. Tomorrow, Iqbal Qadir will talk about Grameen Bank. Grameen is the father of all microfinance.

we did a lot of things right

He focused on the business model and insisted on investing in his company.

Ultimately, the women decided for themselves how they would use these credits to start small businesses, increase their income, and provide a better life for their families.

But we didn't realize what was going on around us. Fear, ethnic strife and, of course, the aid game, mingled together, became a hidden but tangible movement in Rwanda, which at the time relied on foreign aid for 30 percent of its national budget.

The genocide happened in 1994, seven years after women worked together toward the same dream.

Our microfinance bank luckily survived.

Became the largest reconstruction financier in the country

The bakery is gone, but I've learned the importance of accountability, building with people on the ground, and, as Steven Levy puts it, a business model where incentives matter.

No matter how complicated we are, incentives matter.

Chris said, "Great things are happening all over the world. We are witnessing a shift in the zeitgeist, and I think he's absolutely right. I'm thrilled with what's happening in the G8 -- thanks to people like Tony Blair and Bono and Bob Geldof -- people all over the world are talking about global poverty. The world is talking about Africa like never before.

I'm impressed

But on the other hand, what keeps me up at night is the fear that the victory we expect from the G8 -- a $50 billion increase in aid to Africa, a $40 billion debt reduction -- will be a victory, a moral pardon, more than the first chapter.

In fact, we've just finished the first chapter, rejoice, and after closing the chapter, we should realize that we need a second chapter.

And the only thing I want to say today, I want you to remember, is that the only way to end poverty is to build a viable system on the land, a system that is financially sustainable and scalable to provide affordable goods and services to the poor.

so we can make poverty a thing of the past

And that's -- this whole philosophy -- that inspired me to launch the Acumen Fund, which is trying to create a little blueprint for how to provide water, health care, housing to Pakistan, India, Kenya, Tanzania and Egypt.

So that you can easily imagine what we do, I'll tell you a little about it with some examples.

But before that -- and this irritates me -- who exactly is the poor?

We often talk about strong, gigantic crowds yearning for freedom, but it's actually an amazing story.

At a macro level, four billion people on earth live on less than four dollars a day.

we call them poor

Collectively, it's the third-largest economy on the planet, yet it's mostly invisible.

Where I work, people make $1 to $3 a day.

who are they?

people who work in farms and factories

People who work in government offices Drivers

housewife

They spend mostly on essentials and services like water, health care, housing, etc. They pay 30 to 40 times more than the middle class in the same country -- especially in Karachi and Nairobi.

Poor people try to make smart choices, and they do, if given the chance.

I'll give you two examples

The first is India, which has 24 million farmers, most of whom earn less than two dollars a day.

In Aurangabad where we work, the land is very dry.

People's average income is 60 cents to $1

This man in pink is Ami Taber, a social entrepreneur.

When he saw a big initiative in Israel, he devised a way to do drip irrigation, a way to bring water directly to the plants.

Previously, it was only possible on large farms, and Ami Taber has modularized this to an eighth of an acre.

Make it small as a rule

Infinitely expandable and made affordable for the poor

This family, Sarita and her husband, were living in a tin-roofed hut with only three walls when they purchased the $15 unit.

After the harvest, their income increased to the point where they could buy a system that covered an entire quarter of an acre.

two years later i met them

They make four dollars a day, middle-class Indians, and they show me the concrete foundation they've just laid on which to build their house.

The future really shined in her eyes

i believe so

You can't talk about poverty today without talking about malaria bed nets, and I applaud Jeffrey Sachs at Harvard for bringing to the world the fad idea that $5 can save a life.

Malaria kills 1-3 million people each year

300-500 million reported

Africa is estimated to lose 13 billion annually to this disease

$5 can save a life

We can send people to the moon to investigate life on Mars -- why can't we give $5 net to half a billion people?

It's not a question of why it can't be done

The question is, how can we help Africans become self-sufficient?

There are many hurdles

1: Too low productivity 2: Too expensive

Third: This is a good way -- right near the factory

Distribution is a nightmare, but it's possible.

We financed 350,000 dollars in Africa's largest factory that produces traditional mosquito nets, introduced technology from Japan, and started producing mosquito nets that last five years.

These are photos of the factory

Today, 3 years later, the company hires an additional 1,000 women.

Contributes $600,000 in wages to the Tanzanian economy

The largest company in Tanzania

The current annual production capacity is 1.5 million mosquito nets, which will reach 3 million by the end of the year.

We expect to reach 7 million by the end of next year.

The production side is doing well

On the distribution side, on the other hand, there is still a lot of work to be done.

Today, 95 percent of these bed nets are purchased by the United Nations and distributed mainly to people across Africa.

We are developing Africa's most precious resource -- the human resource.

are women

Let me introduce you to Jacqueline, who has the same name as me, but is 21 years old.

If she had been born outside of Tanzania, she would have run Wall Street.

She runs two lines and has saved enough money for a down payment on a house.

He earns two dollars a day, he's building an education fund, and he says he's not going to get married or have children until he's done this.

When I told her about our idea -- taking the Tupperware model in the United States and having the women themselves go out and sell these nets to other women -- she quickly figured out how much she could make out of this and joined.

I learned from one of my favorite companies, IDEO, and quickly built a prototype and went to Jaclyn and her neighborhood.

She brought in 10 women she knew to see if they could sell this bed net for five dollars, and people said no one would buy it.

Contrary to our common sense, she didn't mention malaria until the very end.

Preaching comfort, status and beauty first

She said that if you put this mosquito net on the floor, insects will not come to your house.

Children don't wake up at night, the house looks stylish on the windows

And so we started making curtains that weren't just fashionable, they represented status -- they were thinking about the kids.

And finally, she talks about saving a child's life.

I learned a lot about how to sell goods and services to the poor.

Let me conclude by saying that there are many possibilities to make poverty a thing of the past.

To do it right, we need a business model that's scalable and falls into the category of Africa, India, developing countries, a business model that all the people in the world can do for themselves.

because at the end of the day, it's a relationship

Understanding that people don't really ask for charity. They want to make their own choices and solve their own problems.

Next time, think about how you're going to engage with this idea and the potential that we have -- to make poverty a thing of the past -- to be part of the process, moving from a world of us and them to a world where we all live and share.

Thank you

(applause)

I'm Ellen and I love food.

I wasn't drawn to it from the beginning.

I started with global security policy because living in New York on 9/11 strongly influenced me.

And the reason that led me to eating was that I noticed hunger irritability, so I assumed it was the same for other people.

It's even more frustrating when you and your kids, your neighbor's kids, the whole neighborhood are hungry.

In fact, what is surprising is that the regions of hunger are often also unsafe.

So I joined the United Nations World Food Program as a way to address security issues through food issues.

While working there, I came across what I thought was the coolest of their plans.

It's called school food assistance, and it's an easy-to-understand plan to break in and stop the growing cycle of hunger and poverty around the world.

Education can be a way out of poverty, and in addition, children can be fed with the macronutrients and vitamins they need for mental and physical development.

I met Lauren Bush at the United Nations.

She had the brilliant idea of ​​selling a bag called the FEED bag, ironically getting food money out of the feed bag.

But for every bag you sell, you can feed a child for a year.

It's simple, we thought, the cost of feeding a year is

It's about $20 to $50, so I could raise a ton of money through the sale of these bags and spread the World Food Program.

As you know, the UN's response was slow at times, and they basically said no.

It's a great idea to raise a lot of money.

I started a company 3 years ago with some crazy thoughts, and my first dream was to found FEED.

Here is the website image

We started selling these bags one month after the earthquake in Haiti to provide school lunches to children.

The FEED is functioning well, with 555,000

So far, we have provided 55 million meals to children around the world through bag sales.

When you think of hunger, you think of eating, and it's hard to really think of hunger.

my head is full of eating and i love it

There's something a bit odd about international hunger, and when we discuss international issues, we often get interested in what's being done in the United States. What are we doing for America's children?

There's definitely hunger in the US, 49 million adults and 16.7 million children.

It's a big problem for America.

Hunger means very different things in the United States and abroad, but it's also very important to address hunger in the United States.

But as you know, the more serious problem is obesity, which is dramatic.

It's also worth noting that hunger and obesity have intensified in the last 30 years.

Unfortunately, obesity is not just a problem in the United States

In fact, it's spread all over the world, largely due to the spread of the U.S. food system.

the number is huge

There are over 1 billion obese people and over 1 billion hungry people on the planet.

This issue seems to have two branches, but I've been trying to figure out what the link is between obesity and hunger.

both are food related

Underlying both when we think about food is probably problem agriculture.

Agriculture is a food source

U.S. agriculture is very interesting

It's so integrated that we eat the food that's produced there.

Most of the produce is corn, wheat and soybeans.

It's fast food and processed food that makes up 75 percent of the food we eat.

Unfortunately, this agricultural system hasn't worked well in the last 30 years when it comes to delivering technology to the world.

Agriculture in Africa, home to the world's worst hunger, has declined dramatically as hunger worsens.

So we are not associated with exporting farming systems that are suitable for feeding people around the world.

who is farming? I thought

So I went to a grain depot in the Midwest, and it didn't really help me understand agriculture, but I think I got some great shots.

So let me actually be quite frank with you, and this is only American farmers, but the reality is that when I spent my time in the Midwest, they were generally fat.

The farm itself is also huge.

But farmers in other countries are very thin because they're hungry, the most in the world.

It's the subsistence farmers who are hungry

And most of them are women. That's a whole other topic, so I'm not going to talk about it, but one day I'd like to tackle the issue of gender equality.

it is very interesting to look

We have these huge consolidation farms, where our food is grown, and it's not until after the oil shocks, right in the 1980s, that consolidation began and small American farms disappeared.

And during this same period, we've let the American farmers go free.

What is unfortunately produced becomes our food

In the United States, much of our food causes obesity, and over the last 30 years, we've changed our eating habits dramatically.

I'm crazy

20% of children under 2 drink soda

You wouldn't normally put soda in a baby bottle

But a lot of people do because it's cheap, and this is how our diet has changed over the last 30 years.

It's all changed. It's not just the United States, it's exporting the same food system all over the world. If you look at the data from less developed countries, especially in rapidly growing urban areas, American processed foods are being consumed.

Then, in a generation, we went from the health hazards of hunger to obesity, to diabetes and heart disease.

It's superseded by problems. This troubled food system affects both hunger and obesity.

Needless to say, it's a global food system problem with more than a billion obesity and hunger worldwide.

i think this is the only view

It's important to think of these two phenomena as one system, rather than as separate, branching problems.

We source a lot of our food from all over the world, and the world is importing the US food system, so there's a lot to be said for a new perspective.

I'm not as tech savvy as most of you, but what I've learned is that it's obviously taken 30 years for the mouse, the Internet, Windows, and other technologies to reach us.

In other words, there is a 30-year cycle.

2010 could be interesting, because it's the end of the 30-year cycle, and it's also the birthday of the world's food system.

So first let's talk about this birthday

If you think about what has happened in the last 30 years, I think there's hope: Breed Crop BigGulp Chicken McNuggets.

High-fructose fructose will mark the 30th anniversary of the changing response to agriculture internationally, in addition to the domestic agricultural crisis.

There are good reasons to regard the next 30 years as a period for creating a new food system.

I'm not the only one obsessed with these 30 years

As Michael Pollan and Jamie Oliver mentioned at the TED Prize Wish, the last 30 years have made a lot of sense in transforming the food system.

1980 is important to me too, because this year I will be 30.

And in the time since I was born, a lot has happened around the world.

So my second dream is for us to see the next 30 years as a time to reinvent our food system.

We recognize what happened in the past, and if we start now and take a long-term view of technology and improvements to our food system, we may be able to reinvent our food system, and the next time I'm 60 and I'm going to talk to you, I'll be able to call it a success.

Today we are announcing the opening of a new organization, the 30 Project, which is also a new fund for the FEED foundation.

The 30 Project focuses on just such long-term ideas to change the food system.

I hope to find a long-term solution that brings together those who are fighting global hunger and those who are fighting obesity at home to create a better food system for everyone.

We tend to think that the two systems are very different, and we debate whether organic farming can feed the world, but if we look at the 30-year time horizon, there is hope for a joint proposal.

I hope we can talk about holistic, systemic, long-term solutions that improve food for all by bringing together groups that currently don't have much in common, like ONE Campaign and Slow Food.

I was thinking, for example, as a practical matter, children in the Southern Bronx need apples and carrots, just like children in Botswana.

How do you provide them with nutritious food?

Meat and fish production is also a global problem

Understanding how to produce proteins in an environmentally and human-friendly manner is critically important in tackling issues such as climate change and the use of petrochemical fertilizers.

These are very relevant long-term challenges, and they are important issues for both small African farmers and American farmers and consumers.

I also think that a new way of looking at processed foods is to put the negatives of petrochemicals and fertilizer runoff on top of the price of potato chips. When a bag of chips becomes more expensive than an apple, people's responsibility for food choices will shift in a different direction, because 75 percent of food is made up of choices rather than corn, soybeans, and wheat.

30Project.org was launched and started out with partnerships with a few organizations.

We will be expanding further in the coming months

But I'd like to encourage you to take a long-term view and think about how you can bring about change in the food system.

(applause)

A tree is the epitome of quiescence

Once rooted, it's been on the same ground for generations, but if you shift your focus from the trunk to the twigs, the tree becomes a living entity, moving and growing.

I turned trees into artists to explore this movement.

I simply tied the tip of my brush to a twig.

I waited for the wind, I held the canvas, and I made art.

The painting on the left is by red cedar and the painting on the right is by Douglas fir.

But I was interested in how to capture and quantify the movement of trees, so I measured and summed up the individual lines to measure the annual movement distance of the ivy maple that made this picture.

I then multiplied that by the number of twigs per branch by the number of branches per tree and divided by the equivalent of a year.

So I could calculate the annual distance traveled by a single tree.

do you know how much

186,540 miles, seven times around the earth.

By simply shifting the focus from one trunk to many dynamic twigs, we can see that the tree is not just a still life, but extremely dynamic.

I started thinking about how I could use what I learned from this tree, and I started thinking about other entities that were static and doomed but wanted change and dynamism, and one of them was prisons.

A prison is a place where people who break the law are confined and detained.

The prison system itself is also at a standstill.

Over 2.3 million men and women are incarcerated across the United States.

their number is increasing

60% of those released go back to prison

Funding for education, vocational training and reintegration is dwindling.This vicious cycle of imprisonment continues.

We looked to see if what we've learned from trees as artists can be applied to static facilities, prison-like facilities. The answer is yes.

In 2007, we launched a partnership with the Washington State Department of Corrections.

Worked with 4 prisons to bring science and scientists sustainability and conservation projects to 4 state prisons

We do science lectures Prisoners come to science lectures instead of TV and weightlifting.

i think it's movement

We've partnered with the Nature Conservancy to grow endangered plants for inmates at the Stafford Creek Correctional Center to restore the state's remaining prairies.

I think this is also a movement.

Working with the Washington State Department of Wildlife, we raised endangered frogs and later released them into protected wetlands.

this is also a movement

Recently, I've been working with prisoners in isolation in top-level security facilities.

I have a fissure fracture, and I got into a fight with a guard and another prisoner.

Quarantine in an empty private room, 23 hours a day.

I enter a booth where I can't move during interviews with reviewers and psychiatrists.

You're taken to a quiet, dull playground for an hour a day.

We can't bring trees and plants and frogs into our immediate surroundings, but we're bringing images of nature into our playgrounds and covering the walls with plants so that we can interact with images of nature.

Mr. Lopez, who has been in solitary confinement for 18 months, and he offers us an image of an ideal type that makes himself and his peers peaceful and non-violent.

As you can see, when we gather together small movements for change, we can move things like the prison system into hope.

If you just look at the trunk, the tree is a still life.

But if trees can create art, if they can circle the earth seven times a year, if prisoners raise plants and frogs, then other still lifes within us, like grief, addiction, racism, can be transformed as well.

Thank you for your attention

(applause)

I still remember in school when our teacher told us that the world's population had reached three billion, and it was still 1960.

What I'm going to talk about now is how the world's population has changed since then and what it will look like in the future.

Instead, I've made progress. Today, I'm showing off a brand new analog educational technology, like this box from IKEA.

This box represents 1 billion people

A schoolteacher told me in 1960 that the industrialized world had a population of 1 billion.

In the developing world, on the other hand, they said the population was 2 billion.

two worlds were divided

There was a huge gap between one billion industrialized countries and two billion developing countries.

In industrialized countries, people were healthy, educated, wealthy, and had small families.

Their dream is to buy a car

In 1960, every Swede was saving up to buy a Volvo like this.

This is the economic level of Sweden at that time

By contrast, the average household's strong desire in developing countries was to have enough food for the day.

they were saving to buy shoes

There was a tremendous gap in the world when I was growing up.

And the stereotypes that have arisen from the gap between the West and the rest of the world remain in the language we use today, and we call them "Western countries" and "developing countries."

But the world has changed, and we need to rethink and understand the stereotypes and classifications of the world as soon as possible.

And that's what I'm going to show you today, and what happened to the world between 1960 and 2010 is that, astonishingly, four billion people joined the world's population.

See how many

It's doubled since I was in school.

And of course there was economic growth in the Western world.

A lot of companies helped the economy grow, people from Western countries moved here.

Now their aspirations are not just about owning a car

Now they want to fly very far away and spend their holidays.

now they are here

And the most successful of the developing world are also on the move, and their economies have come to be called emerging economies.

and they're starting to buy cars now

A month ago, when the Chinese company Geely bought Volvo, the Swedes finally realized that something big had changed in the world.

(Laughter) It's like this now.

The tragedy is that the two billion people struggling for food and shoes here are still as poor as they were 50 years ago.

What's new is that the largest group, the three billion people here, are starting to transform into emerging economies. They're pretty healthy, relatively well-educated, and have two or three children for every woman.

Their dream is to buy a bicycle, and later on a motorcycle.

This is our world now, the gap no longer exists.

But the gap between the poorest and richest countries is only widening.

But it's a world where all people are distributed on a continuum, from walking to riding bikes to driving to flying, and most people are in the middle.

This is our new world in 2010

So what will happen in the future?

Let's predict the year 2050.

I was in Shanghai recently and asked what was going on in China, and it seems that China is on the verge of becoming an economic powerhouse like Japan.

Other predictions, this one will grow by one, two or three percent.

This one will grow by 7 or 8 percent, this one will move here.

they start using planes

These lower middle income countries will develop further economically as emerging economies.

But that's assuming they'll only move this far if we invest in the right green technologies, avoid abrupt climate change, and stay relatively cheap in energy.

and they start buying electric cars

such a future is expected

But what about the poorest two billion people?

What's going on with these 2 billion people?

Will they move too?

This is where population matters, where there are two to three children for every woman, where family planning is widespread, and where population growth has leveled off.

population is growing here

That 2 billion people will grow to 3 billion in 10 years, and they'll grow to 4 billion after that.

This situation won't stop unless there is a nuclear war like we've never seen before.

because change has already begun

But if they get out of poverty, get an education, if their child survival improves, they can buy bikes, they can buy cell phones, they can get here, and this will stop population growth by 2050.

We can't leave people at a level where they want food and shoes, because that will lead to continued population growth.

I'm going to explain why, using earlier digital technology.

A circle is drawn on the screen to represent each country.

Size represents population

Colors represent continents

The yellow represents America, the dark blue represents Africa, the brown represents Europe, the green represents the Middle East, and the light blue represents South Asia.

That is India and this is China

This axis represents the number of children per woman, whether it's two children, four children, six children, eight children, small or large families.

The era is 1960

The bottom axis is child survival, which represents the percentage of infants who survive and go to school, 60, 70, 80, 90 percent and the same as in the wealthiest and healthiest countries, up to almost 100 percent.

Look, this is the world that my teacher told me about in 1960. Here are the countries of the Western world of one billion people, characterized by high child survival and small families, and the rest of the world is a multicolored developing world characterized by low child survival and large families.

What happened? MOVE THE WORLD THAT!

As you can see, child survival rates have increased over the years!

Health education gives us soap, vaccines, penicillin, and then family planning.

Child survival rates are up to 90 percent, family sizes are declining, and this is the case in many Arab countries in the Middle East.

You see, Bangladesh is catching up with India.

All the emerging economies have matched the Western world in good child survival rates and small family sizes, yet the poorest billion still remain.

Can you see the box over there representing the poorest billion people?

they are still here

Child survival is still 70 to 80 percent, which means that for every six children, at least four will survive to the next generation.

And the population doubles every generation

The only way to really stop the world's population growth is to continue to improve child survival rates to 90 percent.

That's why the Gates Foundation, UNICEF, aid agencies, and others are so effective in investing with governments in the poorest countries, because they're actually helping us reach a sustainable population size in the world.

If you do the right thing, the population will stay at 9 billion.

High child survival is the new goal

Child survival is the only way to stop population growth.

Will it come true?

I'm not an optimist, but I'm not a pessimist either.

I'm a very serious "positivist"

This is part of a new category of decoupling emotions and just working analytically with countries around the world.

it is possible

by green technology

There will be even better outcomes because investments that reduce poverty and global governance will make the world this way.

Look at the position of the old Western countries

Remember this blue box that single-handedly led the world and lived its own way?

this will not happen

The role of the old Western world is to be the foundation of the new world, the modern world, nothing more, nothing less.

But it's a very important role.

It's about playing a role and getting used to it.

thank you

(applause)

Some years ago I went out looking for God

I'll tell you from the beginning that this mission has failed, and as a lawyer, it's really hard for me to admit that.

But the many things I found on that failed trip instead were very enlightening.

One thing in particular gave me a lot of hope.

It has to do with the magnitude and importance of differences between humans.

I grew up in the United States of Indian parents — culturally Hindu, but religiously I practiced Jainism, a strict religion that is not very well known outside of India.

That alone explains how I'm a minority, Indians make up about 1 percent of the American population, Hindus 0.7 percent, and Jains 0.00046 percent at best.

In other words, the annual number of visitors to a teddy bear factory in Vermont exceeds the number of Jains in the United States.

In addition to me being in the minority, my parents made a decision: "I've come up with a good idea! Let's go to a Catholic school."

At that school in Frothmoor, Illinois, the Infant Jesus of Prague School -- yes, that's what the school was called -- we believed in the teaching that there is only one God, and that God is the source of all creation, everything in the world, from the beginning of the world to moral guidance to eternal life.

But when I got home, I was taught something completely different.

Adherents of Jainism do not believe in one god, nor do they even accept the idea of ​​multiple gods.

Instead, we are taught that God manifests itself through personal perfection, and believers spend their lives trying to rid themselves of the bad karma that prevents them from becoming God-like, perfect human beings.

Moreover, one of the pillars of Jain thought is what is called non-absolutism.

Non-absolutists believe that one person cannot attain or know absolute truth, even if it is a belief.

If you're going to try this concept out on a Catholic school priest or nun, good luck.

(Laughter) No wonder I'm confused and how different I feel.

The scene changed, and twenty-odd years later, I had become a deeply spiritual person, and I was still struggling.

Because I was mentally "homeless"

Because I found myself in the "None" category, and it's not an acronym, it's not a clever pun, it's not a "Nun."

It's just a painfully boring name given to people who check "no" for religion in the Pew Research Center poll.

(Laughter) Some of the interesting things about people in the "None" category are that they are numerous, and that they are skewed toward young people.

As of 2014, more than 56 million people in the United States had no religious affiliation.

"None" accounts for more than a third of adults aged 18 to 33.

But for me, the most interesting thing about people without "no" is that most of them are spiritual.

In fact, 68% of us believe with some degree of certainty that God exists.

I'm just wondering who the god is

(Laughter) Once I realized that I belonged to the nothingness, and found out about it, the first thing I felt was that I wasn't alone.

It was a relief to finally be part of one of the largest groups in America.

But then I felt a little uneasy about the fact that there were so many of us.

It can't be good, because if those of us with deep spiritual minds haven't found God, finding God is going to be harder than we first thought.

So I decided to stay away from the mundane in my spiritual journey, ignoring the mainstream religions and instead daring to seek out mediums, healers, and gurus on the fringes of the spiritual world.

But remember, I'm not an absolutist, so I can be open to anything and it's worked out well. I went to a witch potluck dinner at the LGBT Center in New York City, and I befriended two witches. So I spent hours chanting a spell, and I got together with a tequila-drinking medium, and I summoned a spirit, and the strange thing about that experience was that among the spirits were my dead mother-in-law and the former manager of the hip-hop group The Roots.

(Laughter) Yes, my mother-in-law told me that she was very happy that her son had chosen me to marry her.

Of course! But— (Laughter) Yeah.

But the manager of The Roots advised me to cut down on the amount of pasta I ate too much.

Now, we can all agree that my husband was lucky that it wasn't his late mother who advised him to cut back on carbohydrates.

(Laughter) I also joined a laughing yoga group from South Africa, and I saw a woman in a 45-minute orgasm -- no myth -- she was harnessing cosmic energy -- I wonder if I'll go back -- (Laughter) I put on a leotard, put on ski goggles and called God from a phone booth at a Burning Man event in the Nevada desert, and I had an old Indian man lay on top of me.

A man named Paramji, a total stranger, chanted into the chakras of my body and harnessed the power of cosmic energy to heal my yoni, which is Sanskrit for the vagina.

(Laughter) I was going to show you the slides here, but several people warned me that at TED -- even at TED Women -- my "yoni" slide would never be appropriate.

(Laughter) Shortly after I started my quest, I went to visit a Brazilian faith healer, John of God, and also to his settlement in Brazil.

John of God is said to be a full trance medium, which means he can talk to the dead.

However, he claims to channel only certain spirits, only saints and doctors, and that by doing so he can cure any disease.

John of God doesn't even have a medical degree, let alone a high school diploma, but he actually performs surgery, using a scalpel, but without anesthesia.

yes i'm a bit skeptical

He also performs invisible surgeries and surrogate surgeries that don't involve cutting the body, and is said to be able to perform surgeries on behalf of a patient's loved ones and cure patients thousands of miles away.

There are many rules and regulations for meeting John of God.

It's a very complicated process, but the end result is that you meet John of God, give him three things you want him to fix, and he works the spirits of saints and doctors to make your wishes come true.

(Laughter) Before you start laughing, think about it. At least according to his website, more than eight million people -- including the daytime TV goddess Oprah -- have met John of God through his hands.

But to be honest, the experience was a bit weird and inconclusive. In the end, I just got on the plane and flew home, and I was even more confused than I was before I left.

But that doesn't mean I didn't get anything.

A few weeks before I left for Brazil, I had confided my quest plans to a few friends and a few colleagues at Google, who was working as a lawyer at the time.

Maybe I was talking to other people, I don't know. I'm talkative, so it's the neighbors, the coffee shop clerk who stops by every morning, the Whole Foods checkout lady, the stranger who sits next to you on the subway.

I told each of them where I was going, explained what I was going for, and offered to take their three wishes with me to Brazil.

To my surprise, my inbox was flooded with emails.

The story spread from friend to friend, to friend, to friend, to friend, to friend, to stranger, to coffee shop clerk, until the day I left for Brazil, no one knew my email address.

The only thing I came to the conclusion at that time was that I made too many promises to an abnormally large number of people.

But after a few years, when I read the emails again, I realized something completely different.

The emails had three things in common. The first was a little strange.

Most people gave me detailed instructions on how to contact them.

What I told them, and what my friend told them, is that you need a photo with a list of three wishes, a name, and a date of birth.

But he sent me a detailed address, including an apartment number and a zip code, as if John of God wanted to stop by my house to meet me or send me a package.

It's unlikely, but he wanted to make sure that John of God didn't get his wish granted and that it wasn't delivered to the wrong person or address by mistake.

Even though I knew it wasn't possible, I wanted to prevent a possible failure.

The second common denominator was equally strange, but much more subdued.

Almost everyone — a stranger you met on the subway, a coffee shop clerk, a lawyer in the office down the hall, a Jew, an atheist, a Muslim, a devout Catholic — all wanted the same three things.

Of course, there were a few people who said they were totally out of it, and they wanted the cash.

But aside from those few exceptions, the commonalities among those who remained were striking.

Most people wanted their own health and the health of their families first.

Most of the time, I wanted happiness next, and love last, in that order health, happiness, love.

Some wanted to be cured of certain health problems, but most simply wanted a healthy body.

When it comes to happiness, everyone describes it in slightly different ways, but for the most part it's the same subtype of happiness: the kind of happiness that's deeply felt, the kind that takes root in the soul, the kind that sustains us, even when we've lost everything else.

And when it comes to love, everyone wants romantic affection, the kind of love you see in long romance books, the kind of soul-bound partner that will stay with you for the rest of your life.

I'm sorry, thinking about my husband filled my heart

I'm in trouble! i forgot how much i said

(Laughter) (Applause) So, for the most part, whether it's a friend or a stranger, regardless of where they were raised, their race, or their religion, they all wanted the same thing, and it was the same thing that I wanted, a simplification of a basic human need identified by social scientists Abraham Maslow and Manfred Max-Neef.

No one has ever heard the answers to the important existential questions, the proof of God's existence and the meaning of life that I was searching for.

We didn't even want to end war and world hunger.

I could have asked for anything, but all I asked for was health, happiness and love

The emails also had a third thing in common.

they all closed in the same way

Instead of thanking me for carrying their wishes all the way to Brazil, they wrote, "Don't tell anyone."

So I decided to tell everyone (Laughter) and I'm here on this stage now, not because I'm an untrustworthy person, but because I feel that people, especially now, need to know that we actually have a lot in common.

Yes -- the best I know is that I'm not a statistician, so the only data I can give you is what's piled up in your email inbox, and it's more anecdotal than scientific, more qualitative than quantitative.

As anyone who works with data will tell you, it's never statistically significant, it's never a demographically relevant sample.

And yet, I can't help but think about the emails I get, every time I'm reminded of the prejudice and hatred I've faced in my life, or every time a hate crime or a senseless tragedy strikes and makes me feel sad that the differences between us may be insurmountable.

What I tell myself is that I have proof that there is a commonality of humility and unity in our human nature, and that even when given the opportunity to have anything come our way, most of us want the same things, no matter who we are, which god we believe in, or which religion we follow.

Another thing I'd like to point out is that some people's wishes are so strong that they even send emails to "no" people -- mentally confused -- maybe others are confused, but they even email "no" people like me. I wondered if someone I could never imagine would grant my wish

So now, as I reflect on my spiritual quest, I never found God, but the discovery of this fact has helped me find my place. In today's world, divided by religion, ethnicity, politics, ideology, race, even though we have many obvious differences, at the end of the day, at the most basic level of human beings, we are all the same.

thank you

(applause)

(Nina Drvik Brockmann) We were all taught that the hymen is the proof of virginity.

but it was a mistake

The common myths we hear about female virginity are based on two myths of anatomy.

The medical community has known the truth for over 100 years, yet two myths continue to make life difficult for women around the world.

(Ellen Stocken Dahl) The first myth is about bleeding.

It is said that when a woman has penetrative sex for the first time, her hymen ruptures and bleeds.

So if there's no blood stains on the sheets after it's done, it's possible the woman wasn't a virgin.

The second myth follows from the first.

It is believed that the hymen ruptures and bleeds, so it is also believed that a woman's hymen may disappear or undergo a drastic change in shape during the first sex.

If that's true, then it would be easy to determine if a woman is a virgin by examining her genitals and performing a virginity test.

CA: Those are the two myths, "virgins bleed" and "the hymen disappears."

It may not matter to you

You're going to wonder if we should care about those tiny folds of skin on a woman's body.

But in reality, the problem is more than just an anatomical misunderstanding.

The misconceptions about the hymen have been believed for hundreds of years because they have cultural implications.

These myths have been used by all cultures, religions and historical contexts as powerful ways to control women's sexuality.

Women are still distrusted, humiliated, hurt, and even worse, victims of honor killings, simply because they don't bleed on their wedding night.

Some women can't get a job, save face, or get married without undergoing an insulting virginity test.

CA: For example, in Indonesia, when women enlist in the military, they are required to be tested.

In Egypt, after the 2011 anti-government protests, the military forced virginity tests on women's activists.

In Oslo, doctors sometimes check girls' hymens to reassure parents that their children are still clean.

Unfortunately, there are too many examples like this to enumerate.

Women, fearful of failing to live up to myths about the hymen, sometimes resort to a variety of tricks to get the bleeding right.

There's also plastic surgery. It's called hymen reconstruction surgery. Some people spill the blood they've prepared on the sheets after sex.

Nina: By telling girls that you can't hide anything you do, and that you can tell by looking at your body, you terrify them.

Girls fear getting dirty, whether it's playing sports, playing games, using tampons, or having sex.

We are robbing girls of their opportunities and freedoms.

It's time to end the illusion of virginity.

It's time to break the illusion about the hymen.

CA: We're medical students, we're sexual health workers, we're authors of "Wonder Down Under."

(Laughter) It's going to be a general science book on female genitalia.

In our experience, many people think of the hymen as the membrane that closes the opening of the vagina.

Even in Norwegian, it's called "virgin membrane."

That word probably makes you think of something fragile, something that you can easily break and tear, like plastic wrap.

You may be wondering why I brought you a hula hoop.

let me show you

(Laughter) Now, obviously something happened to this hula hoop.

Before and after I punched, things changed.

Since the cover is torn, it will not return to its original state unless the wrap is reapplied.

It would be very easy to do a virginity test on this hula hoop right here and now.

I can tell you this hula hoop is no longer a virgin.

(Laughter) (Nina) But the hymen is not the plastic wrap you use to wrap your food in. It's not a membrane.

actually···

It's more like something like a scrunchie or a rubber band.

The hymen is the fold of skin outside the opening of the vagina.

They're usually donut-shaped or half-moon shaped, with a big hole in the middle.

But it varies from person to person. Some hymens are fluttery and puckered, some have holes, others consist of multiple patches of skin.

So the hymen is naturally different in appearance, which is why it's so difficult to do a virginity test.

CA: Now that we know the anatomy of the hymen, let's go back to two myths: "virgins bleed" and "the hymen disappears."

But the hymen doesn't always break

The hymen not only looks like a scrunchie, but also functions like a scrunchie.

Does the scrunchie stretch?

(Laughter) The hymen also stretches and contracts.

It's actually stretchable.

Many women's hymens are stretchable enough to allow penetrative sex without any damage.

Some women tear the hymen slightly to make room for the penis, but that doesn't make it go away.

It just looks a little different before and after sex.

So you can't tell if you're a virgin by testing your hymen.

This fact was discovered almost 100 years ago, in 1906, by Norwegian doctor Marie Chansett.

Chanset examined middle-aged sex workers and concluded that their vaginas resembled those of teenage virgins.

That's what it should be, right?

If sex didn't damage her hymen, then what's the point?

CA: The shape and appearance of the hymen varies so much that it's hard to tell if it's a defect or a tear, and if it's the result of an injury or if it's natural.

The absurdity of virginity testing is made clear by a study of 36 pregnant teens.

When doctors examined their hymens, only 2 of the 36 found conclusive evidence of penetration.

Unless you think the other 34 were virgin births -- (Laughter) -- we have to admit that the second myth is also completely debunked.

You can't learn about a woman's sexual history by looking between her legs.

Nina: Like many myths, the hymen myth is also an illusion.

There is no such thing as a hymen that mysteriously disappears after sex, and half of women who are virgins can have sex without bleeding.

It would be nice if we could say that if we could debunk this myth, everything would be over, and there would be no more insults, no more malice, no more honor killings.

Of course it's not that simple

The repression of female sexuality runs much deeper than just an anatomical misunderstanding of the characteristics of the hymen.

It's a matter of cultural and religious suppression of women's sexuality.

It's going to be a lot harder to change

you have to speak up

CA: As healthcare professionals, this is what we can do.

I want every girl, parent, and future boy-husband to know what the hymen is and how it works.

I want you to know that you can't prove virginity with your hymen.

Then we can remove one of the most powerful methods used to control young women.

Now, at this point, you might be wondering what else you can use? and

I suggest using nothing

(Cheers) If you— (Applause) if you really want to know if a woman is a virgin, ask her.

(Laughter) But it's up to women to decide how to answer that question.

thank you

(applause)

This is the sea that I have known for a long time

I've been to this bay so many times that I was very shocked, because all over the sea, because all over the sea, you can see the sheen of the crude oil left untouched.

I want to talk to you today not only about the oil spill, but also about what it is and what causes it.

First of all, from self-introduction

I've loved fishing since I was a child, and I used to go fishing.

Now I'm writing a book, mainly on ocean variability, and rapid changes in the ocean have been observed for some time.

The earth we live in is like hard marble wetted with water.

The atmosphere is similar. If you take all the air and roll it up, if you take all the air and roll it up, you get a ball of gas like the one on the right.

We live in a very fragile little sacred soap bubble.

By burning oil, coal, gasoline, etc. By burning oil, coal, gasoline, etc., the atmosphere is changing dramatically, and CO2 levels continue to rise.

we are raising the temperature

So oil spills are just a small part of the energy problem that human society needs.

Besides warming, there's the problem of ocean acidification, and we're already seeing the effects on animals.

Now, in the lab, if you put, say, a mussel in water that's pH 7.5 instead of normal seawater's pH 8.1, instead of normal seawater's pH 8.1, the mussel dissolves within three days.

In the case of sea urchin larvae, if you move them from pH 8.1 to pH 7.7, they don't really crumble, but they deform and die.

Already, in some areas, commercial oyster larvae have been extensively killed.

Coral reef growth lags in some regions Coral reef growth lags in other regions

it's a big problem

Let's take a little circle around the bay

I'm impressed with the people who live in the bay, because they're really people of the sea.

Make good use of water and avoid frequent hurricanes and

Make good use of water and avoid frequent hurricanes and

I know how to deal with floods

But when things other than water change their aquatic habitat, they don't have many options.

Looking at the community as a whole

There is nothing like water

Even if you want to work in a hotel, it's impossible because the hotel itself doesn't exist.

You can see a lot of crude oil around the bay.

It can also be found on the sea and on shores.

An unbelievable sight when you go to the spill site

It's like flipping a car's oil pan upside down.

The most unbelievable thing is that no one is trying to recover the oil.

The ocean here is in a dire state.

As we were traveling along the shore, we saw crude oil everywhere.

I'm in a mess

If you go to the east coast of Alabama, you'll see people cleaning up the beaches.

Cleaning methods have changed

Put only 5 kg of sand in a 200 L plastic bag Put only 5 kg of sand in a 200 L plastic bag

Thousands of plastic bags

I don't know what you want to do, but on the other hand, some people still use the beach.

There's no sign telling you to stay away from the water Kids are in the ocean covered in oil

My clothes and sandals are a mess. If I go to a place where there is still crude oil, it's even more messed up.

Basically no one, just a few people using it

Some people have neuroses

they are hard workers

When I wake up in the morning, the engine starts

They feel they depend on the security that nature provides through coastal ecosystems.

I knew that the world was destroyed

Look at the sign that expresses shock

sign of wrath

sign of anger

sign of sorrow

these are visible

But in the ocean, there are only things you can't see.

what's going on in the ocean

Opinion is divided on whether oil is leaching into the water.

According to Senator Markey, "Can't a submarine check for oil?" "Can't a submarine check for oil?"

But the submarine didn't work, and since the last time I've been to the Gulf, until today, I've done an experiment to see if there's oil in the Gulf of Mexico.

this is the gulf of mexico

A bright spot with plenty of fish

We spilled a little bit of oil into this Gulf of Mexico.

The hypothesis is confirmed. Oil and water don't mix.

But if we add a dispersant

start to mix

Add a little bit of energy, like wind and waves, and you're in a mess. You can't clean it, you can't extract the oil.

i think it's hidden on purpose

A lot of information is being leaked out about a catastrophe of this magnitude.

Rumor has it, there's a cover-up for the accident.

In my humble opinion, this dispersant is a cliché similar to corpse cover-up, hiding evidence of a murderer.

Crude oil concentrated in the ocean can be seen with the naked eye.

You can see the dense mass of oil in the ocean, and you're probably hitting it and erasing the evidence.

Now

If microbes eat oil

also eat sea turtles

If you have an oil spill, it takes a long time for microbes to decompose.

Sea turtles eat the oil, and fish absorb it through their gills.

And I'm forced to swim in oil

On my way here today I heard an incredible story on the train On my way here today I heard an incredible story on the train

An author named Ted William asked me what I had seen, and I was writing an article for Audubon.

He said he had been to the bay a week earlier and had a guy who was a fishing guide show him around the accident site.

The guide was available all year round The guide was available all year round

I was asked to return the reservation fee, and no one would approach me.

Thousands of people are in a similar situation.

But according to the guide, on its last day at sea, a bottlenose dolphin suddenly appeared next to the boat, spewing oil from its blowhole.

I left the dolphins because it was my last catch and I knew that dolphins would scare fish.

So I left the dolphin, and after a few minutes I turned around and was right next to the boat again.

In his 30 years of fishing, this is the first time he has seen dolphins behave like this.

And this felt like it was asking for help.

In the Exxon Valdez oil spill, nearly 30 percent of the killer whales died within months.

population has not recovered

Population recovery rates will vary.

Some things take time

Some say they will recover quickly.

The Gulf of Mexico has an important role.At certain times of the year, many animals congregate in this bay.

That's why the Gulf of Mexico is such an important source of water that it's more important than an equal volume of water in the Atlantic Ocean.

Tuna crosses the world's oceans, riding the waters of bays all the way to Europe.

They come inland to spawn. I've tagged two of them so they know where to spawn. They choose smooth spots.

This year's spawning season is probably going to be disastrous.

I hope the brood fish avoid dirty water.

Normally they wouldn't go into muddy water,

It's a very athletic fish.

I don't know what affects the error

I don't know the effect on parent fish.

Even so, I'm pretty sure it's going to affect the eggs and fry, but I'm pretty sure it's going to affect the eggs and fry.

Look at this graph that's been going down, and it's the result of decades of overfishing.

While the oil spill has been devastating, it's important to keep in mind that we've had a huge impact on our oceans over the long term.

It's not a good thing when we start something

A lot of stress and problems come along

If you look at the birds, at certain times of the year many of them congregate in bays and then fly away.

Birds have a much wider range

For example, the birds in this picture are mostly migratory birds.

So we came to this bay in May when the oil was flowing.

In the lower left is a red-winged sandpiper and a black-legged sandpiper.

They raise their children in the Arctic and winter in the southern part of South America.

They congregate in the Gulf of Mexico and eventually take off across the Arctic.

We also saw birds breeding in Greenland in the Gulf of Mexico.

So this is a hemispheric problem.

The economic impact has also been felt, at least across the United States.

Biologically, it has a hemispherical effect.

This is one of the completely unexpected and dumbfounding examples.

Even when the Japanese bombed Pearl Harbor, they shot back.

But now we don't know what to do

It is clear from the current measures that nothing has been done.

The main methods we're doing now are booms and dispersants.

Since the boom cannot be deployed over a wide area,

You can't fence a place where a lot of oil accumulates You can't fence a place where a lot of oil accumulates

There are two boats near the coast. The boat on the right is commonly known as "fishing fool"

It's a good name, because it's hellbent on booming over thousands of square miles of oil at sea in the Gulf.

Dispersants allow crude oil to pass under the boom

Boom diameter is only 30 cm

I've never been this stupid

hire hundreds of shrimp boats

It's their job to pull the boom, not the net.

Seawater covered in oil is moving to the rear of the boom.

I'm actually stirring

ridiculous

Hundreds of miles of coastline with booms Hundreds of miles of coastline with booms 'Cause the next coastline has no booms

Crude oil and dirty water can easily enter

the picture below is

A colony of birds is fenced in. We're trying to protect the colony.

As an ornithologist, I know that birds fly.

Birds have to dive into the sea to find food.

The first thing the birds have to do is

It's about protecting the nest. If all the nests were destroyed, the birds would leave, and it would have been better this time.

Speaking of bird washing

I don't blame anyone who cleans the birds.

showing compassion is really important

Because the most important thing a human has is compassion

It's important to have these images and express them.

But where will the birds be released?

It's like taking them out of a burning building, taking care of their smoke inhalation, and then putting them back in again, and the oil is still leaking.

We cannot accept this as an accident.

This is a situation caused by gross negligence.

(Applause) It's not just BP.

BP operated sloppily and recklessly BP operated sloppily and recklessly

Because we were able to do that, it's been pardoned as the full oversight responsibility of the government, which is supposed to protect us.

You see this sign on most merchant ships in the United States, and if you spill a few gallons of oil, you're in big trouble.

We need to think about who the law is made for and who is outside the law. Who the law is made for and who is outside the law.

there is something we can do in the future

It's a device I needed but couldn't get.

If you dig 30,000 holes in the Gulf of Mexico in search of oil, it wouldn't surprise me if oil came out of one of them.

this is what we have to do

We need to understand where the leak actually started.

It starts with the collapse of the notion that "government is on our side to protect the public interest."

Oil spills, bank bailouts and mortgage crises must all be symptoms of the same cause.

We understand that the least we need is the police to protect us from some bad people.

No one is saying that the police should be abolished, even if the ticket is turned off or it is a little annoying.

Over the last 30 years, there's been a deregulation movement across government, a deregulation movement, led by people who protect us, who have bought the government behind the scenes.

(Applause) This is still an issue.

Corporations were illegal when the United States was founded. Even Thomas Jefferson complained that he was already ignoring American law.

Some people say they're conservative, but if you really want to be a conservative patriot, you're going to tell corporations to go to hell.

this is true conservatives

So what we really need to do is bring back the notion that it's the government that protects our interests, to bring back the lost sense of solidarity and common interests in this country.

I see a glimmer of hope and we're waking up a little.

The Glass-Steagall Act, a law that prevented recessions, bank failures, bailout situations, etc., came into force in 1933, but was systematically undermined.

Now there's an atmosphere to restore these things, but lobbyists are already trying to deregulate after the bill is passed.

so the battle continues

this is a historic moment

Either you're going to have an oil spill catastrophe in the Gulf, or you're going to have an oil spill catastrophe in the Gulf, or you're going to make a decision that many people are aware of and get out.

There is a common theme in making the decision to exit.

I've had experience with offshore drilling before.

At first, the name of the offshore oil field was "whale"

The name of the excavator was "Mori"

At that time, the number of whales in the ocean was declining.

Ever since we lived in caves, when we want energy, we burn things with fire, and that's what we do today.

Even now, when I need energy, I burn something.

They say clean energy is too expensive to use.

Who says it's expensive?

people who sell oil

When I was here before, I was told that if we switched energy, the economy wouldn't survive. Cheap energy is slavery.

energy is a moral issue

It's also a matter of good or bad

thank you

When I was a student here at Oxford in the 1970s, the world's future looked bleak.

The population explosion is unstoppable

Global hunger is inevitable

Chemicals in the environment were thought to cause cancer epidemics and shorten our lifespans.

Acid rain pours down on forests

Deserts are expanding at a rate of 2-3 km per year.

It was said that oil would run out and a nuclear winter would wipe out humanity.

But none of these things actually happened. (Laughter) What actually happened in my lifetime is amazing. The per capita income of every human being on this planet has tripled, even after inflation is taken into account.

30% longer life expectancy

Child mortality has dropped to 2/3

food production per capita has tripled

And the population doubled during that time.

Whether it's right or wrong, how

these are made possible

How did we manage to be the most prosperous and the most numerous and the only species?

The thickness of this graph represents the size of the population, and the vertical axis of the graph represents GDP per capita.

To answer that question, we need to understand how humans put their brains together and combined ideas over and over again, or met and crossed them.

In other words, we need to understand how ideas have sex with each other.

Imagine how we were able to make the right out of the left.

both exist in reality

One is an Ashurian hatchet made by Homo erectus 500,000 years ago.

The other is obviously a computer mouse.

The size and shape of the two are eerily similar

I tried to measure which one was bigger, but it was almost impossible to measure.

Both are designed to fit the human hand.

They're both products of technology, and the similarities aren't all that interesting.

It's just made to fit comfortably in the human hand.

What's interesting is the difference between the two: the shape of the stone ax on the left didn't change for about a million years, from 1.5 million years ago to 500,000 years ago.

Homo erectus has been making the same tools for 30,000 generations.

Of course, there have been some changes, but back then, bones were evolving faster than tools.

There was no progress, no innovation in tools.

It's a surprising phenomenon, but it's true.

But the mouse on the right will be obsolete in five years.

There's one more difference, the stone ax on the left is made of a single material.

The mouse on the right is a collection of different materials, including silicon, metal, and plastic.

And what's more, it's a collection of different ideas -- ideas about plastics, lasers, semiconductors.

They are included in the product of this technology.

This combination, this set of technologies, is interesting to me, because it's the key to understanding what's going on in the world.

My body is also a collection of ideas: skin cells, brain cells, liver cells.

those cells are combined

How can evolution accumulate combinations?

it is done through sexual reproduction

Let's say that two asexual individuals each have a mutation. Let's represent them in green and red.

The winner survives and the other dies.

But in sexual organisms, it's possible for a single individual to inherit two mutations from different strains.

Reproduction gives individuals the opportunity to inherit the genetic innovations of the entire species.

it is not limited to the individual's lineage

What changes in cultural evolution would have the same effect as the role of reproduction in biological evolution?

I think of it as trading, the practice of exchanging one thing for another.

This is a unique feature of humans

no other animal

In the laboratory, animals can be taught to trade a little bit. Non-human animals do trade, but they never trade things for things.

Adam Smith once said, "I have never seen a fair trade of bones between dogs and dogs."

(Laughter) Culture can exist without exchange.

So there is a culture of asexual reproduction.

Things like chimpanzees and killer whales have cultures.

Passing on traditional skills from parents to children

In the picture, chimpanzees are teaching each other to crack nuts with rocks.

They differ from humans in that their cultures never expand, they never grow, they never accumulate, they never combine.

Chimpanzees have different cultures in different groups

There is no exchange of ideas between

Why the exchange of ideas raises living standards

The answer lies in David Ricardo's 1817 paper.

He talked about trade between nations, but you could apply that to the Stone Age.

Let's say Adam takes 4 hours to make a spear and 3 hours to make an ax.

Let's say Oz takes an hour to make a spear and two hours to make an axe.

Oz is better at making spears and axes than Adam

oz doesn't need adam

Because you can make your own spears and axes

But think about it, if Oz made two spears and Adam made two axes and traded them in, both would save an hour.

The more you do this, the more time you save, because the more you push for it, the better Adam will be at making axes, and the better Oz will be at making spears.

What can be gained by exchanging more and more

That's the beauty of exchange. In fact, exchange gives impetus to specialization. Specialization drives more exchange.

Adam and Oz saved an hour

This is abundance, because it saved me time while meeting my needs.

Now ask yourself, how many hours do I have to work to get enough light to read an hour?

If you start from scratch, you go to the farm

Find a sheep, slaughter it, get the fat

Refining it to make candles, etc.

How long will it take? it is considerable

How much does the average wage earner in modern Britain really need to work to get an hour of reading light?

the answer is about 1/2 second

In 1950, you had to work eight seconds to get that same light.

So compared to 1950, we now have seven and a half seconds to spend that time doing other things, buying other goods and services.

It took 15 minutes to get the same light in 1880.

In 1800, you had to work six hours to buy a one-hour candle.

In other words, the average wage earner couldn't afford a candle in 1800.

Go back to this picture and ask yourself, "Who made this for whom?"

The stone ax was made by someone for himself

was self-sufficient

today we call it poverty

But the right mouse was made for me by other people.

how many people

Dozens? hundreds? thousands?

probably millions

Because the man who grew the coffee, the man who drank the coffee, the man who worked at the oil rig, and the oil he extracted was used to make plastic, and so on.

All those people worked to make me a mouse.

This is how society works

This is how mankind has become successful.

Once upon a time the rich man had many servants

I got rich by using people

Louis XIV had many servants

(Laughter) Weird hair style, also done by a servant

He assigned 498 people to prepare the daily supper.

But a modern tourist touring the Palace of Versailles and admiring the portraits of Louis XIV still has 498 people preparing the dinner.

Servants are in bistros, cafes, restaurants, and shops all over Paris, and if you give them one hour, they'll serve you a better banquet than Louis XIV's banquet.

This is humanity, we work for each other.

Through expertise and exchange, we raise each other's living standards.

There are other animals that work for each other

worker ants and queens work for each other

But there's one big difference: there's no cooperation with other nests.

Different nests do not cooperate

because labor is differentiated by fertility

Fertility Determines Type of Labor

In the ant world, only the queen reproduces.

humans hate it

I insist on doing this myself, only the reproductive act.

(Laughter) Even England won't let the Queen handle it.

(Applause.) When did this practice begin?

How long does it last and what does it mean?

Perhaps the oldest of these practices is the differentiation of labor by gender.

but there is no certainty

Humanity seems to have first made men work for women, and women for men.

In all today's hunter-gatherer societies, there is labor for food, divided between men who hunt and women who gather.

It's not always so clear cut, but it's certainly true that the roles of men and women are differentiated.

The beauty of this system is that it's a win-win.

In the case of the Haza, women dig up the roots of plants and trade them for meat from animals that men hunt, but women know that to get protein, they have to dig a little extra roots and trade them for meat.

That way, you don't have to go out on an exhausting hunt and kill a warthog.

Man knows he doesn't have to dig to get roots.

The man just has to make sure the warthog he kills is big enough to distribute the meat.

In this way, both men and women can raise their standard of living through the gender division of labor.

I don't know when it started, but it was impossible for Neanderthals.

Neanderthals were highly collaborative

was a highly intelligent species

At the end of its life, its cerebral volume was larger than ours here.

imaginative and buried the dead

Findings here at Oxford show that they have the FOXP2 gene, just like us, and they probably used words.

It is thought that he also possessed linguistic ability.

They were clever primates, and I'm not ignoring them.

But they have no evidence of a gender division of labor.

There is no evidence that women were engaged in gathering.

The woman seems to have been engaged in hunting with the man.

Another area of ​​lack of evidence is exchange between groups, because the tools excavated from Neanderthal sites are made from indigenous materials.

For example, there are sites in the Caucasus where Neanderthal tools have been excavated.

Tools are made from local charts

In the same valley, there are also modern human remains, some 30,000 years old. Some of their tools are made of local chert, but many are made of obsidian from far, far away places.

When humans began to move goods in this way, there was trade between groups.

Trade is ten times as old as farming

We tend to forget this and think of trade as modern.

Trade between groups has a history of tens of thousands of years.

The first evidence of this is found in Africa between 1.2 and 800,000 years ago, in Ethiopia, where obsidian, jasper and other materials were transported over long distances.

The shells, discovered by a team at the University of Oxford, were also transported about 200 kilometers inland from the Mediterranean coast of Algeria.

This is proof that people started trading between groups.

Trade promotes specialization

How do we know that long-distance movements are due to trade and not to migration of peoples?

Let's take a look at the modern hunter-gatherers, the Aborigines, who mined stone for their stone axes at a place called Mount Isa, which is Kalkadoon territory.

They trade with neighboring tribes, exchanging stones for things like stingray thorns, and as a result, stone axes are widespread across the Australian continent.

These long-distance movements of tools are evidence of trade, not human migration.

What happens when you disconnect people from trade, disconnect them from the ability to specialize?

The answer is that technological progress not only slows down, but sometimes it actually goes backwards.

An example can be seen in Tasmania

Rising sea levels turned Tasmania into an island 10,000 years ago, and the islanders were not only less advanced than the people of mainland Australia, they were also regressing.

They lost their ability to make bone tools, fishing gear and clothes, and the island's population of about 40,000 was too small to sustain the specialized skills needed to keep up their craft.

It's like we're left on a deserted island

How many of the things we wear will continue to be made after 10,000 years?

Things were different in Tierra del Fuego, where Tasmania is very similar in island and inhabitants.

Because Tierra del Fuego is separated from South America by a narrow strait, there was trade between the island and the continent for 10,000 years.

Tasmania, on the other hand, was an isolated island.

Let's go back to the picture. Ask yourself, who knew not only who for whom, but who knew how to make it.

In the case of the stone ax, the person who made it knew how to make it.

But who knows how to make a mouse

no one really knows

No one on earth knows how to make a mouse

this is a serious story

I don't know the president of the mouse manufacturer.

All he knows is how to run a company

The assembly line worker doesn't know either, because he doesn't know how to drill a well and extract oil and make plastic.

We all know the pieces, but we don't know the whole.

I'm quoting this from the famous 1950s economist Leonard Reed's paper, titled "I'm a Pencil." In that paper, Reed discussed how pencils are made and that no one knows how to make a pencil, because assemblers don't know how to mine graphite, and they don't know how to cut down trees.

What we've achieved in human society through trade and specialization is the ability to do things we don't even understand.

it is different from the language

With language, we communicate ideas that each of us understands.

With technology, we can accomplish more than we are capable of.

It can surpass the capabilities of the human mind.

Now, let me tell you, I'm not trying to lead you to an IQ argument, that some populations have higher IQs than others.

such arguments are utterly pointless

What matters to society is how well people communicate ideas, how well they collaborate, not how smart the individuals in that group are.

We created a "collective brain"

Each person is just a node in that network

we are neurons in a collective brain

It's the exchange of ideas, the encounter and interaction of ideas, that pushes science and technology forward, step by step.

But bad things can happen

In the future, we will also experience terrible things.

There will be wars and depressions and natural disasters.

It is certain that terrible things will happen in this century.

But it's also true that people's ability to meet and interact with ideas will be more active than ever.

Because I believe that in the bottom-up world that we create through the Internet, through crowdsourcing, where not only the elite but everyone has ideas, and where ideas are met and exchanged, the speed of innovation will accelerate.

thank you

(applause)

As an American, I'm basically not interested in the word "football" unless it's a big man like me bumping into one another on a bullet train.

That said, it's become very difficult to ignore 'football' in recent weeks.

When I log in to Twitter, words I don't know are flying around. FIFA, vuvuzelas, nonsensical jokes about octopuses...

There is one phrase that I can't understand and was frustrated. "Cala a boca, Galvao".

If you've used Twitter even once recently, you've probably seen this phrase.

It has emerged as a "hot topic".

As an American who only knows English, I don't understand the meaning of this phrase.

So I asked on Twitter what "Cala a boca, Galvao" meant.

Luckily, a Brazilian friend came to the rescue.

Galvao is a species of bird, a species of parrot that is on the verge of extinction. It's a really dangerous situation.

Let's talk a little more.

Narrator: Describes the Galvao, a rare bird native to Brazil.

Each year, over 300,000 Galvaos are killed for Carnival parades.

Ethan: Clearly a tragic situation. still continue.

The Galvao parrot is not only very beautiful and used as a head covering, but it is said to contain a certain hallucinogenic drug. In other words, Galvao is being abused, unfortunately.

There are also people who "suck" Galvao.

So we are facing a life-threatening crisis.

To my delight, my Brazilian friend told me that people all over the world are doing Galvao's relief efforts.

For example, Lady Gaga released a single titled "Cala a boca, Galvao". To be exact, it's 5-6 singles.

And I told them that just by tweeting "Cala a boca, Galvao," 10 cents will be donated to a global campaign to save this precious and beautiful bird.

Now you know this is a joke. It's a very well made joke.

Actually, "Cala a boca, Galvao" is

It means "Galvao, shut up!" in Portuguese.

Specifically, I'm referring to Galvao Bueno, the main broadcaster for TV station Rede Globo.

A Brazilian friend told me that he has a habit of repeating clichés.

Repeating cliche phrases over and over makes even the most interesting matches boring.

So the Brazilian started a Twitter campaign with this banner during the first game against North Korea. Ask the world to tweet "Cala a boca, Galvao".

This was such a hit that it was ranked as a "popular topic" on Twitter for two weeks.

Now, there are several things we can learn from this series of events.

First, it's not that hard to get people to take action online. If it's a simple action like RT a certain phrase

It is quite possible. I think this is an important lesson.

Second, many Brazilians use Twitter.

There are over 5 million people.

By country, 11% of Brazilian internet users use Twitter.

This is a very high number compared to the United States and the United Kingdom.

It is the second largest usage rate after Japan.

Even if you're on Twitter or any other social network and haven't realized that this is a space with a lot of Brazilians, it's common.

Because a social network is a space where you connect with people you choose.

If you're a big white American geek like me, you tend to get involved with other white American geeks.

I don't necessarily feel that Twitter is a space with many Brazilians.

Similarly, many Americans are surprised by the fact that there are many African Americans.

Recently, Twitter

We published a research that analyzed the user layer.

24% of Twitter users in the US are African-American.

This is about twice the actual population ratio.

Again, this may surprise many Twitter users, but it doesn't have to.

The reason is that when looking at "popular topics"

I find that there are many topics that are self-contained as African-American conversations.

There is an experiment done by the great visualization designers Fernando Viegas and Martin Wattenberg. After accumulating a week's worth of Twitter traffic, we found that many of the "popular topics" were racially divided.

For example, oil spills are mostly talked about by white Americans and cookouts are mostly talked about by African Americans.

And what's even more amazing is that if you're looking for variation in how you interact on Twitter, it's just one click away.

Click on the #cookout tag and there's a completely different conversation with a different group of people participating.

But we don't try to do much.

Our relationships end up with people we already know or who are similar to people we know. My friend Eli Pariser calls this a "filter bubble".

We are in a situation where it is difficult to see the big picture.

This is a surprising fact. Because the internet wasn't supposed to be like that.

Think back to the early days of the Internet. It was around the time Nick Negroponte was writing "Being Digital". At the time, it was predicted that the Internet would become a powerful force that would eliminate cultural differences and, in some way, bring people all over the world to the same foundation.

Negroponte's book begins with the statement that it will be difficult to make connections in a world composed of atoms.

He was attending a technical event in Florida.

Looking at Evian plastic bottles on the table

Say, "This is crazy."

"It's the old economy," he said.

Transporting these heavy, slow atoms over long distances is very difficult.

In the future, everything will be speedy and light, with bits that can exist anytime, anywhere.

We are heading towards a world that is structured.

And the world will change.

Well, many of Negroponte's predictions came true.

This was a big mistake.

What's actually happening is that atoms are more mobile than bits.

For example, it is very easy to buy a plastic bottle that has been packed in Fiji and brought to the United States with a huge shipping cost.

On the other hand, watching Fijian films is surprisingly difficult.

It's very difficult to listen to Fijian music

Fiji news is very hard to come by. In Fiji, a coup, a military regime

Various things are happening, such as the suppression of freedom of speech.

It's a strange situation when you think about it.

Fiji is a place we should pay attention to.

This is how I interpret it.

We tend to focus on the infrastructure of globalization. the connected world we live in

Focus on enabling frameworks.

There are flight routes and

Internet cable included.

When you look at a map like this, the bases are connected, so the world looks flat.

If you fly to London, you will arrive in Bangalore on the same day.

Two hops and you're in Suva, Fiji's capital.

It looks like that.

But when you start looking at what exists on top of these networks, you see something different.

Observing how international flights work, we realize that the world is not at all flat.

It is very bumpy.

There are bases that are directly connected.

It can be said that there is a big road in the sky between London and New York.

But if you look at this map for a few minutes,

You can see that there aren't many flights going to South America or Africa.

And you can see that there are regions that are disconnected from the system.

When we put aside the infrastructure that allows us to connect and see what's really going on, we find that the world doesn't work the way we think it does.

This is the subject that I have been researching for the last ten years.

Globalization is progressing in the world

It's getting more and more connected.

Many issues have global implications.

Economic activity has consequences on a global scale.

And the media is going against globalization day by day.

In the 1970s in America, 35-40% of the nightly news programs were international news.

Now it's down to 12-15%.

It means that a distorted view of the world is being offered.

Slides used by Alisa Miller in a previous TED talk.

President of Public Radio International.

This is a statistical map of the countries picked up by American news programs over the course of a month.

When we map according to attention, the "world" that American news programs refer to is a bloated America and a few invaded nations.

I see that it is configured.

Our media is like this.

However, it is premature to conclude that only American news programs are terrible. I agree with you that it's terrible, but I've mapped elite media outlets like the New York Times, and it's the same result.

If you look at the New York Times and other elite media outlets, it's about the rich countries and the countries we've invaded.

And the new media has not greatly alleviated this condition.

Map created by Mark Graham of the Oxford Internet Institute.

This is a map of Wikipedia articles with geocodes.

It is heavily skewed toward North America and Western Europe.

Even Wikipedia, which creates its own content online, isn't evenly distributed, but there are a lot of regions where people write Wikipedia articles.

This is England, but after this session, you can turn on your computer and pick up a newspaper from India, Australia, Canada or the United States.

But you probably won't.

Take a look at online media consumption. Among the top 10 internet populations, 95% of news subscriptions are directed to national news sites.

It's one of the few cases where the US is ahead of the UK. Because Americans like to read British media. than vice versa.

When you put these things together, you see what I call "imaginative globalism."

we use the internet

You think you know what's going on in the world.

When you come across a Chinese page by chance, you mistakenly believe that you are facing the best technology that connects you to the world.

Most of the time we forget that we use the Internet to check Red Sox scores.

This is a big problem. Aside from the fact that the Red Sox are not doing well, as discussed at TED, the problems of the world, the problems that need to be solved, are global in both scale and scope. Achieving global solutions requires a global conversation.

This is the problem we have to solve.

Well, I have good news for you.

Since 6 years ago, I have been working with a group called Global Voices.

I am active.

A group of bloggers from all over the world.

With a mission to fix the world's media,

I started in 2004.

As you may have noticed, we haven't made much progress.

And I don't think we can solve this problem alone.

But the more I think about it, the more I realize that what I've learned over the past six years can be used to "rewire" the web to create a wider world.

First of all, we have to keep in mind that there are areas in the world that are not getting attention.

A NASA map of the Earth at night with dark areas due to lack of electricity.

I used to think that this dark area was an area where news wasn't available because there were so many other necessities of life.

But recently I've started to think it's possible. However, it requires a lot of effort and a lot of support.

One of the darker areas is Madagascar. It's a place that's more famous for the DreamWorks movies than the nice people who live here.

Those who founded the Foko Club in Madagascar had no intention of changing the image of their country.

I was trying to do something simpler.

It started out as a club to study English and develop computer and internet skills.

But there's a coup in Madagascar

Most independent media were shut down.

The high school students who had acquired their blogging skills at the Foko Club suddenly found themselves in a position to talk to an international audience about the demonstrations, the violence and what was happening in Madagascar.

So this little little program that puts people in front of their computers to post their thoughts and create independent media has had a huge impact on what we know about Madagascar.

Now, the problem here is that most people here don't speak Malagasy.

Few people speak Chinese. Considering that the most used language on the net is Chinese, it's sad.

Fortunately, efforts are underway to fix this problem.

If you're using Google Chrome and encounter a Chinese site, you'll see a cute little box at the top of your browser. You can detect that this page is in Chinese and translate this page with one click.

Unfortunately this is a machine translated page.

Google is good at some languages, but Chinese is pretty bad.

Occasionally, you'll see funny results.

Ideally, clicking a button puts you in a waiting queue for a human to translate.

You may think it's out of the question, but it's not.

In China, there is a group called Yeeyan.

A group with over 150,000 members. they are on the web every day

Find interesting content written in English.

And we translate about 100 articles a day from major newspapers and websites.

All can be read online for free.

The founder of the project is a man named Zhang Lei. I was living in the United States when the Lhasa riots broke out, and I was stunned by the biased reporting in the United States.

I started translating as something I could do so that people from both countries could understand each other as much as possible.

So I have a question for all of you. If Yeeyan can attract 150,000 people to translate English content into Chinese, where are the English-speaking Yeeyans?

Who is chasing China with its 400 million internet population?

There must be at least one person who says something interesting!

And even if you find a way to translate from Chinese, there's no guarantee you'll get there.

There are two main ways to look for information on the Internet.

First, search.

As long as you know what you're looking for, no problem.

But what if you're looking for a coincidence? We use social networks when we want to discover "coincidences" that we don't even know we need. what my friends see

I thought maybe I should take a look myself.

The problem with this stance is that it only has input from collective wisdom.

You'll be flocking to people who are like you, people who have similar interests to you.

And it's extremely difficult to get information about other groups that are meeting and thriving on other topics.

You need someone to push you out of your group and into another group.

I need a guide.

That guide is Global Voices Middle East editor Amira Al Hussaini.

She has a very difficult job.

We have to keep our Israeli and Palestinian members from quarreling, and we have to figure out what topics in the Middle East might be of interest to our readers.

For example, to stretch yourself out of your comfort zone a little and draw attention to people who quit smoking during Ramadan, you need to know your global audience™.

Additionally, you need to know what the story is.

So she's a DJ.

He's a very skilled curator who can take the material in front of him, listen to his audience, make smart choices and guide people in some way.

I don't think this is necessarily a computable process.

I think the advantage of the Internet is that it's easier for DJs to reach a larger audience.

Amira is my friend

You can ask what to read.

But with the internet, you can tell a lot of people what to read.

If you're interested in how these stories spread, you too can listen.

And when you start expanding your world in this way, and when you start shining a spotlight on voices in dark areas, when you start translating and curating, you discover something very strange.

Here is a photo taken from my favorite blog, AfriGadget.

This blog explores technology from the perspective of Africa.

This is a blacksmith in Kibera, Nairobi who turns car shafts into chisels.

You might look at this image and think, "What does this have to do with me?"

he will explain. ®

Erik Hersman. I may have met you at this conference.

His nickname is White African.

I'm an American geek with a wide face, but I'm also a Kenyan born in Sudan and raised in Kenya.

He is a "bridge".

It focuses on both the African tech community and the American tech community.

So, the story of Kibera's smithy can be assembled into a story from the perspective of repurposing technology, innovation born from limitations, and reuse of materials.

He knows one world and is trying to convey it to another. He is deeply involved in both worlds.

I am convinced that the future of expanding the world through the use of the web lies in a bridgeman like him.

However, a bridge ultimately needs someone to cross it.

So let's move on to the topic of dealing with foreign countries.

If I belonged to the NFL, I would probably rest and relax at home during the offseason. I might try making a hip-hop album.

Dhani Jones of the Cincinnati Bengals is a little different.

He called "Dhani Tackles the Globe"

I am in charge of a TV program.

In this program, we travel to some country every week

Find a local sports team.

We train together for a week and then play matches.

The reason I do this is not because I want to master Muay Thai.

For him, sports are the "languages" to mix with the splendor of this big world.

For some, "words" may be music. It could be food.

It could be literature or writing.

In this way, there are various techniques to go out into the world and find your place.

I don't want you to become a xenophobic after listening to today's talk.

You're at an event called TEDGlobal, so whether you say it that way or not, you're already a xenophobe.

My purpose is to make the world wider.

However, personal decisions are not enough to achieve this.

Rewiring the existing system

fix the media

I have to fix the internet.

We have to fix the education system.

We have to fix immigration policy. We have to explore ways to create coincidences, to make translations universal, to find ways to make bridges acceptable and celebrated.

We have to find a way to increase the number of people who are interested in foreign countries.

Here's what I'm trying to do. Thank you for your cooperation.

(applause)

I am a writer

I write stories and novels, and today I'm going to talk about some of the nitty-gritty of stories, and I'll also talk about supernatural creatures called jinn.

Before I get to the point, let me give you a little personal story.

Because the story progresses not only with words but also with geometric patterns, circles and rings appear in the middle of the story.

I was born in Strasbourg, France, to Turkish parents.

Shortly after I was born, they divorced and my mother took me to Turkey.

I was an only child and was raised by a single mother.

Ankara in the early '70s had an unusual family structure.

Every house in my neighborhood was a large household, and my father was the head of the family, so I grew up watching my mother divorce in a paternalistic society.

In particular, I grew up watching two different types of women.

One is a mother, a highly educated, Western-influenced, non-religious modern person.

The other was my grandmother, who raised me with my mother, who lived in the spiritual world and was undereducated and irrational.

My grandmother used coffee beans to foretell the future, and melted lead into strange shapes to ward off evil spirits.

A lot of people came with bad acne and warts on their hands.

My grandmother cast a spell in Arabic and stuck as many rose thorns in a red apple as there were warts she wanted to get rid of.

And my grandmother circled the thorn with ink.

The patient came back to see me a week later.

I know I shouldn't say things like this in front of academics and scientists, but all the people who came to visit my grandmother with skin problems went home satisfied and cured.

I asked my grandmother if she was healed by the power of prayer.

I said that prayer works, but it's the power that the circle creates that works.

I learned a lot from my grandmother, but she taught me a particularly valuable lesson.

It disappears inside

everyone in social and cultural circles

living

It's a circle called the family you were born into, the race, the class.

But if we don't have any connections outside the world we take for granted, we too can become depleted in the circle.

Lack of imagination, small mind, dehumanizing, the result of living too long in cultural enclosures.

Friends, neighbors, co-workers, family members, if we all share the same values, it's like looking at ourselves in a mirror.

Turkish women, like my grandmother, have a tradition of covering mirrors with velvet and hanging mirrors upside down.

It's an Eastern tradition, and it's based on the idea that it's not healthy to just stare at yourself in the mirror.

Ironically, like-minded communities are one of the great dangers of modern global society.

It's everywhere: liberals and conservatives, agnostics and adherents, rich and poor, East and West.

Humans tend to associate with people they have something in common with, creating stereotypes for other groups.

I believe that these cultural ghettos can be overcome through the power of storytelling.

Even if you can't tear down your boundaries, you can punch holes in your mental walls

From there, you can get a glimpse of others and even fall in love with them.

I started writing stories at the age of eight

One day my mother suggested that I write a diary.

You must have been worried about me

I was constantly talking to non-existent, imaginary friends.

I was a shy kid, and I used to interact with crayons and apologize to things when I bumped into something, so my mother thought it would be a good idea to write down what happened each day and how I felt.

But my days were boring and I didn't have a single thing I wanted to write about.

I started writing stories about other people and fictional events.

Writing fiction like this - I learned to enjoy it

Fiction, for me, has been a journey into other people's lives and alternative possibilities from the very beginning, rather than revealing myself.

I'll tell you another story now, but I'm going to draw a circle and come back here again.

Life changed during this time

because my mother became a diplomat

I left my superstitious little middle-class town with my grandmother to attend an upper-class school in Madrid, where I was the only Turk.

It was there that I had my first experience of being a representative of a country.

My classmates came from all over the world, but the classrooms weren't always democratic, and there were prejudices and inequalities.

Instead of being seen as an individual, there was this feeling of being forced to carry something bigger, like a mini-United Nations, if you will.

When a negative event related to the country or religion occurs, the targeted child is forever ridiculed.

I was bullied, by the way, when I was attending this school.

In Turkey, the military intervened in politics, a Turk man tried to kill the Pope, and the European version of the Song Contest was a disaster for Turkey. (Audience: Laughter)

At the time, I was skipping school a lot, and I had a fascination with sailors, a cultural stereotype.

It was my first experience there, I had never seen-

My classmates asked me about movies set in Turkey and how many cigarettes I smoked a day. All Turks were thought to be avid smokers.

Politics, cigarettes, I learned that it was a veil to hide my skin and hair, and then I lived in Jordan and Germany.

I'm back in Ankara again Wherever I live

Imagination was like the only suitcase I could carry I was told by stories

I got emotional balance, continuity, coherence. Mid-twenties. My favorite city.

Moving to Istanbul and living in a vibrant place

Written in 1999 in Istanbul

There was an earthquake, it was 3 in the morning, and I ran outside.

A certain sight jumped into my eyes.

The usually grumpy store owner sits down and wears a long black wig on his side.

There was a cross-dresser whose mascara fell from her tears, with a trembling hand

The image of the shopkeeper taking out a cigarette and offering it to her is still burned into my mind, the conservative shopkeeper and the weeping transvestite both smoking on the pavement in the face of death and destruction.

The superficial differences disappeared and we became one, even for a short time, and I think stories have the same effect.

It doesn't mean that fiction and earthquakes have the same weight.

When you read a good novel, you leave your comfortable home behind, go out into the nightlife alone, and start meeting people you've never met before, even people who were prejudiced before.

I went to college in Boston and Michigan, where more than geographical variation.

I experienced a language shift.I started writing novels in English.

I'm not in a position like an immigrant

People ask me why I write in English, but by using different languages, I can reinvent myself. I love writing in Turkish.

Because it's a romantic and emotional language for me. I like English, but English is a mathematical and intellectual language for me, and I feel a different connection to each language.

like millions of people

I learned English by studying it at a certain age.

Trying to learn a new language is always frustrating, making people laugh.

If you want to make a witty comment, but the words don't come out, it's because there's a gap between your mind and your language.

Learn not to be intimidated

That feeling is also exciting, as I felt in Boston.

Frustration inspired my grandmother

Concerned about the way I behaved, in my usual prayers, I hoped that I would get married and settle down.

(Venue: Laughter)

Instead of settling down at home, I moved to Arizona because my husband is in Istanbul.

I started living a life of ups and downs, two cities on opposite ends of the spectrum, physically and mentally for me.

I have a nomadic side, stories follow me

I keep piecing together the fragments of my memory as if I'm questioning my life.I love stories.

I've recently realized that stories lose their magic when they're seen as more than just stories.

I'd like you to think about the first novel I wrote in English in the United States.

When it was published, one literary critic said, "It was interesting, but I didn't like the content."

(Venue: Laughter)

When I ask what it means, even though there are many characters

I was told there was only one Turk, and it was a man, because it was set on a college campus in Boston.

I thought it was normal to be international rather than Turkish, but that's not what the critics were looking for, and that's what I'll continue to do in my style.

I found it disappointing. He wanted to see proof of my identity.

Just because I'm a Turkish woman

I was expecting a Turkish woman in the book, and it's been talked about how the real world is influenced by stories.

But we should also look at how identity politics affects the way stories are read and critiqued everywhere, and many writers feel this pressure.

If you're not a Westerner, the pressure is even greater if you're a writer from the Muslim world, like me.

The desired story is the story of a Muslim woman I prefer the dark story of an unhappy Muslim woman The desired story is

It's educational and poignant, and experimental and avant-garde literature is considered the domain of Western writers, something that I experienced as a child in school in Madrid.

What's happening in the literary world right now is to make writers creative

We don't see them as individuals, we see them as representatives of individual cultures, Chinese writers, Turkish writers, Nigerian writers, even if we're not bizarre.

It's supposed to be a novelty, the novelist James Baldwin

In an interview I had in 1984, I was repeatedly asked about my homosexual orientation as a homosexual writer.

Baldwin said to a reporter trying to categorize, "What you don't have, I don't have, and what I don't have, you don't have."

constraining the freedom of imagination non-Western writers

There's an ambiguous category, lumped together, called transnational literature, called about a decade ago.

I will never forget my first multinational book club, besides me, a Filipino and an Indonesian.

A writer was invited. Sounds like a joke. (Venue: Laughter)

The reason these three artists were invited was not because of their similarities in style, but simply because of their nationalities.

Writers of Multinational Literature Like Fiction

You're asked to tell a true story rather than use your imagination.

not only the author himself

Fictional characters also represent something bigger, but

The tendency to look at stories over stories is not unique to the West, it happens everywhere.

the first time i experienced this

It was when I was put on trial in 2005 for the words uttered by a character in the novel I saw through the eyes of a woman.

I was going to write a constructive, multi-layered novel about an Armenian family and a Turkish family, and my little story was accused.

It became a big problem.

It was controversial, but both sides said it was fiction.

There was a time I wanted to tell you, it was just a story

Even if it's "just a story"

I don't take my books lightly.

I want to enjoy it for what it is, not as a means to an end. Writers have the right to express their political views.

There are good political novels, but the language of fictional novels is not for politics, said Chekhov.

“A solution to a problem and a legitimate way of posing the problem are two different things. Only the latter is the responsibility of the speaker.”

Identity politics separates humans

I create boundaries

Fiction connects people

nuanced and appealing

No border awareness

Identity politics is made of solid bricks

fiction is running water

During the Ottoman Empire, there was a storyteller named Meddah.

Medduff goes around coffee shops

It's an improvisational storytelling.

I used different voices to play roles, regardless of class or religion.

Anyone could go and listen to Medduff, and the story crossed all boundaries.

It's like the story of Nasreddin Hodja was popular in the Middle East, North Africa, the Balkans, Asia, and the story is still there today.

Continuing beyond borders, Palestinian and Israeli politicians

Even though we don't listen to each other, Palestinians still read novels by Jewish authors, and vice versa, to connect with and empathize with the characters. Literature has to cross boundaries.

if it can't

Not great literature I used to be an introvert

Books saved me, but also the dangers of worshiping books

I recognize Rumi the poet

When he met Shamseh Tabriz, the first thing Shamseh did was throw Rumi's book into the water and watch the writing disappear.

Worse than ignorance.” The problem with modern cultural ghettos is

It's not a lack of knowledge. We know enough about each other, but the knowledge that we can't surpass ourselves creates elitism and disconnects. I live my life as a moving compass.

I like the analogy, with one leg in place

the other draws a circle

It's always in motion, and so is my novel.

Has Turkish roots

I'm rooted in Istanbul, but I travel the world and connect with different cultures.

I think it's regional, but it's also international. If you've been to Istanbul,

You've probably seen the Topkapi Palace, the residence of the Ottoman monarchs for over 400 years.

There's a room, and outside of that, there's a place called the Jinn's Meeting House, and it's sandwiched between buildings.

I am intrigued by this concept

the place between two spaces

There are a lot of people who are suspicious Such places are like gin

Because they're home to supernatural creatures, and they're symbols of the unknown, but

I think that secluded space is what writers and artists need most when I write fiction stories.

The important thing is variability.

I love the unexpected behavior of characters.

on Muslim women

When I write a novel, it can be a happy story, or it can be a handsome gay Norwegian university professor, if that's what the mind creates.

You can write anything, said Audrey Lord.

"I was taught by my white father that I think, therefore I am." She suggested, "I feel, therefore I am free."

but to this day

Why do we teach creative writing classes to write from what we know?

Literature is not necessarily our essence

It's not about knowledge or identity, what we should teach young people and ourselves

It's about opening our minds and writing what we feel, getting out of the cultural ghetto.

You should see other worlds, the story is like a Sufi whirling dance.

We will create a link between the rings that had no point of contact, regardless of identity politics.

Stories connect humanity -- there's a positive side. I'll conclude with a Sufi poem.

"For now, let's be friends Let's stop fighting Let's love each other The earth belongs to everyone" Thank you

(applause)

welcome julian

I've heard that your WikiLeaks has pulled more out in the last few years than all the world's media outlets combined.

Is that possible?

I wonder if it's possible...

It's sad, isn't it? Isn't the world's press doing a poor job that a small band of activists is able to release more classified information?

How does it work?

how to receive information

How do you protect your privacy?

The information we receive probably comes from whistleblowers, and we have a number of ways to pass the data.

For example, it uses the latest cryptography to obliterate its tracks on the Internet, and transfers data back and forth through countries with legal protections like Sweden and Belgium.

Or plain mail, sometimes encrypted, sometimes unencrypted, and then backing it up and formatting it like a normal news organization, which can be a tricky business when the data is huge.

So you're verifying the validity of the information, but you don't really know who the source is, do you?

Yeah, we rarely know.

(Ringtone) Oh no

(Laughter) It must be the CIA, tell me your TED membership code.

(Laughter) So let's look at an example.

This is what you ripped out a few years ago.

I wonder if it will slide out...

I'm talking about Kenya

What information did you release and what happened?

This is a "crawl report"

It's a top-secret report commissioned by the Kenyan government after the 2004 elections.

Until 2004, Kenya was ruled by Daniel Arap Moi for 18 years.

he was the dictator of kenya

Then Kibaki came to power, pushed by those who wanted to clean up the corruption, and spent £2 million to produce this "Kroll Report" and related reports.

Then the government used it as a weapon against Moi, who was, and still is, Kenya's richest man.

It's a craving item in Kenyan journalism.

I went to Kenya in 2007 and managed to get this just before the election, on the 28th of December, during the national election.

We published this report three days after new President Kibaki decided to join forces with Daniel Arap Moi, who he was supposed to oust.

So, to put it simply, the information about this report came into Kenya from outside rather than being released by Kenyan agencies? Do you think that changed the outcome of the election?

Yeah, by being on the front page of The Guardian and then being in newspapers in surrounding countries like Tanzania and South Africa.

I got information from Kenya

After a few days, the Kenyan media felt it was safe to report.

It was on TV for 20 days in a row, and a Kenyan intelligence study found that it made a 10 percent difference in votes, and that changed the outcome of the election.

You really changed the world when you published it.

yes

(Applause) Now I'm going to show you a short video clip of the fighting in Baghdad.

It's actually quite long, but I'll show you only part of it here.

I warn you that this is a shocking image.

(Radio) Hit me when I'm in sight

I've confirmed your unit, four Humvees and...

You can shoot me.

Let me know when you're done.

blow it all away

go!

(Sound of machine gun firing) Strafing... strafing...

(Sound of machine gun firing) Strafing...

This is Bushmaster 2-6 I want to move now

Understood Engage 8 enemies

2 helicopters confirmed Still fighting

got it

2-6 This is on the move

oops excuse me what happened?

hey hey kyle hah hah i got it

What ripples did this video make?

It was a big shock to those involved.

We sent two people to Baghdad to follow up.

The footage you see now is the first part of three attacks that happened at this time.

I believe 11 people were killed in the attack, including two Reuters reporters?

Yes, two Reuters journalists were killed and two young children were seriously injured.

In all, 18 to 26 people were killed.

The release of this video caused a lot of outrage among people.

What do you think was the big factor that triggered that anger?

Perhaps you've witnessed a gross power imbalance.

We were walking around at ease when suddenly, from a kilometer away, an Apache helicopter started firing 30mm cannonballs at everyone, looking for an excuse to shoot... even killing those who came to help.

And those two are full-time reporters, and they're clearly not rebels.

A U.S. intelligence analyst has been arrested, Private First Class Bradley Manning, who is said to have admitted in a chat that he gave this video and 280,000 classified U.S. embassy telegrams to WikiLeaks.

Is it true?

Denied the phone call

About five days ago, he obtained 150,000 telegrams, and was accused of leaking 50 of them.

We published a telegram obtained from the US Embassy in Reykjavik earlier this year, but it's irrelevant.

I went to the embassy

So what if you received thousands of diplomatic telegrams...

(Julian: I'll make it public) …Is it going to be made public? Yeah (Chris: Why?) Something like this reveals what is really going on with human rights abuses in, say, governments in Arab countries.

If you look at the declassified telegrams, you can see that there is such material.

Let's look a little wider

based on what belief

Do you think it's right to recommend leaking confidential information?

So there's the question of what information is important to the world -- to achieve change.

there is a lot of information

The fact that an organization is willing to spend money to hide information is a good indicator that there is a social benefit to putting that information out there, because companies that know the information -- they know it very well -- are desperately trying to hide it.

And that's what we've learned along the way, that's what journalism has historically been.

But is there any risk? To stakeholders and society at large? Will the leak have unintended consequences?

that's not happening

we're on the safe side

PERSONAL INFORMATION Personal identifiable information gets special treatment

There are legitimate secrets, like personal medical records, legitimate secrets, and we're dealing with whistleblowers with a good conscience.

Even if my conscience moves me

For example, someone whose son is in the U.S. military might say, "Someone had a plan and leaked it.

For releasing a video of an American soldier laughing and killing a man

Millions of people around the world mistakenly believe that all American soldiers are idiots.

My son is different Oh my god! ”

How would you answer that?

It is often said that

But if you think about it, people in Baghdad, Iraq, Afghanistan, they don't have to watch the video, they see these scenes every day.

So their opinions and perceptions

never change

What we want is to change the opinions and perceptions of those who are paying for these actions.

So you've found a way to shine a light on the dark side of these companies and governments.

light is good

But isn't it ironic that you, none other than you, have to classify the source in order to shine that light?

Not really, there are no WikiLeaks dissidents.

No one has appeared with conflicting information.

It's going to be difficult, but we're trying to convince WikiLeaks that what we're doing is morally right.

Now that we've talked to you, what are the opinions of the people in the audience?

WikiLeaks and Julian, I think we're divided.

The view of “everyone’s hero who brings precious light” and

It's a "dangerous troublemaker" view.

Who do you think is a hero?

Do you think you are a dangerous troublemaker?

Look, you need a little bit! (smile)

you are all generous

Let's see another example

This story hasn't been made public yet, but he's here at TED to tell us about it.

What is that “funny story that happened recently”?

What is it?

This is a good example of how we can show you our day-to-day activities.

Late last November, there was a series of oil spills in Albania, kind of like the Gulf of Mexico spill, but not as big.

We got a report, which appeared to be a technical analysis of the accident, where it said security guards from a rival oil company had arrived in a truck and blew it up --

I heard that the Albanian government is involved.

But the document had no cover page or anything, and was very difficult to work with.

I know what it says, but I don't know who wrote it.

I doubted the possibility that a rival company had made it up.

However, it was made public with the following statement: “Regarding this material,

have doubts

The content looks plausible, but I couldn't verify it."

And then this week, I got a letter from the company that wrote this report, wanting to find out where the information came from...

we say "tell me

Which document are you talking about, exactly?

Do you have legal rights to the document?

Are you really at home? ”

And then they sent me a screenshot of the Author field in Microsoft Word.

That's why

(Applause) This happens all the time.

One way to verify the validity of a document is to have the other person write a letter.

Do you have any information from inside BP?

There are many, unfortunately, funding and technical

We've been busy with work, and the frequency of publication has been kept to a minimum in recent months, as we're rebuilding our back-end systems to meet the recent surge in public interest.

I'm in trouble

It's a problem that fast-growing startups tend to fall into: they can't keep up with their growth, which means there's an enormous amount of sensitive disclosure going on, but not enough people to process and verify it.

So recruiting volunteers and funding to do journalistic work is the main obstacle?

Yeah, it also takes someone you can trust.

Because of the nature of what we're dealing with, it's difficult for us to grow rapidly as an organization.

I'd like to know your personality and how you got here.

I heard that you went to 37 schools as a child.

is it true?

My parents worked in the film industry and I was on the run from a cult...

(Laughter) As a psychologist, I would say, it's the perfect conditions for a delusional person to grow up.

Oh the movie industry?

(Laughter) (Applause) And I heard that you were a hacker when you were younger, and you ran into the authorities.

…no, I'm a journalist since I was young—

was a journalist and activist

As a teenager, I was once indicted for a magazine post.

the word hacker

It has to be used with caution, although this technology can be used for many things.

Unfortunately, these days it's being used by the Russian mafia to steal from the accounts of the elderly.

So the phrase isn't as good as it used to be.

I wouldn't expect you to steal money from some old man, but what are your core values?

Tell me what it's like and what made you think of it that way.

There is no particular reason

The core value is that competent and kind people don't create victims, they help victims.

This is something I've learned from my father and from other talented, kind people I've met in my life.

Well, capable and kind people don't create victims, they help.

Yes, but I'm a combative person, and I'm not very good at helping. But there are other ways to help victims.

It's been a core part of my personality for many years.

Lastly, I would like to ask you a quick question. What happened in Iceland?

You published something there, you clashed with the bank, and you got an injunction to report the story.

instead you are reported

You got a lot of attention. What happened after that?

this is an important case

Iceland's financial crisis

more serious than any other country

The GDP of the financial industry was 10 times that of everything else.

We published a report last July,

National television got an injunction five minutes before it aired. Like a scene from a movie, the injunction reached the news desk and the newscaster said, "This is the first time I've seen this, what should I do?"

So instead, I showed them the WikiLeaks site, which made them famous in Iceland and talked about this issue.

There was a renewed sense of urgency, and as a result, I worked with Icelandic politicians and international law experts to create a series of laws that would make Iceland the world's most free press sanctuary, and I lobbied for the Nobel Prize for Freedom of Speech.

Iceland is a Nordic country, so like Norway, it's easy to get into the system.

Only a month ago, the Icelandic parliament unanimously passed it.

(Chris: That's great)

(Applause) Last question.

What do you think will happen to society? Do you think we're going to have a society where the oversight of big powers is getting stronger? Or do you think we will become a society where we monitor power? Is there a 50/50 chance of Airu?

I don't know which way to fall

There are great forces at work around the world over free speech and transparency, between the EU countries, between China and the United States.

Which way will it roll? hard to predict

That's why this is an interesting time, because with a little effort, you can push it either way.

Speaking on behalf of the audience, Julian, please take care and good luck.

Julian: Thank you Chris: Thank you (standing ovation)

October 2010 “The 99” collaborates with “Justice League of America”

Familiar Heroes – Batman, Superman, Wonder Woman, and more join forces with heroes like Jabber, Noora, and Jami

It's truly a crossroads of different cultures, and it's best suited for this exchange of heroes born out of fighting fascism in their own histories and geographies.

As fascism swept Europe in the 1930s, there was an unexpected backlash in North America.

At a time when Christian symbols were altered to make swastikas out of crosses, Jewish youths in the United States and Canada went back to the Bible again and created Batman and Superman.

Think about it, these superheroes, like the Prophet, are parentless.

Superman's parents died on the planet Krypton shortly after he was born.

Batman Bruce Wayne lost his parents in Gotham City when he was six years old.

Spider-Man was raised by his aunt and uncle.

Heroes receive messages from Heaven, just as the Prophet received an oracle from Gabriel.

When Peter Parker is in a library in Manhattan, a spider descends from the ceiling, bites him, and gives him a mission.

Bruce Wayne was in his bedroom when a big bat flew overhead and he took it as a sign that he was going to become Batman.

Superman came in a pod that was sent from heaven, the planet Krypton, and then drifted down the Nile River in a pod that looked a lot like Moses' cage.

(Laughter) You can also hear his father, Yor El, speaking to Earth, "I have sent my only son."

(Laughter) (Applause) They're all clearly based on the Bible, and the idea behind it was to create a positive, universally relatable story, because by choosing a template that's so badly abused by some people, the people who abuse religion are just bad guys with bad ideas.

And only positive connections can break ties with evil.

That kind of idea was the impetus for the creation of “The 99”

The name "The 99" comes from the Qur'an - "The 99 Names of Allah" - Generosity, Mercy, Insight, Wisdom, etc.

It's a universally recognized virtue, not even an atheist, when it comes to parenting, we don't say, "Lie three times a day."

It's a basic human value

The background to "The 99" is the historical event of 1258, when the Mongols invaded and destroyed Baghdad.

All the books of Bait al-Hikma, the most famous library at the time, were thrown into the Tigris river, and the river was blackened with the ink.

This story has been passed down for generations

I rearranged the story, and in my story, the librarians picked up on this turn of events -- and by the way, the hit comic trick is that when you put a librarian in the hero role, it's always a hit.

(Laughter) (Applause) When the librarians figured this out, they prepared a special solution called King's Water, mixed it with 99 stones, and tried to save the history and culture in the book.

Unfortunately, the Mongol army attacked first.

All the books and liquids were thrown into the Tigris river.

Some librarians escaped and spent weeks soaking stones in the Tigris, sucking up the wisdom everyone thought was lost with civilization.

Three rosary beads were made from 33 stones each and shipped via Arabia to Andalusia, Spain, where they would be safely stored for 200 years.

But in 1492 two important events happened.

The first was the fall of Granada, the last Islamic territory in Europe.

Second, Columbus got the money to go to India, but got lost.

(Laughter) So, 33 of the stones went to the New World on the Niña, the Pinta, the Santa Maria (Columbus' ship).

33 via the Silk Road to China, South Asia and Southeast Asia

33 made their way to Europe, the Middle East, and Africa.

Now, it's 2010, and we have 99 heroes from 99 countries.

What's misleading here is that not all the books in Beit Al-Hikma's library were Islamic, because Ma'amun, the caliph who built the library.

- He was the son of Harun Al-Rashid, who commanded, "Let the scholar translate every book into Arabic, and give him gold for the weight of the book."

After a while, the adviser sued

"Your Highness, the scholars are deceiving

I'm writing big letters to increase the reward money."

In response, Maamun said, "I don't mind." "Translated books are worth more than gold."

In other words, open architecture, the openness of knowledge, is not unprecedented.

At the center of the story is the Noah stone.

Noah means light in Arabic

These 99 stones have a few rules. The first one is that you can't choose the stone.

It's an Arthurian element.

Second, when everyone in "The 99" picks up a stone for the first time and gains power, they abuse that ability and use it for themselves.

There's a strong message here, and that's that if you misuse the stone, it's used by the bad guys.

Third, the 99 stones have the ability to automatically update.

Now there are two groups in the Muslim world.

Together we believe that the Koran is eternal and universal

One group believes that interpretations from thousands of years ago still apply in today's world.

i don't belong to this group

Another group believes that the Qur'an is a living thing, and they expressed this concept with stone updates.

Then the villain Rugal doesn't want you to update, so he tries to prevent the update.

He can't use the stone, but you can prevent him from using it.

It's fascist intentions show up when you don't use it. You get some of "The 99" on your side.

They rule from top to bottom, until they realize they've been taken advantage of by the wrong side, and when they leave Rugal and reach the other side, they each wear their own, bright clothes.

The final rule for 99 Noah stones is

"The 99"' is to work in a team of three

why three? There are several reasons

One, Islam doesn't leave a man and a woman alone, because temptation and Satan are the third person.

It's a story that applies to any culture

But this has nothing to do with religion or conversion.

This is a strong social message that is needed to remove deep-seated intolerance, and the only way to deliver this message is to play games like this.

How I handled this

I worked in a team of three. 2 men and 1 woman, 2 women and 1 man, and 3 men and 3 women are okay

Swiss psychologist Carl Jung also said that the number 3 is important in all cultures, so I thought I could go with this.

I thought

Some blogs accused me of being sent by the Pope to preach the Trinity and Christianity in the Middle East.

Let me introduce you to the characters.

I'm Mziba from Malaysia

She can answer any question. She's the so-called quiz queen.

Jabber from Saudi Arabia breaks things when he has powers.

Mumita is a good name Mumita is a destroyer

Allah's 99 beautiful names have yin and yang. Some are strong and leader-oriented. Some are gentle and open-minded.

“Are men strong and women gentle?”

"I know some women who seem to be destroyers."

(Laughter) I'm Jami from Hungary. I make weapons. I'm a technological genius.

I'm Musawira from Ghana, Hadiah from Pakistan, and Jaleel from Iran uses fire.

My favorite Yemeni al-Batinah

Al-Batina is the Shadow Avatar

A shadow and a hero

When I told my wife, "I made a character that looks like you,"

-My wife is Saudi of Yemeni descent.

"Show me" When I show this

Say "I don't look like you at all"

I said, "Look at my eyes, it's your eyes"

(Laughter) My promise to my investors is that I won't make a stingy movie.

If it's not as real as Superman, it's a waste of time and money.

It's been like this since the beginning. Bottom left is Fabian Nisija, screenplay for X-Men and Power Rangers.

Next to him is Dan Panoshan, the current X-Men character designer.

Above right is Stewart Moore's Iron Man script.

Next to me is John McCree Spider-Man's drawing

In 2005, he advertised to the Western media that "the world will have a new hero in the next Ramadan."

I was at a conference of the Foundation for Arab Thought in Dubai, and I was drinking coffee and looking for the right reporter.

At that time, even if I didn't have any work, I was motivated.

I found a reporter from the New York Times, and I pressed him to sell himself.

(Laughter) Even without the work, he promised me, "I'll write some in the art section, don't bother me anymore!"

(Laughter) I said, "Great," and I called him a few weeks later.

I said "Hi Hesa" He said "Hi"

I said, "Happy New Year." He said, "Thank you. Baby is born."

I said, "Congratulations." I don't care (laughs).

I asked, "When will the article come out?"

He said, "Mr. Naif Islam and comics?

now is not the right time

It may come out in a week, a month, or even next year, but it will definitely come out."

What do you think happened a few days later?

Muhammad caricature publication problem spreads all over the world

then my time came

(Laughter) I was inundated with calls and emails from the New York Times.

I found myself in a positive full-page story. On January 22nd, 2006, our lives changed forever, and a Google search for Islam and comics turned up me.

The superheroes of "The 99" look like they've stepped out of a global event

And that led to a lot of things, including college and school curricula. One of my favorite photos was taken in South Asia, with men with long beards and women in hijabs -- a school scene.

To my delight, they're all laughing with their "The 99" books, and they've noticed me and asked for my autograph.

Unfortunately, it was an illegal copy, so there was no income.

(Laughter) So far, "The 99" has been published in eight languages: Chinese, Indonesian, Hindi, Urdu, Turkish.

A year and a half ago, we opened a theme park in Kuwait. It's called The 99 Village Theme Park. It's 28,000 square meters with 20 rides, all with superheroes. It was used in back-to-school campaigns in Spain and Turkey.

But the biggest one, this is amazing, has created a 26-episode animated series for audiences around the world, and in fact, it's already decided to air it in the United States and Turkey.

High quality 3D CGI from the writers of Ben 10, Spider-Man, Star Wars and the Clone Wars

The image I'm going to show you is a world premiere, and it depicts the struggle.

Two characters, the macho Jabbar and Noora, who has the ability to use light, are both tricked into wearing matching fascist-inspired mouse-colored uniforms.

They don't even realize they've been tricked, and they're the other members of "The 99."

I'm trying to be an ally I'm in the middle of a split

can you make it darker

[“The 99”] Jabber: Dana, I can't see your hand

make it brighter

What happened

Dana: It's too dark for me.

Rugal: We should be able to do something.

Man: We can't let any more troops go unless we can make it safe.

Dr. Razem: Miklos, we have to go.

Micros: I have to download the file

Don't forget your aunt

Jabber: Dana, lend me your strength.

Dana: I can't do anything.

Jabber: You can do it, though you may not be confident right now.

i believe

you are noura of light

Dana: No

I'm not worth it

Jabber: So everyone does too?

Isn't it worth saving one person? Me too?

then guide me

Dana: Over there

Alert: Enemy approaching

Jabber: aaa

Micros: Stay away

Jabber: I'm here to help.

Dr. Razem: Don't listen to them!

Dana: Micros, that man is not on your side.

Miklos: No, you want to reactivate the stone he gave you access to.

[“The 99”] Thank you

(Applause) "The 99" is technology, it's entertainment, it's design.

But that's not all

I have five sons, and I worry about who they're going to look up to.

We see faith being manipulated around us and among our closest relatives.

As a psychologist, I worry about people all over the world, but I'm particularly concerned about how people perceive themselves in my own world.

I am licensed in Clinical Psychology from the State of New York.

I've heard a lot of stories about people who trained for the Political Torture Survivor Course at Bellevue Hospital and ended up being tortured by leaders they idolized as children.

Torture itself is unacceptable, but being tortured by someone you admired is even more costly.

I left Bellevue, went to business school, and set out to do this.

Whenever I assert the importance of this message, I always tell the following episode. I once gave a lecture on the biological underpinnings of behavior at the Kuwait University School of Medicine. I gave students articles from the New York Times and articles from the New York Magazine.

We hid the names of reporters and magazines so that only the facts remained.

The first one was about a group called "God's Party," whose policy was to ban Valentine's Day and make red things illegal.

If you catch a couple flirting, get them married immediately.

The second was based on the complaint of one woman, who said that six bearded men got out of three minivans and interrogated her on the spot for talking to a man who was not part of her family.

I asked the students where they thought these two incidents happened.

The first is Saudi Arabia, no objection.

The second actually split into Saudi Arabia and Afghanistan.

The students were surprised by the correct answers. The first was a group in India that worshiped a Hindu god.

The second happened in upstate New York

was the case with Orthodox Jewish groups

And what's even sadder and more serious is that when I listened to myself and people around me who were involved in both incidents, I called it Talibanization.

So good Hindus and Jews don't do this.

I think this is the influence of Islam.

And that's what the Kuwaiti students thought they were too, and this is dangerous.

It's dangerous when a group perceives itself as extremist.

Here is one of my sons, Rayan, he's a Scooby-Doo fan.

You can tell by looking at those glasses

The other day he called me a "nosy kid"

(Laughter) I learned something from him.

Last summer I was at my house in New York, and he was playing with his toy house in the yard.

I'm "noisy" I'm in a toy house

"I'm busy now"

And Layan did this, stamped his feet -- he's only 3 years and 6 months old -- he looked at me and said, "Dad, I want you to come with me to my office.

I have a job

(Laughter) (Applause) Rayan saw the situation and adapted it to my level.

(Laughter) I'm trying to do the same thing with "The 99."

I think it's a lot like bending a cross to make a swastika.

And when I see a picture like this of a child holding a Quran and wearing a suicide belt and joining a demonstration with a parent who thinks it's cute, it makes me want to connect the Koran to something positive and one day change the self-esteem that the child on the left feels to the self-esteem that the child on the right feels.

And I think "The 99" accomplishes this goal.

When I was a student at Tufts University, I gave away free falafel, and it was something like Middle East Day.

People stop by, eat exotic falafel, talk, and leave.

No one confused free with falafel.

(Laughter) And just as I was thinking that, a woman ran up to me, threw her stuff on the floor, pointed to a sign, and said, "Who do you want released?"

(Laughter) It's true.

(Laughter) Actually, he was at an Amnesty International conference.

(Laughter) Just today, DC Comics announced the cover design for the collaboration.

Batman, Superman and Wonder Woman on the cover, plus members of Saudi Arabia, UAE and Libya from "The 99"

On April 26, 2010, President Obama said, "We've seen a lot of moves since the famous Cairo speech that reached out to the Muslim world, but the most revolutionary was "The 99," which reached out to the Justice League."

There are times in our world where preconceived notions misinterpret culturally innocuous symbols like falafel, and where religions are twisted from their original purpose by human hands.

This world needs Superman and "The 99"

thank you

(applause)

About ten years ago, I got a job teaching Swedish students about global development.

As I worked with African institutions on hunger studies in Africa for about 20 years,

I guess you expected me to know a little bit about the world.

I'm going to have an undergraduate class called "Global Health" at the Karolinska Institutet, a medical school.

But when it came time to do it, I got worried.

They're the best students in Sweden, and I thought they all knew what I was teaching.

So I decided to do a quiz first.

The question at the time taught me a lot: "For each of these five pairs, choose the one with the highest infant mortality rate."

Each pair was chosen so that one had more than twice the infant mortality rate as the other.

We made sure that the difference was much larger than the error in the data.

I'm not going to test you, the answer is Turkey, Poland, Russia, Pakistan, South Africa.

Here are the results of Swedish students.

The confidence intervals are very narrow, which was a good thing for me.

Average of 1.8 out of 5

Now there's a place for a professor of global health. My classes are safe. (Laughter)

But it wasn't until late at night, when I was compiling the answers, that I really understood the results.

Swedish students' knowledge of the world is statistically significantly lower than that of chimpanzees.

(Laughter) If you give a chimpanzee two bananas, it will choose either Sri Lanka or Turkey, half the time, and the correct one.

Swedish students are even lower

The problem isn't ignorance, it's preconceived notions

I also conducted unethical research on professors at the Karolinska Institutet (Laughter), and the people presenting the Nobel Prize in Medicine were like chimpanzees.

(Laughter) I realized the need for communication, because we have well-organized data on children's health levels around the world.

So I built the software you see.

Each circle represents a country

this is china this is india

The size of the circle represents the population, and the horizontal axis is the birth rate.

I asked my students how they see the world, "What do you really think of the world?"

It turned out that their knowledge came from "Tintin's Journey".

(Laughter) Students still think of the world as "us" and "them" -- our "Western World" and their "Third World."

I asked, "What is that 'Western World'? ”

“Long-lived, small families are like that. Short-lived, big families are the Third World.”

If you look at this, the horizontal axis is the fertility rate, the number of children per woman.

1, 2, 3, 4 to 8 people

We have very good data on family sizes in different countries since 1962.

margin of error

The vertical axis is life expectancy at birth, ranging from around 30 years old to around 70 years old.

In 1962, there was actually this group of countries: industrialized countries with small families and long lives.

and this is a developing country

had a large family and a relatively short lifespan

And what happened after 1962? let's see the changes

Students are right, are there still two kinds of countries?

Or is the developing world a small family around here?

Or are you on top of this with longevity?

let's see

The data uses available United Nations statistics.

This will improve China to a healthier society.

Green Latin America is moving toward smaller families

The yellow ones are the Arab countries. Life expectancy is increasing.

Green Africa stays here

to india indonesia moving very fast

In the 1980s, Bangladesh was always with African countries.

This is where the miracle happens, the imam promotes family planning and goes up to the top left.

In the 1990s, there was a terrible HIV epidemic, and life expectancy dropped in African countries.

All the rest of the countries are moving to the top left. Longevity, small families, our world has become a completely different place.

(Applause) Let's compare the United States to Vietnam.

1964 America has small families and long lives, while Vietnam has big families and short lives.

then it becomes

If you look at the data during the war, life expectancy is increasing despite the high death toll from war.

Around the end of the war, family planning began in Vietnam, and they moved to smaller families.

The United States has longevity and small families Vietnam in the 80s

Abandoning the planned economy and becoming a market economy accelerates the improvement of social standards.

And today, Vietnam's life expectancy and family size in 2003 are on par with the United States in 1974 at the end of the Vietnam War.

If we don't look at the data, we're underestimating the dramatic changes in Asia, where social change precedes economic change.

Let's look at it another way, the distribution of income around the world.

This shows the distribution of income for people around the world.

$1, $10, $100 per household per day

There's no longer a gap between rich and poor countries, it's a myth.

There's a small valley, but it's distributed all the way through.

Let's take a look at how income is distributed. This is 100 percent of the world's annual income.

The richest 20% hold 74%

And the poorest 20% get the 2%.

This shows that the concept of developing countries is very questionable.

When we think of aid, we think of people here helping people here.

But the most populous part in the middle now earns 24 percent of the income.

Who are these people?

Where does each country belong?

Africa first

10% of the world's population are mostly poor

This is the country club of the OECD countries, the rich countries, the United Nations.

There's quite a bit of overlap between Africa and the OECD in this area.

this is latin america

From the poorest to the richest, we have it all

Eastern Europe, East Asia, South Asia

Go back in time to 1970

the valley is getting deeper

There were many people in Asia living in extreme poverty.

The world's problem was poverty in Asia.

As we move forward in time, the population grows, and hundreds of millions of people in Asia escape poverty and fall into poverty elsewhere, and that's the current pattern.

The World Bank's best prediction is that after this, the world isn't divided, and most of us are in the middle.

This is, of course, a logarithmic scale, and our concept of the economy measures growth in percent.

I see it as a percentage of development.

Let's change the horizontal axis from household income to per capita GDP. Change each data to regional GDP. The size of the circle is population.

The OECD is here. Sub-Saharan Africa is here. Let's separate the Arab countries from Africa and Asia.

The horizontal axis is money, and the vertical axis is your child's chances of survival.

In some countries, 99.7% of children live past the age of five, while in others it's 70%.

There appears to be a gap here OECD, Latin America, Eastern Europe, East Asia Arab States, South Asia, Sub-Saharan Africa

There is a strong correlation between child survival and money.

Let's take sub-Saharan Africa apart

The vertical axis is the level of health, the higher the better.

divided sub-saharan africa into countries

The size of each circle represents the country's population.

Sierra Leone is here Mauritius is there

Mauritius was the first country to lift trade barriers, allowing it to sell sugar and textiles on par with the West.

There are big differences between countries in Africa.

Ghana is in the middle

Sierra Neone receives humanitarian aid

Uganda receives development assistance

You can invest here You can spend your vacation here

Africa has a lot of breadth, but we're lumping it all together.

Let's split up South Asia, and the big circle in the middle is India.

There is a huge difference between Afghanistan and Sri Lanka.

Let's divide the Arab countries What will happen?

Even with the same climate, culture, and religion, there are big differences, even between neighboring countries.

Yemen is in a civil war. In the United Arab Emirates, money is being used equally well, including for the children of foreign workers.

different from what we believe

The data is more powerful than most people think. Despite the uncertainty, we see a clear difference.

The difference between Cambodia and Singapore

far more than a data problem

Eastern Europe was under the Soviet economy for a long time, but ten years after leaving it, a lot has changed.

Cuba isn't the only healthy country in Latin America now.

Chile is likely to surpass Cuba in terms of child mortality in a few years.

These are high-income OECD countries.

So that's the pattern around the world, and it's kind of like this.

Let's see the world in 1960, it's going to move

This is Mao Zedong, who brought health to China.

After his death, Deng Xiaoping came along, brought money to China, and brought China back into the mainstream.

As you can see, each country is moving in a different direction, so it's hard to give examples of countries that show typical patterns around the world.

let's go back to 1960

Let's compare South Korea over here with Brazil over here. Let's include Uganda for comparison.

here it is

advance time

You can see how fast South Korea is progressing, compared to Brazil, which is much slower.

Also, if you go back to the beginning and turn on the track display and run it again, you can see that the rate of development is very different, and the economy and health are changing at about the same rate, but when health comes before the economy, you can see that it's moving much faster.

To better illustrate that, let's add the United Arab Emirates.

It's a resource-rich country. Oil made money.

You can't buy health in a supermarket

We must invest in our health and teach our children in school.

We have to train the medical staff and educate the public.

Emir Zayed did this pretty well.

Despite falling oil prices, we've pulled this country up to this point.

So the mainstream situation in the world is that countries are doing better with their money than they used to.

This is when you look at each country at its average.

But there's a danger in using average data, because there are big differences even within countries.

If you look at this, Uganda today is where South Korea was in 1960.

If you divide Uganda, there are big differences within the country.

The richest 20% of Uganda are here The poorest are here

If you divide South Africa, it looks like this.

Let's take a look at Niger, which recently had a terrible famine, the poorest 20% of Niger is here.

South Africa's richest 20 percent is here, and yet we're debating what the solution for Africa should be.

Africa has everything in the world

I can't have a discussion with my 20% about the HIV response with my 20%.

Improving the world needs to be contextualized, and it's inappropriate to lump it all in one big region.

I've noticed that students get really excited about using this tool.

Policy makers and businesses also want to know how the world is changing.

So why isn't it happening?

Why don't you try to use the data you already have?

Even though the United Nations, national statistical agencies, universities, and other non-governmental organizations have data.

because the data is hidden.

We have the Internet for the general public, but the data is not being used effectively.

There is no publicly accessible information about the changes in the world that we have seen.

There are certain types of web pages that feed off of databases, but they charge high prices, they have weird passwords, and they just display boring statistics.

this won't work

(Applause) What do you need? there is a database

You don't need a new database, you have great design tools.

more and more

So we started a non-profit venture to connect data to design, Gapminder, named after "MIND THE GAP" (mind the gap) on the London Underground.

We started building software that could connect data.

It's not that hard. It's a few man-years.

So now I can pull the data out and animate it.

We also released data from some UN agencies.

Some countries have agreed to release their data to the world.

But what we really need is search capabilities. We need to make the data available in a searchable form, and make it freely searchable.

What words do you hear when you travel the world for that?

I've become familiar with the anthropology of statistical agencies, and they all say the same thing.

“Impossible because our information is special”

“It is impossible to make it searchable like other data”

“You can't give data away for free to students and entrepreneurs around the world.”

but i want to

here's the publicly funded data

I want to see it blossom on the internet.

The bottom line is to make the data searchable and viewable as a picture using a variety of design tools.

I have good news

The new head of the United Nations Statistics Office doesn't say it's impossible.

He just says, "We can't do it."

(Laughter) You're pretty smart, aren't you?

(Laughter) There's going to be a lot going on in the data space in the next few years.

You'll be able to look at the income distribution in a completely different way.

Purple is China's income distribution in 1970.

Light blue is income distribution in the United States in 1970.

almost no overlap

What happened after that?

It's going to look like this: China is growing up, it's getting less equal, and it's getting to this point, right behind the United States.

(Laughter) It's kind of scary.

(Laughter) I think it's very important to have this kind of information.

really need to see

Finally, let's look at the number of Internet users per 1,000 people.

This software gives you easy access to data on 500 species from countries around the world.

It takes some time to switch screens, but you can select your favorite data for the vertical and horizontal axes.

What we need is to make the database free and searchable, so that with a click we can turn it into a graph that we can understand instantly.

Statisticians don't like this, they say it doesn't represent reality, they say we should use statistical, analytical methods.

But this allows us to generate hypotheses.

the internet appeared

The number of users accessing the Internet is increasing

The horizontal axis is GDP per capita.

It's a new technology, and it's surprisingly responsive to the economic strength of the country.

That's why $100 PCs matter.

I see a good trend here

It's like the world is flat

These countries are rising faster than their economies, and it will be interesting to see what happens next.

(applause)

I'm really lucky

The essence of my story is told by three historical events that happened one after the other over the last two months. These three events may seem irrelevant, but you'll find that all of them are relevant to what I'm about to tell you.

One of them is actually a funeral, or more specifically a reburial.

On May 22nd, a hero was reburied in Frombork, Poland, a 16th-century astronomer who truly changed the world.

What he did was literally - swapping the center of the solar system, the Sun, with the Earth. And then with this simple swapping, he achieved a revolution in science and technology, what many call the Copernican Revolution.

And that's how, ironically and very fittingly, we found his grave.

As was customary at the time, Copernicus was actually buried, along with 14 others, simply in an unmarked cemetery in the cathedral.

One of the hallmarks of the 400-year scientific revolution that began with Copernicus was DNA analysis, which allowed us to identify the actual bones of our readers from the abundance of hairs left behind in astronomy books.

the match is clear

The DNA matched, and it turned out that the hair and bones actually belonged to Nicholas Copernicus.

Now, the biology and the relationship between DNA and life is what really bothers me to talk about Copernicus, because even then, his followers asked the very quick and logical question: If Earth is just a planet, what about the planets around other stars? and

What did most of the world think about life on other planets?

In fact, it was very popular at the time -- it's a quote from a book.

And at the time, people were actually answering that question affirmatively, yes.

but there was no evidence

The dreams of Galileo, Giordano Bruno, and countless other scientists have been unfulfilled, and in the 400 years since then, they have been frustrated and unable to answer the very basic questions that humanity has always asked.

what is life? What is the origin of life?

Are Humans Lonely?

And in the last decade, towards the end of the 20th century, molecular biology has made some really spectacular advances in understanding DNA, the code of life, and in fact, it's not getting us any closer to answering that fundamental question, it's making us even more confused.

here's the good news

A lot has happened in the last few years, starting with the planet, the old-

Let's start with that Copernican question: Are there Earth-like stars around other stars?

As you've heard, I tried to answer that question in some way, and now I have the answer.

it's a new telescope

Our team, fittingly for me, named the telescope after Johannes Kepler, who dreamed of the days of Copernicus. The sole purpose of the new telescope is to go out and find planets around other stars in this galaxy and tell us how often we find Earth-like planets there.

The new telescope is actually the same as the Hubble Space Telescope, as you know it, but with an extra wide-angle lens, which is a photographer's way of calling it.

If in the next few months you go out in the evening and you look up straight up and hold your hand up like this, you're actually looking at the region of the sky where the telescope is looking for planets, day or night, any time for the next four years.

In fact, what we're doing is called the transit method.

When a planet passes in front of a star, it actually causes a small eclipse.

Depending on the position of the planets, you won't have much luck observing them, but with a million stars, you'll find enough planets.

As this video shows, what Kepler was looking for was simply a decrease in starlight.

You can't see this image of stars and planets

To Kepler all stars were but points of light

But it taught me a lot, not just that the planet was there, but also its size.

You can tell how big the planet is by how much light it loses.

Orbits, orbital periods, and other things.

So what do we know?

So let's get you in touch with what we've actually seen, so that you can understand what we're talking about today.

Kepler finds a lot of candidate stars, and we track them to find planets and see if they're planets.

So what we basically know is the distribution of planets by size.

There are small planets, there are medium planets, there are large planets.

I'm going to count a lot of those planets.

counting the planets in our solar system

Indeed, even in ancient times, the solar system would have looked like this diagram in that respect.

There are small planets and there are large planets, and this was the same in the time of Epicurus, and of course, later in the time of Copernicus and his followers.

Until recently, our solar system consisted of four small terrestrial planets, up to about twice the size of Earth, which of course included Mercury, Venus, Mars and, of course, Earth, and then two giant planets.

Then the Copernican Revolution brought us the telescope, and of course three more planets were discovered.

The total number of planets in the solar system is nine.

Most of them are dwarf planets, and they are, to some extent, in line with what Copernicus was happy to take note of and what Kepler enthusiastically proposed.

Pluto has now joined the dwarf planets

Until literally 15 years ago, that was all we knew about the planets.

I feel frustrated there

Copernicus' dream was not fulfilled

It wasn't until 15 years ago that technology finally allowed us to find planets around other stars, and we've done really well.

In the next 15 years, about 500 planets orbiting other stars will be discovered in various ways.

Unfortunately, as you can see, things have changed a lot.

There's an explanation, of course, that we can only see large planets, and that's why most planets are actually classified as "Jupiter-type."

But as you can see, little progress has been made

still the same as in the days of Copernicus

There is no evidence that planets like Earth exist.

The reason I'm really interested in planets like Earth is because, as you can see, life as a chemical system really needs a smaller planet, where there's water and rock where a lot of complex chemistry can occur, evolve, and survive.

there was no evidence of that

Today, I'm here to give you the first look at what Kepler, the new telescope, has been telling us over the last few weeks, and to my surprise -- it's something that Copernicus has noticed and that's consistent with Kepler's proposal, and that Copernicus' dream can come true.

As you can see, dwarf planets make up the majority.

"Terrestrial" planets are visible to us - completely more than any other planet

This is the first time I can say that

There is still work to be done on this matter

Most of the terrestrial planets are only candidates

We will see in the next few years

But the statistics are clear.

Statistics show that planets like Earth do exist.

Our Milky Way galaxy is full of planets like Earth.

So the question is what to do next?

Earth-like planets whose locations are known can now be investigated first.

We can look for planets that can be said to be habitable, that is, planets where the same conditions that we experience here on Earth exist and where complex chemistry can occur a lot.

We can even put a number on how many terrestrial planets we can expect to have in our Milky Way galaxy.

As you might expect, the numbers are very variable.

Approximately 100 million terrestrial planets are expected

that's great news

Because with our small telescopes, in just the next two years, we'll be able to see at least 60 terrestrial planets.

It's great, because then you can go to the rover, remotely operated, of course, but with a rover with technology that you've already tried in the last five years.

We'll be able to figure out the composition of the planet and find out if the atmosphere contains water or carbon or methane.

you will come to understand that

Great, but that's not all

I still have something to say

I'm here for the next story, the really interesting part.

Now that we've reached this stage, the next stage is possible.

Now on to biology, and biology has a fundamental question that remains unanswered, which is essentially, "If there is life on other planets, would it be similar to life on Earth?"

Now, let me just say that life doesn't mean "abundant life," such as wonderful life, human life.

I would like to say that life is the truly diverse molecular structure that has existed on the earth from the past to the present, from microorganisms to humans. The current understanding is that life on earth is made up of groups of molecules that undergo chemical reactions.

So the question is, is the chemical phenomenon universal? Or is it different for each planet?

Is it the same everywhere in the universe, like gravity, or is biochemistry all different depending on where it is found?

To find something, you have to know what you want to find.

It's a very basic question that we don't know the answer to, but we can try to find the answer, and we're trying to find the answer in the lab.

You don't have to go to space to answer questions.

So we look for answers in the lab

Many others are now doing the same

I'm trying to build a bridge, and a lot of good news is coming from that bridge.

Here's an example I'd like you to see

Compartmentalization comes to mind when we think about what the phenomenon called life requires, the isolation of the molecules that are important to life from their surroundings and entrapment in membranes, but in environments where molecules and membranes can actually occur together.

In one of our laboratories, Jack Szostak's lab, a series of experiments over the last four years have shown that in the presence of water and clay -- a very common environment on terrestrial planets -- naturally occurring molecules spontaneously form bubbles.

Bubbles have membranes, which are very similar to the membranes of all cells of all life on Earth, like this.

Nucleic acid-like molecules like RNA and DNA really do develop inside, mutate, divide, and do what we call life.

It's just an example of how to talk about the logic behind answering the larger question about the universality of phenomena.

In some ways, the work that scientists around the world are embarking on today can be thought of as building bridges, building bridges from both sides of a river.

One is on the left bank of the river, where researchers like myself are trying to understand the planet's environment.

There are just too many possibilities, and I don't want to blindly explore them. There are only a limited number of laboratories, a limited number of people, and a limited amount of time to actually carry out all the experiments.

Therefore, it is necessary to build a bridge from the right bank as well.

On the right bank of the river, the experiment that I just showed you is being conducted in a laboratory, and it's actually an experiment, and the results go back and forth, and hopefully one day we'll be able to connect the bridge.

So why would you want to pay attention to that?

Why would you want me to buy a half-finished bridge?

Are you that attractive to me?

There are many reasons, and I've talked about a few in today's short talk.

Understanding chemistry actually helps us in our daily lives.

But deeper and deeper - there's a reason

The deep and fundamental point is that chemistry is redefining life as we understand it.

It's about to change the way we see the world, and it's nothing like how Copernicus' actions 400 years ago changed the way we think about space and time.

It's a different story, but it's equally important.

And what often happens is that it has to do with this feeling that the Earth and humans are tiny in the big universe.

The more you know, the stronger you become

We all learned in school how small the Earth is compared to the vastness of the universe.

The bigger the telescope, the bigger the universe.

Look at the blue dots in this image

This pixel is the earth

the earth as we know it

In this case, you're looking from outside the orbit of Saturn.

really small

I know that

Let's think about life on the planet as a whole, and in a way, the whole planet is life.

The size of the Earth is the biosphere

life on earth is the size of the earth

Let's compare that to the universe in a professional way.

What if Copernicus' impotence was really all wrong?

If so, will you be able to take more responsibility for what happened today?

Let's put it into practice

In space the earth is very small

Can you imagine how small it is?

let's do it

So let's say this is the size of the observable universe, all the galaxies and stars are here, from here to here.

How big would life be in this tie?

the size of a single atom

unimaginably small

unimaginable

I can see a tie, but I can't imagine seeing something as small as an atom.

But this is the story

Both space and time exist in the universe and life

If this tie represents the age of the universe, this is the history of life on Earth.

Think about the oldest life on Earth on a cosmic scale.

it's not tiny

very meaningful

Life is tiny in size, but not in terms of time.

Life and the universe are compared like parent and child, parent and offspring.

So what do we know

I understand that Copernicanism - the paradigm that we've been learning all along about being tiny - is wrong.

Life in this universe has huge and powerful potential, especially now that we know that terrestrial planets are commonplace.

And that powerful potential is also the potential of all of us.

If we're going to care for this planet and its biosphere, we need to understand more about the importance of the universe and do something about it.

The good news is that it's actually possible to do that.

so let's do it

Let's start this new revolution and end the old one with synthetic biology that can change both our environment and our future.

I hope we can build this bridge together and connect someday.

thank you

(applause)

Until now, our communication with machines has been limited to conscious and direct communication.

Whether it's something as simple as turning on a light with a switch, or as complex as programming robotics, if you wanted a machine to do something, you had to give it an explicit command, a series of commands.

Human-to-human communication, on the other hand, is much more complex and much more interesting, because it takes into account a lot of things that aren't explicitly stated.

By reading facial expressions and body language, we can intuitively capture feelings and emotions during a conversation.

In fact, it's a big part of our decision making.

Our vision is to introduce a never-before-seen element of human interaction into human-computer interaction, so that computers can respond not only to direct commands, but also to facial expressions and emotions.

And there's no better way to do that than by interpreting the signals our brains produce at the center of our control and experience.

This seems like a really good idea, but as Bruno pointed out, it's not easy for two reasons. The first is the detection algorithm.

Our brains have billions of active neurons, with 170,000 kilometers of connected axons.

When these neurons transmit information, we can measure the electrical signals produced by the chemical reactions.

Most of the functional parts of the brain are on the surface of the brain, and the surface of the brain has many folds to increase the area available for intellectual abilities.

These cortical wrinkles make interpretation of electrical signals on the surface of the brain a difficult problem.

The way the cortex wrinkles is different for each individual, like a fingerprint.

So even though the signals are coming from the same functional part of the brain, this wrinkled structure means that their physical locations are very different from individual to individual, even in identical twins.

Surface signals cannot be interpreted consistently.

To solve this problem, we created an algorithm that unrolls cortical folds, which allows us to map signals to their origins, which is applicable to many people.

Another challenge is the equipment for observing brain waves.

For EEG measurements, we usually use something like a hairnet with an array of sensors, like the one you see in the picture.

A technician attaches the electrodes to the scalp using a conductive gel or paste, and when you do this, it's like a light abrasion afterward.

This is very time consuming and not very comfortable.

On top of that, these systems cost tens of thousands of dollars.

Now let's bring in last year's speaker, Evan Grant, who kindly agreed to help us demo our invention.

(Applause) What you're seeing here is a 14-channel high-fidelity EEG capture system.

You don't have to put gels or pastes on your scalp

It only takes a few minutes to put it on and get a stable signal.

It's wireless so you can move around freely

Where conventional brainwave capture systems cost tens of thousands of dollars, this headset costs only a few hundred dollars.

Let's talk about detection algorithms

Earlier, I talked about facial expressions as an expression of emotion, but with a simple, personalized sensitivity adjustment, you can quickly capture facial expressions.

I'm short on time today, so I'm just going to show you the Cognitive Set, which involves moving virtual objects in your mind.

Evan is using this system for the first time, so he creates a new profile first.

He can't be Joan

enter with Evan

To do the cognitive set, we start by training with a neutral state signal.

Neutral means doing nothing.

just sit back and relax

This sets a baseline, or a normal state of the brain, because everyone's brain is different.

This takes eight seconds, and when you're done, pick any task that moves things.

Now, Evan, pick something that you can clearly picture in your mind.

I will try "pull"

Now select "Pull"

Evan is asked to imagine an object coming towards the front of the screen, while the progress bar grows.

Nothing happens at first, because the system doesn't yet know what he thinks of "pull."

Keep imagining "pulling" for 8 seconds

So 1, 2, 3, yes

okay

After registering this, you will be able to move the cube.

Now let Evan imagine "pulling."

wow amazing!

(Applause) I was surprised.

(Applause) It looks like we still have some time left, so let's ask Evan to take on a very difficult task.

It's hard because you have to imagine things that don't exist in the real world.

do "erase"

If it's an action related to movement, it's something I do all the time, so I can easily imagine it.

But I don't have any experience with "erasing." Now, Evan, imagine a cube slowly disappearing.

Practice first 1, 2, 3, yes

so let's try

Look! he is really good

try again...

I lost my concentration

(Laughter) But you know it worked once, but it didn't last very long.

Like I said, this is very difficult to imagine.

The nice thing about this is that you can tell the software once and for all how to think about "erasing."

There's a machine learning algorithm inside... (cheers) Thank you very much.

Wow wow

(Applause) Thank you so much, Evan, for a great demo.

As you can see, the software has a measurement system, and as users become more familiar with the system, they can add functionality to it, and that's how the system is able to discriminate between different ideas.

Once you've been trained in detection, you can assign each thought to a computer, an application, a device.

Let me give you some examples of how many applications there are for this new interface.

For example, in games and virtual spaces, you can intuitively use facial expressions to control avatars and virtual characters.

Of course, you can also experience magical fantasies and control the world with your mind.

And then you can also change colors, lights, sounds, special effects, depending on your emotional state, to amplify the experience in real time.

Researchers and developers around the world are developing applications with robots and machines, such as here, a toy helicopter that can be flown simply by wishing it to fly.

This technology can also be applied to practical things, like the smart home.

You can open and close the curtain through the control system's user interface.

And of course you can turn the lights on and off.

And finally, an application that really transforms people's lives: it allows you to control an electric wheelchair.

In this example, we're mapping facial expressions to movement commands.

Right eye wink turns right

Left eye wink to turn left

go straight with a smile

here...thank you

(Applause) I've only scratched the surface of what's possible today, and I hope that with the input of the community and the participation of developers and researchers from around the world, you'll help us determine where this technology is headed. Thank you very much.

"Kicking the bucket" "Chewing the dust" "Cashing chips" "Checking out" "Departing" "Deadline passed" "Going into the distance"...

These humorous euphemisms describe one life event that we all experience: death.

But most of us don't want to acknowledge or prepare for death, and we don't want to talk about it with the important people in our lives.

In the Australian community where I grew up, when someone died of old age or disease, only adults attended the funeral.

When my parents came home from the funeral, they were devastated and didn't say much.

So I grew up ignorant of death and the mourning process.

When I was 15, I received an invitation.

My dear neighbor, who was like an aunt, died suddenly of a heart attack, and I read his eulogy at the first funeral I attended.

I didn't know it was normal to have a tight chest and a dry mouth.

The funeral director said a few things wrong and I got really angry.

"The deceased loved to knit," she said.

It's knitting

(Laughter) The host didn't say it, but at 75, she mowed her own lawn, built an amazing fish pond in her front yard, and made her own ginger beer.

You didn't want me to use the words "I love to knit" in my condolences.

(Laughter) If talking about death becomes a daily thing, it will be an opportunity to reflect on our core values, and share them with those we care about, so that those left behind can make the right decisions without fear of violating the wishes of the deceased.

I've been lucky enough to lead an amazing, culturally diverse team, and in the past year, I've lost five parents in total, including my father.

We started talking openly and frankly about our experiences.

We also talked about practical issues that no one tells you about: how to interact with government agencies, hospitals, nursing homes, advance directives, funeral homes, relatives.

We also discussed the issues posed by different cultural backgrounds, and it made me realize how different ways people mourn their loved ones can be.

A good example of this is what is called "sorry business" by Aboriginal and Torres Strait Islanders.

During a sorry business, families have specific roles and responsibilities, such as following rules that limit the use of photographs and mentioning the name of the deceased, and holding smoking ceremonies, all of which are acts of respect and the sending of the souls of the dead to rest.

These practices can sometimes be in stark contrast to what's happening in Western culture, where we pay tribute to the memory of our loved ones who have passed away by talking about them and sharing photos.

The lesson I learned last year is that talking about death while you're still healthy makes life so much easier.

Many of us tend to wait until we miss the opportunity, by which time we're too emotional, too ill, too physically exhausted.

Isn't it time for you to decide for yourself the finale of this world?

let's get started

What do you want to do when you die?

How do you want people to remember you?

Does location matter?

Would you like to be by the sea? Or would you rather be in the ocean?

(Laughter) Do you want a religious funeral or a casual party, or do you want to die in style, literally with fireworks?

(Laughter) There's a lot to be said about death, but I want to focus on two aspects: why talking about and planning your own death can help you die better and lessen the burden on those you care about, and how talking about death can help those who are grieving.

Let's talk about the plan first.

Who wrote the will?

please raise your hand

wow that's great

45% of adults over the age of 18 in Australia do not have a legally binding will

you are above average

Given that writing a suicide note is fairly simple and inexpensive, the average numbers are staggering.

When I started questioning my friends and neighbors, I was very surprised that not many had prepared wills.

In many cases, "because it ends up in the hands of the spouse."

Keeping in mind that laws vary from state to state and country to country, here's what happens when someone dies without a will in New South Wales.

First, a suitable administrator is appointed by the Supreme Court of New South Wales.

It's highly likely that this administrator didn't even know the deceased.

That person is responsible for the funeral arrangements, collects the estate, and distributes it after the debts and taxes are paid.

One of the liabilities includes funeral expenses.

You wouldn't know that this curator would want to give away the 120-centimeter wooden giraffe figurine in the deceased's living room to someone who helped him move it all the way. By the way, this is my will.

(Laughter) If you have a spouse or a live-in partner, the property is likely to be yours, but if you're single, things get much more complicated, because your parents, your siblings, your half-siblings, your dependents are all involved.

And did you know that if you donate regularly to a charity, that charity can claim your property?

The most important thing to know is that the bigger the property you own, the more complex and costly your will will be.

So for those of you who haven't written a will, I ask...

When in your life have you ever been willing to pay the government money that you didn't have to pay?

(Laughter) I lost my father last February to progressive lung disease.

When my father learned that his illness was finally incurable, he made three clear wishes.

He wanted to die at home, to die surrounded by his family, to die peacefully without suffocating.

Fortunately, my family was able to support my father's wishes, and he fulfilled his wishes, and in that sense, his death was a good death.

my father died exactly as planned

My father wanted to die at home, so it was necessary to have some pretty painful conversations, and I filled out a lot of paperwork.

The paperwork questions covered everything from resuscitation to organ donation.

My father said, "I will donate all the organs that can be used."

This upset my mother, because my father's condition was deteriorating rapidly, and it was no longer the right time to talk about organ donation.

We should discuss these things while we're still healthy and active, so that we can talk about them in a non-emotional way and realize not only what's important, but why it's important.

So, as a process of self-reflection, I started asking family and friends about their thoughts on death and how they wanted to be remembered.

So what I've learned is to have a "death talk over dinner" or a "death café" where people talk casually about death --

(Laughter) It's a great insight.

(Laughter) Did you know that the bodies must be legally disposed of? You can't throw it off a cliff or burn it in your backyard.

(Laughter) In Australia, you have three options.

The two most common are burial and cremation, and can also be used for scientific research.

Happily, scientific advances have also extended to the disposal of corpses.

(Laughter) You can also choose an eco-friendly funeral.

Burying at the base of a tree in a recycled cardboard or wicker basket, or if you love the sea, there are urns that dissolve in seawater.

I myself plan to be cremated, but I get seasick so badly that I don't want to imagine that I'm going to be ashes in the rough seas of the ocean.

I bought a lot next to my father's grave.

We call it “investment property”.

(Laughter) Unfortunately, I don't get tax credits.

(Laughter) Planning for your own death allows those left behind to mourn in a healthy way, without the fear of failing to honor their wishes, or the guilt of failing to do so.

As part of my research, I attended seminars, read books, and spoke with palliative care nurses.

And what I've learned is that one of the consequences of not talking about death is that we don't know how to deal with grief.

Conversely, the more we talk about death, the more likely we are to deal with the emotions we experience with grief.

What I've discovered this year is that it's an honor to help someone die. Loss and grief weigh my heart, but I have no regrets.

I knew what my father wanted, and being able to support his wishes gave me peace of mind.

For the last 24 hours of my father's life, he slipped into a mild coma, and after days of constant nursing care, I was able to sit next to him, hold his hand, and say goodbye.

My father passed away before breakfast on Monday morning, and while I waited for the doctor to come and the funeral home to come, I went to the kitchen and ate a lot of porridge.

When I told my friend about this, he seemed shocked.

"Does food go down your throat at times like that?"

But I was hungry.

(Laughter) The grief kept me awake and distracted, but I never lost my appetite. I'm always hungry.

(Laughter) Everyone is different, and it's very important to recognize that.

If you don't talk about your own death or the death of a loved one, how can you support your friends, colleagues, and neighbors in their grief?

How can you support someone who has lost someone suddenly, such as in an accident or suicide?

We tend to avoid such people

Not because I don't care, but because I don't know what to say.

Friends can't solve it, they can't take away the pain, so sometimes they try to say something to break an awkward silence and then regret what they say.

For example, something like this: "I don't have to suffer anymore."

"You have a lot of memories, don't you?"

"I don't have to pay for hospital parking anymore."

(Laughter) I don't really have to say anything.

just stay there

Be patient, understanding, and a listener.

If you can't do that, please make me a lasagna, curry, or casserole.

(Laughter) Last year, I attended 10 funerals, one of which I helped organize.

There were all kinds of funerals: one very solemn Greek Orthodox funeral, four Catholic farewell masses, and a garden party, where people toasted and scattered the ashes in the garden with a ladle.

(Laughter) We carried the coffin, kissed the coffin, wrote words, and toasted with ouzo.

I've attended in all black, and I've worn brightly colored clothes and party dresses.

There were many ways to say goodbye, and sometimes I was uncomfortable doing things I'd never done before, but one thing gave me peace of mind, and that was what the deceased wanted.

What do I want to do?

I want to do it right, so I wrote a will, I registered as an organ donor, and I have a lot called investment property.

All that's left is to have a funeral, a big party, a lot of champagne, a colorful, laughter-filled funeral with my own music.

thank you

(applause)

Let me start with my own story

I tore my knee meniscus playing soccer in college.

Then I tore my anterior cruciate ligament and got more knee arthritis.

I'm sure many of you have had the same experience, and by the way, the woman I married had the exact same experience.

That's what motivated me to become an orthopedic surgeon, because I wanted to focus on solving problems that would allow me to continue playing sports without restrictions.

To give you a better understanding of this, we have prepared a video for you to watch.

(Narration) We all know the dangers of cancer, but there's one disease that affects more people than cancer: arthritis.

Cancer may be deadly, but the numbers afflict more patients with arthritis.

If you live long enough, you have a one in two chance of developing arthritis.

And aging isn't the only cause of arthritis.

After decades of pain from everyday injuries, joints finally become immobile.

In search of a solution, we turned to engineering, and artificial materials were developed to replace the worn out parts.

consider other options

What if all the replacement sites your body needs already exist in nature or in your own stem cells?

It's a biological replacement that replaces worn out parts with new, natural ones.

(Speaker) So what is a biologic therapy?

Let me start by telling you how I treated my wife and hundreds of other patients.

One of the most common questions I hear from patients in their 40s to 80s, including my wife, is, "Doctor, do you have cushioning material for your knees?

I'm still hesitant about artificial joints."

So my wife had a human-donated meniscus implanted into her knee joint space.

An allogeneic transplant replaces the lost meniscus.

For the unstable ligaments, we used human-donated ligaments to stabilize the knee.

We did a stem cell paste transplant that we developed in 1991 to regenerate the articular cartilage surface and smooth the surface.

On the left is a photo of my wife's injured knee before surgery, and on the right is my wife hiking comfortably in Aspen four months after surgery.

It worked for other patients, not just my wife.

In this video, Jen Hudak won the Aspen Superpipe, just nine months after she injured her knee. As you can see in the photo, her knee has a paste implant, which allows for biological resurfacing.

With all these success stories, why isn't this enough?

because there are few donors

There aren't many chances for young, healthy people to have a motorcycle accident and provide us with the organization.

And the tissue is very expensive.

So living tissue transplantation is not a solution that can be used on a very large scale.

But animal tissue can be a solution because it's plentiful and cheap, and you can get young, healthy tissue, but there's an immunological barrier here.

A specific epitope called the galactosyl or gal epitope is responsible for this barrier.

If we're going to transplant animal tissue into humans, we have to figure out how to remove the epitopes.

I started researching animal tissues in 1984.

We started with the bovine Achilles tendon, which is mainly composed of type I collagen. We wash the bovine Achilles tendon, which is mainly composed of type I collagen, with acids and surfactants to break down and remove antigens, and then use that to create a regeneration template.

By inserting the regeneration template into the patient's knee, the lost meniscal cartilage is regenerated.

More than 4,000 surgeries have been performed using this technique worldwide, and it's the FDA-cleared and globally accepted method of meniscal reconstruction.

If the tissue can be decomposed (cartilage), this is fine.

But what if you need an intact ligament?

can't use mixer

For those cases, I worked with Uli Galili and Tom Turek to develop a method to remove this galactosyl epitope with an enzymatic wash using a specific enzyme.

It's a "gal strip" technique

humanized the organization

By stripping the gal, we've humanized the tissue (Laughter) so that we can then put it back in the patient's lap.

That's how we're now using porcine ligaments to transplant young, healthy, large tissue into 10 people in an FDA-approved clinical trial. One of the subjects won the Canadian Downhill Masters competition three times post-surgery, as he put it.

A similar clinical trial is currently pending.

So what is the next step

What will happen to the implementation of total biological knee replacement, not just partial?

Will there be a revolution that replaces artificial joints?

Please explain what we are doing

They take articular cartilage from young healthy pigs, strip it of its antigens, combine it with the patient's stem cells, and transplant it onto the inflamed articular surface of the knee.

This is the current biological approach.

Rebuild the knee using parts

resurfacing the knee with a completely new surface.

And the animal kingdom is 400 million years old.

There is a history of walking, and its benefits

can enjoy

We can use thicker, younger, better tissue than your injured joints, or your 40-, 50-, or 60-year-old joints.

This procedure can be done on an outpatient basis

Also, the cost of preparation is very low, which is why the global adoption of biological knee replacement surgery is so realistic.

Welcome to the world of super biomaterials

this is not hardware

this is not software

it's bioware

a new version of yourself

It's coming out soon. (Laughter) Go to the nearest operating room.

thank you

(applause)

Today I'm going to take you around the world for 18 minutes.

I'm based in the United States, but I'll start by talking about far away Kyoto, where I was lodging with a Japanese family and researching my dissertation, 15 years ago.

I knew I would experience culture shock and misunderstanding, but it came in an unexpected way.

On the first day after arriving in Japan, I entered a restaurant and ordered green tea with sugar.

The waiter hesitated for a moment and said, "I don't put sugar in green tea."

"I know the custom

I like sweet green tea.”

He said the same thing in a more polite tone than before.

“There is no sugar in green tea, so…”

“I know Japanese people drink without sugar, but I add sugar.”

(Audience laughter) I'm persistent, so he's in trouble and goes to the store manager.

Soon after, they had a lengthy discussion, and finally the manager came to apologize, saying, "Sorry, we don't have any sugar..."

(Laughter from the audience) I ordered a coffee because I didn't have the green tea that I like.

What I saw there was two bags of sugar!

My order of sweet green tea didn't go through because of a simple misunderstanding.

It's a fundamental difference between the two ways of thinking about choice.

Americans think that as long as customers make sensible requests based on their preferences, they have a right to be met.

Burger King Says “Dine Your Way” Starbucks Says “Happiness Is In Choice”

(Audience laughter) But the Japanese think it's our duty to protect the ignorant (Audience laughter) In this case, it's to protect the ignorant gaijin from making the wrong choices.

Green tea, which I prefer, is inappropriate for cultural norms, and they tried to save my face.

Conversely, Americans tend to think they're at the pinnacle of choice.

Americans believe that all humans are born with a desire for choice.

Unfortunately, that's an assumption, and it may not apply in different countries and cultures.

Even in the United States, sometimes that's not the case.

I'm going to talk about these assumptions and the problems that come with them.

I invite you all to think about your own beliefs and how they were formed.

Myth #1: “If choices affect me, I should choose.

The only way to maximize your own priorities and interests is to make your own choices.”

essential for success

In the United States, the first choice is the individual.

It is natural to make your own choices and keep your beliefs without being influenced by others

live true to yourself

But does this method of choice work for everyone?

I did some research with Mark Ripper to answer this question.

For this research, we went to San Francisco's Japantown, brought seven- to nine-year-old Caucasian and Asian Americans into the lab, and divided the children into three groups.

We introduced Smith to the first group and showed them six letter-sorting puzzles.

Children can choose their favorite puzzles, and even choose a marker pen to write their answers.

A second group is shown the same puzzle in the same room, but this time Smith tells them which puzzle to do and which marker to use.

A third group is instructed to use puzzles and markers determined by the mother.

(Audience laughter) Although they were actually instructed by Smith or by their mother, the work was exactly the same, except for the first group, which had the freedom of choice.

In this procedure, we gave three groups the same task and arranged them so that it was easier to compare their results.

We made a small difference, but it made a big difference in the children's outcomes.

White Americans solved two-and-a-half times as many puzzles when they chose the puzzles themselves, and this data compares to Smith's or his mother's choice.

Regardless of who chose them, they became less efficient when commanded by others.

Some children were blatantly embarrassed when their mothers decided

(audience laughter) A child named Mary said, "Why are you asking mom?"

(Audience laughter) In contrast, Asian-American children performed best when their mothers chose them, second when they chose themselves, and last when Smith chose them.

A child named Natsumi ran up to Smith as they parted and clung tightly together and said, "Can you tell Mommy that you've done what she says?"

Second-generation children were strongly influenced by their immigrant parents in their choices.

For them, choice is not only a way of expressing and asserting individuality, but also a way of building society and harmony by entrusting choices to those they trust and respect.

If they have the idea of ​​being honest with themselves, perhaps their "self" is collective rather than individual.

Making your loved one happy is equivalent to satisfying your own desires.

In other words, an individual's tendency to choose is shaped by the wishes of a particular person.

The belief that the decisions you make are the most correct only holds true when you are clearly separated from others.

On the other hand, when the choices and outcomes of several people are intertwined, making communal choices can increase mutual achievement.

Conversely, sticking to individual choices can end up undermining each other's abilities and relationships.

America's paradigm, little acceptance of mutual existence

Lack of recognition of human imperfection

Choice is seen as a private and self-determined act

If you grew up with examples like this, you'll find it inspiring, but it's a mistake to think that everyone grows up under pressure and making solitary choices.

Americans: The Second Myth

“The more options you have, the better decisions you make”

Walmart has 100,000 items Amazon has 27 million books Match.com now has 15 million subscribers

You will find the best partner

Let's test this assumption with the example of Eastern Europe.

I interviewed people who had gone through the transition from communism to democracy and capitalism.

An interesting fact I discovered not during an interview, but simply in a hospitality setting.

When the participants showed up for the interview, I offered them a drink: Coke, Sprite, seven sodas in all.

I did my first interview in Russia, and I was caught off guard by what one of the participants said.

“Any

After all, they are all carbonated drinks.”

(Audience murmurs) I was so shocked by this comment that I started recommending seven different sodas to everyone.

I asked everybody, they didn't see the seven sodas as one thing, not seven options.

If you add fruit juice and water to seven sodas, you say you have three choices: fruit juice, water, and soda.

In comparison, many Americans are obsessed not only with the flavor of their soda, but also with the brand.

As research shows, consumers can't really tell the difference between Coke and Pepsi.

Of course, we in the hall know that Coke is better.

(Audience laughter) Today, America is more saturated with choice and advertising than any other country.

Add in the belief that "more is better" and you've got a group that is particular about details and every choice is important.

But for Eastern Europeans, suddenly the number of products on the shelves was overwhelming.

It's like being thrown into a sea of ​​choices without even having time to argue that you can't swim.

What do you associate with the word choice?

I asked Mr. Gregoire, "I'm afraid

I have a dilemma

I'm not used to choosing.”

Bourdin, from Kiev, had this to say about the new consumer market: "It's over the limit.

We don't need that many products."

A sociologist from the Warsaw Research Service explained, "The older generation jumped from a society of nothing to a society of choice.

They never had the opportunity to learn how to respond.”

Young Polish Thomas says, "I don't need 20 different gums

I don't mean that you don't need options, but I think there are many fake options."

In fact, many options don't make much of a difference.

The value of choice depends on our ability to distinguish among others.

Americans are trained to spot the difference all their lives.

Americans think it's an innate ability because we train them from an early age.

We all have basic needs and desires for choice, but we don't all perceive choice in the same circumstances or to the same degree.

When you can't tell the difference between multiple options, or when there are too many options to compare, the act of choosing can be complicated and stressful.

Instead of making better choices, they become confused, sometimes even frightened.

Rather than offering opportunities, choices are forced and constrained.

What choice symbolizes is not liberation but meaningless and silly oppression

In other words, if you force a choice on an unprepared person, every aspect of choice that Americans imagine can be turned into the exact opposite.

It's not just people from other countries who feel the pressure of ever-increasing options, even Americans.

I'm starting to realize that it's more tempting to talk about the theory of "myriads of choices" than to actually have many options.

We are all physically, mentally, and emotionally limited, we cannot make choices, we make a huge number of choices in our lifetime.

My research shows that when people are given 10 or more options, they become less decisive, whether it's health insurance, investing, or anything else important.

Still, many people say that they should choose everything for themselves and that they should look for further options.

This is related to the third and most problematic myth, "Never turn your back on your options."

I'm going back to the US to try this out.

then move to france

In the suburbs of Chicago, a young couple, Susan and Daniel, were about to give birth to their first child.

We even decided on a name for the baby, after my grandmother, Barbara.

One night when I was seven months pregnant, labor started and I rushed to the emergency room.

My daughter, Barbara, who was born by caesarean section, had cerebral anoxia, a lack of oxygen in the brain.

I couldn't breathe on my own and was put on a respirator.

Two days passed, and the doctor gave the couple a choice: Should they be taken off life support, in which case the daughter would die in a matter of hours?

Even if they survive, they remain in a vegetative state for the rest of their lives, unable to walk, talk, or interact with people.

What happened to this couple?

What would a normal parent do?

Together with two researchers, we conducted research and interviewed American and French parents.

They all suffered the same tragedy

In each case, life support was taken off and their babies died.

But there was one big difference.

In France it's the doctor who decides whether or not to take off life support -- and when.In the United States, the parent makes the final decision.

We wondered, does this fact affect how we deal with the loss of our child?

had an impact

A year later, American parents were still more likely to express negative emotions, whereas French parents

She said, "My time with my son was short, but he taught me a lot.

It gave me a new outlook on life.”

An American parent said, "What if I had made other choices?"

Another Parent's Complaint "I can only believe that the doctor's intentional torture

Why are you making me do that? ”

Another Parent Quote: “I feel complicit in the execution.”

But when American parents were asked if it would have been better if the doctor had made the decision, they all said no.

They couldn't imagine entrusting that choice to someone else, even if the choice they made made them feel guilty and angry, even if it made them angry.

many were diagnosed with depression

Why couldn't they contemplate giving up choice? Because giving up choice goes against what we've been taught and believe in the purpose of choice and the power of choice.

Joan Didion's essay, "One Morning in the '60s," quotes: "People give meaning to stories in order to live.

Analyze reality and choose the most effective one from many options

We live by straining the fragmentary reminiscence images that come to mind into the plot of the story and consciously keeping the ever-changing scene still.”

American Beliefs Based on the American Dream - Based on the American Dream - A Story of Limitless Choices

This story promises so much: freedom, happiness and success.

We build a stable world and tell it, "Anything is possible"

It's a great story.

But if you look carefully, you can see the pitfalls, and you start to realize that this story can be told in many ways.

Americans have tried many times to spread America's view of choice, believing it to be accepted with an open mind and an open mind.

But as you'll see in history books and newspapers, yes, it doesn't work.

A scene that changes every moment - the actions that are understood and reasoned through the story change as the place changes.

There is no story that meets everyone's needs

And Americans, who have long dictated their choices, can also benefit from incorporating new perspectives into their stories.

Robert Frost Quote: “Poetry is lost in the process of translation.”

These words suggest that no matter how beautiful, moving, or thought-provoking a poem may be, it will not be understood by speakers of other languages.

On the contrary, Joseph Brodsky said, "Poetry improves in the process of translation," suggesting that translation is a creative and influential act.

When it comes to choice, you gain more than you lose by being involved in translations of many stories.

Instead of replacing the story with another, we can learn from and enjoy the many versions that exist and those that are yet to be written.

Wherever we come from, whatever the story, we all have a responsibility to open our minds to the wide range of possibilities and the many meanings that our choices hold.

This idea does not paralyze moral relativism.

Rather, it tells us when and how to act.

It reminds us of the possibilities of choice, inspires hope, and moves us closer to freedom, which is guaranteed but not always possible.

If you learn to interact with others, even through translation, you'll realize how strange, complex, and absolute beauty choices can be.

thank you

(audience applause) Thank you.

There's something about you that's not written in the pamphlet.

As you may have noticed by now, I am blind.

I think everyone has asked this question: What are the implications of eye problems? The act of choice is related to visual information, such as aesthetics and color, right?

It's an interesting question, and the interesting thing about living blind is that there are different advantages to watching a sighted person make choices.

As you say, there are a lot of visual choices these days.

As you can imagine, sometimes choices can be frustrating, like when choosing a color, you have to rely on other people's suggestions.

I can't decide

One day, when I bought a manicure, I was hesitating between two shades of pale pink.

The first name is "Ballet shoes"

The other one is “Kareen”

(audience laughter) We asked two women for their opinions. One suggested "ballet shoes."

“It’s a very elegant pink.”

“Oh good”

Another recommendation is “Kareen”

“What color?”

“Glamorous pink”

This time I asked two people

“What is the difference between the two colors?”

“One is elegant, the other is gorgeous”

same answer as before

They both agreed that if they could see, they would be able to tell the difference clearly.

(audience laughter) What influences the choice is the impression of the name? Or color? I did an experiment there.

I brought two bottles of nail polish into the lab and peeled off the labels.

I called a woman into the lab and asked her which one she would choose.

Half of the people were skeptical that I had put the exact same color in the two bottles.

(Audience laughter) (Audience applause) Who did the trick?

People who could distinguish between colors chose "pretty" without a label, and "ballet shoes" with a label.

As a blind person, I can tell you that if you give a rose another name, the image of the flower and even its scent will change.

thank you sheena

(audience applause)

I'm a marine toxicologist, and I'm very concerned about what's going on in the Gulf of Mexico, especially about the massively used toxic dispersant, corexit.

I've been doing research on marine pollution for a long time, looking at the effects it has on marine life, especially marine mammals.

Research has shown that marine mammals are at the top of the food chain, into which we pour enormous amounts of toxic substances each year.

And those mammals are like this

It's heartbreaking to see this sad slide, but not everyone in the world is happy, especially in my field.

Marine mammals accumulate hundreds of all kinds of toxic compounds in their bodies, and they're deeply shocked.

And tens of thousands of marine mammals around the world are steadily heading toward extinction.

About a third of them are predicted to be extinct within 30 years.

my project is along the northwest of the atlantic

I named it "the seal index"

We are polluting the bodies of marine mammals and fish, which are at the top of the food web.

We're looking at it over time, and this is a community-scale ecotoxicology study.

I've been looking at a lot of different compounds, but lately I've been really interested in flame retardants, especially brominated flame retardants, which are found in so many things that we use every day, from the cushions on the chair we're sitting on right now to the exterior of things like computers and televisions.

So we're tracking how this compound got from the product to the final reservoir ocean.

Tracing is a very complicated path, as these products age, they condense in dust, they get dumped, they end up in landfills.

because it finally reaches the wastewater treatment plant.

As you know, we get rid of millions of computers and televisions every year.

And these go to the electronics landfill.

All of it finds its way into the surface waters and finally reaches its final reservoir, the ocean.

Our study predictably detected high concentrations of flame retardant compounds in harbor seal bodies.

created a report

This report resulted in a ban on the use of neurotoxic flame retardants, commonly known as Deca, in my home state of Maine, and a nationwide phase-out decision was made late last year.

On the bright side, our harbor seals won't catch fire, at least for the time being.

So, as a toxicologist, I was very curious about myself, and I donated blood to the lab and said, "Okay, let's try."

As a result, 113 different compounds were detected in my blood.

If any of you were to participate in this experiment, you would detect a similarly distributed mixture of compounds -- a cocktail.

But for some reason, I was poisoned by a lot of flame retardants.

To give you an idea of ​​the scale, Americans have 10 to 40 times higher levels of flame retardants in their bodies than Europeans.

why? Because everything is fire-proofed, and the regulations on toxic chemicals are lax.

I'm one of the high-end

how lucky

But I thought, if there was a fire, maybe I wouldn't burn to the end.

(Laughter) Anyway, this is the current Gulf of Mexico problem that we're looking into. This country doesn't regulate chemicals properly.

I can say that I hardly do

We are being swayed by industry

Jackie Savitz [marine biologist] this morning talked about the big oil companies, their propaganda, and how they brainwash us with their lies and all that.

In our case, it will be a large chemical company.

They are allowed the right to keep trade secrets and are not obligated to provide ingredient information.

They don't even give out health and safety data, and as a result, they aren't regulated before the products are on the market.

It's like the presumption of innocence

Producer does not bear the burden of proof

I was invited to the Gulf of Mexico in May.

So I decided to go there to do some preliminary research on how dispersants would be distributed in the ocean.

I was told that no crazy toxicologist had ever jumped into the water, and I did.

We jumped into the oil slick without even a chemical suit or anything.

and lost my temper

Two days later, I had a terrible sore throat.

I thought my throat would burn

I'm cured now

What I saw on my way under the water was so shocking that it's still running through my head, I saw oil droplets all over the place.

Further down, the swarms of oil droplets were clinging to and colliding with all kinds of plankton, which are food for planktonnivorous fish like herring and also tiny life forms.

What I saw when I dived deep into the sea was just a net of death.

This problem first started, in their words, as a trade-off between the swamp and the ocean floor.

I was against the decision from the beginning and still am.

The decision was to protect the swamp.

Once the oil is in the swamp, it's impossible to remove.

As many of you know, until very recently, very little has actually been done to recover the oil.

the situation is getting more and more serious

Here's Exxon's slides about the scenario and its trade-offs.

In this case, the oil is floating on the surface of the water.

It climbs up into mangroves, but doesn't harm corals or seagrass.

here is a different scenario

If you disperse the oil, seagrass and coral will suffer quite a bit, but mangrove areas will be preserved.

Isn't this like going to the eye doctor?

Which one looks better, 1 or 2?

(Laughter) The problem is that Corexit is being released in huge quantities by us, reaching two million gallons in no time.

There is also the problem of plumes (pollutants)

It was said that there was no plume

It turned out that there was a plume

independent researchers found

There's a big, pressing problem that's affecting the human body, and there's been reports of it affecting human health.

A federal official said it was probably heatstroke.

Having been there, albeit for a short time, I can say with certainty that I don't have heat stroke.

At the site, corexit gas, containing large amounts of volatile oils and solvents, was rising from the water.

So the official's view is completely irrelevant.

BP's show is still going on

Our colleagues complain that colexit is one of the most toxic dispersants.

But still they continue to use dispersants, 9527, the most toxic, until the supply runs out.

now they are using 9500

9527 contains 2-butoxyethanol and causes internal bleeding.

I learned this from the Exxon Valdez oil spill.

So what we're doing is spraying a compound containing a petroleum solvent on top of the spilled oil.

Incoherent, right?

Let's talk about how this works

and I'll explain a little thing that happens here

it's micelles

Micelles form around the oil

First, the solvent breaks into the oil, and the surfactant gets into the oil film.

Surfactants are used in packaging for fast food, etc. They surround the oil droplets and form microscopic grains, which are surrounded by clean, small surfactants.

The thing to remember about micelles is that these tiny, floating droplets of poison are meant to deliver.

It's like a FedEx delivery man

If you're a fish, if your drops don't reach you in the morning, they'll reach you in the afternoon, because I know your address.

From a toxicological point of view, this is pretty scary, because when you combine the corexit and the dispersed oil, it's a much more potent poison than either alone.

Exposure to multiple toxins is usually the sum of each.

But the dispersant's job, as I explained, is to break up the oil slick.

The solvent in the dispersant makes this very efficient.

And dispersants break down the oil slicks in our bodies -- the cells from our skin to our organs.

So dispersants help the oil to be absorbed more easily and quickly by the body.

Oil contains hundreds of hydrocarbon and other compounds that are toxic to every organ of the body.

So when combined with a dispersant, you're exposed to a very synergistic combination of toxicity.

Corexit itself contains petroleum solvents and many toxic compounds.

I'm part of a chat group for a national organization of toxicologists and chemists who basically try to figure out what's in a product, how chemicals work and how they interact.

We found that Corexit 9500 contains heavy metals like arsenic and chromium -- and arsenic is enough to cause cancer.

This is the safety data sheet that we research, but strangely enough, it says very little about it.

Chemical companies are now being asked to publish the full list of chemicals contained in collexit.

But why? Many ingredients are not listed.

Derivatives Derivatives are a number of compounds, including sorbitan.

And then there are hundreds of petroleum distillates that are solvents.

they are not specified why

because it's a trade secret

BP is running the show, and Nalco is doing this behind the scenes.

To this day, the ingredients haven't been made public, and toxicologists are really furious because they can't predict exactly what interactions and what toxic consequences they'll have.

But as you can see, we're facing a really big risk: 33 wildlife reserves, a lot of wildlife, a lot of fish, a lot of biodiversity, at risk.

We are learning from past oil spills

What happened in the past accident is also part of my nightmare.

I am grateful to be able to share some of my struggles with you at this time.

We know coral reefs will be greatly affected.

This is a study done on an accident that happened off the coast of Tasmania, Australia.

Coral reefs, as we all know, are home to about a quarter of all marine life.

And the colexit and the oil reduce the reproductive capacity of the corals to zero.

Oil alone is 98% reproductive.

So corals are very susceptible to this combination.

here is another group

can be easily seen in the water column

Plankton and its predators. You know, little herring-like fish that traverse the water column with their mouths open, feeding indiscriminately, while at the same time gorging themselves on this brown, toxic pudding.

We know from other studies that this is a highly toxic mass.

Oil and correxit together cause deaths in much, much smaller amounts than oil alone.

That's all we know about toxicity at this point.

But my nightmare continues

This fish-eating fish -- large fish like cedars, groupers, yellowtails -- including tuna and sharks -- is devoured by this brown pudding.

their gills are very delicate

The respiratory system is very vulnerable.

Think about it, colexit hits the membrane and gets stuck in the gills, and then these fish go into a condition called chemical pneumonitis and try to absorb this compound.

Corexit causes internal bleeding when absorbed into the body.

I'm very concerned about lung-breathing mammals, not only because they're the subject of research, but because they're exposed to volatile vapors that they inhale every time they come to the surface to breathe.

The result is pneumonia that damages the liver, kidneys and even the brain.

Corexit delivers oil to every membrane, every organ in the body.

And it causes a lot of unpleasant symptoms, not just inflammation of the eyes and mouth, but also tumors and lesions on the skin.

In my humble opinion, we have yet to see the real impact of the oil pollution on wildlife in the Gulf of Mexico.

We started hypothesizing what do we know

What happens to the trophic cascade

So the hypothesis is that when an organism dies, all the higher organisms that preyed on it are affected.

Our hypothesis is a simple idea

We really only understand it down to the level of plankton and their predators.

And we weren't very good at analyzing trophic cascades.

This is the trophic cascade that the Exxon Valdez scientists had in mind: they thought that if kelp and herring were gone, the higher-ranking fish would die out.

They thought that killer whales were at the top of this trophic cascade.

What actually happened was more complex and more specific.

Many of the kelp and barnacles clinging to the rocks were predictably damaged by the mix of corexit and oil.

They've been replaced by invasive species that are weaker at bonding to rocks.

there's a storm

tore them from the rock

And that was the whole food source for the ducks.

As a result, as we all know, 300,000 sea ducks were lost in the Exxon Valdez disaster and have yet to return.

Now we're launching an independent study.

And when I say "independent," I don't mean "alone." In this sense, independent means not being bound by, say, crime scene secrets like what's going on in the Gulf of Mexico right now.

We're trying to assess the effects of toxicity, but we need a lot of partners to do this research smartly.

introduce some partners

David Gallo [Oceanologist] is one of them.

There's also Sylvia Earle [oceanographer].

And I hope that some of you can help

I ask you - Shouldn't we know?

What is our right to know?

We have a right to know the loss we're going through in the Gulf of Mexico.

My hope is that the big goal on the Gulf Coast is to find out the truth.

let us get the truth no matter what

To get there, you need an assessment.

Thank you for sharing the problem with everyone Thank you

(applause)

Imagine, I want you to picture it on the screen of your mind

This is the west coast of Japan in the 17th century Near midnight A wrinkled old monk trotting to the top of a small mountain.

When I reach the hill, I'm still wet

Standing there and looking towards Sado

Look up at the sea and look up at the sky

Then he mutters quietly, "Amanogawa, lying on rough seas and Sado."

Basho was a wonderful person

As far as I know, he said more with fewer words than anyone.

In just 17 syllables, Basho describes a scene of stormy seas after the storm has passed, and countless stars twinkling in an incredibly beautiful galaxy, millions of stars, countless planets, and maybe one day there's an ocean called Silvia.

In his later years Basho was often asked by his pupils, "What kind of secret do you have?

Why is it so easy to compose such a beautiful poem? ”

Basho replied, "Learn about pine trees from pine trees."

That's all

(Laughter) Sylvia Earle said that you have to put all your effort into knowing the ocean.

If you want to know the sea, you have to learn from the sea

So what I want to talk to you about today is something that is changing the way people relate to the ocean, and how people interact with the ocean.

I hope it spreads

Key points

First, the ocean plays a central role in maintaining the quality of life on earth.

Secondly, we have a completely new method that hasn't been used much to study the ocean.

And finally, this new method that our community is researching will change the way we look at the planet, the oceans, and in turn, the way we treat the planet as a whole, in a way that's worthy of its value.

The first thing a scientist does is decide which system to work with.

First define what the system is

not the Chesapeake Bay

Neither the Kuril Arc nor the entire Pacific Ocean

The whole planet, the whole planet, including the continents and the oceans.

that's the system we're dealing with

Basically, our challenge is to maximize the benefits and mitigate the risks of living on this planet. The energy that affects life on Earth comes from only two processes, two sources.

The other is the energy inside the earth.

These two are pitting each other against each other almost constantly.

Mountain ranges, or plate tectonics, move continents and form mineral deposits

erupt a volcano

that's the planet we live on

It's a very complicated system

I don't expect you to understand all the details here, but what I want you to know is that this is about 10 percent of the processes that have been going on in the ocean for the last four billion years, almost continuously.

This system is very long lasting.

everything has co-evolved

what does it mean

that everything is constantly interacting with each other

everything influences each other

The complexity of this system that we see is that the upper layers are mostly affected by the sun, but the lower layers are affected by heat and other processes coming from underground.

This is very important, because life on Earth arose from this crucible-like system, and we're at a point where we need to understand this.

if you don't understand

This is one of the themes that Sylvia brought to our attention: understanding our oceans, the fundamental systems that support life -- the dominant systems that support life on this planet.

look at this complexity

this is one of the variables

If you look at the complexity, you can see the movement of small eddies and large eddies, which simply indicate the surface temperature of the water, which is extremely complex.

Further down, we introduce 2-300 processes that interact as a function of temperature and as a function of all the other factors, and this is a really complex system.

Our challenge is to understand this system in new and surprising ways.

this is an urgent issue

Because, for one thing, nearly a billion of the people living on this planet today suffer from malnutrition and hunger.

And one thing, because of Cody here - Cody is 16 now - and I have permission to mention his age -

In 40 years time, when Cody is Nancy Brown's age, there will be another 2.5 billion people on this planet.

We can't solve all our problems just by looking at the ocean, but if we don't understand much more about the basic systems that support life on this planet than we do now, we're going to be in really bad shape for both Cody and 98-year-old Nancy.

Now let's talk about another aspect of the importance of the ocean.

If you look at this diagram, red is where the water is hot and blue is where it's cold. The bright green parts of the continent are where the vegetation is growing, and the olive color is where the vegetation is dead.

At the bottom left is the passage of time, repeating from 1982 to 1998.

What this tells us is that the rhythms of plant growth, including food production on the continent, are directly linked to the surface temperature rhythms of ocean waters.

The ocean is associated with, and even exerts a positive influence on, and even controls, plant growth, drought, and precipitation patterns on the continent.

So people who grow wheat in Kansas also need to understand that the ocean is very important to them.

Let me show you another complexity

This shows the age of the ocean, overlaid with tectonic plates.

It was presented at this conference that when we superimpose the age of the ocean and the tectonic plates, we can see a completely new phenomenon.

I'm going to show you a high quality video captured in real time.

The footage was seen in Beijing, Sydney, Amsterdam, Washington, D.C. just seconds after it was shot.

I'm sure you're familiar with hydrothermal vents, but the other discovery is that there's a lot of microbes active in the subsurface, well below the seafloor, and it's just been discovered, and there's very little way to study it.

By some estimates, the biomass of these microbes, living in crevices and pits on the ocean floor and below, is comparable to the total biomass of life on the surface of the earth.

This is an amazing discovery, and it's only recently discovered.

very exciting

This could be the next rainforest for pharmaceuticals.

little is known yet

Marcel Proust said, "The true voyage of discovery consists not so much in seeking new lands, but in having new eyes." New ways of looking at things, new ways of thinking.

As many of you may remember, in the early days of ocean research, we had to use what was at hand.

it was really hard at the time

I'm sure some people remember

But now, we have a lot of tools at our disposal, and we have really powerful tools: research vessels, observation satellites, mooring buoys.

It doesn't always meet your expectations It doesn't always meet your needs

I'm going to show you just a few of the programs here, which are funded by research funds and can be used for self-propelled machines that move around the bottom of the screen.

Modeling uses a very complex computer model, as you can see on the right.

On the left is a new type of mooring buoy, which I'll show you in a moment.

Fundamental in some respects is that the ocean is complex and vital to life on Earth.

The ocean is changing rapidly, but it's unpredictable.

We need a model to predict the future, but we don't have enough data to refine the model.

The computing power of computers has increased tremendously.

But without the data, the model can't be used to make predictions.

What you really need is data

It's dangerous for a number of reasons, but the Ocean Observatory Initiative (OOI), an initiative funded by the National Science Foundation, could make a big difference.

The program's goal is to bring scientific discovery and understanding to the ocean floor and beyond, using a widely accessible, interactive telepresence.

this is the new world

You can move anywhere in the vast ocean at will and get information in real time.

I've circled some stations in the southern hemisphere of this system.

There are 4 observation points in the northern hemisphere

I'm not going to go into details, but the boxed facility on the West Coast of the United States is called a regional scale node.

Formerly called Neptune

This system is supported by

Next-generation communication technology using optical fiber

You can see the copper part here.

It can carry power, but the broadband pathway for data is fibers thinner than a human hair.

The cable shown here can carry 3 to 5 terabits of information per second.

very large bandwidth

The whole earth is connected like this

It's kind of like wearing a fiber optic corset.

just like this

Connecting continents with cables

A very powerful system underpins most of our communications.

This is the West Coast system I mentioned earlier, which just happens to overlap with a plate called Juan de Fuca.

High power feed lines and unprecedented bandwidth delivered at this scale into the ocean, into the seafloor and into the earth below.

Wideband transmission lines and power, more processes will work.

So this is one of the major nodes -- a subsea station with power and communications capabilities that can cover an area the size of Seattle.

What kind of scientific research will it be useful for? That depends on how many diverse scientists can participate and come up with ideas for scientific measurement.

Devising and connecting measurement methods

It's kind of like allocating telescope time at an observatory, but available at your port.

Climate change Ocean acidification Dissolved oxygen Carbon cycle Coastal upwelling Changes in fish stocks – all areas of Earth and ocean sciences are simultaneously getting data at the same scale.

Anyone who joins later can just access the database and pull the information they need about any event.

this is just the beginning

It's a system that we built in collaboration with Canadian researchers.

Let's take a look at this caldera.

On the left is a large volcano called Axial Seamount.

Animated Descend into the Axial Seamount

This system is now planned like this

so powerful

Elevators that repeatedly rise and fall can be controlled from the ground.

You can let someone in India or China take control for a while, because everything is connected directly through the Internet.

Massive amounts of data will flow to land and become available to anyone interested.

It's much more powerful than just launching a ship in one place and moving it to another place.

now crossing the bottom of the caldera

There are many robotic systems

The camera switch can also be turned on and off at will, depending on the experiment.

The systems to be deployed - Observation equipment installed on the seafloor - Can you read the characters on the screen - Cameras Pressure sensors Fluorometers Seismometers...

All kinds of observation equipment

That raised part actually looks like this

this is how it actually looks

And this is the actual activity in high definition -- because the cable bandwidth is so high, you can have five to 10 stereo HD systems running continuously and being piloted by robotic technology from the ground.

very powerful

Now we're funded for research on these activities.

What is possible in the future?

Right now, we're just riding the wave of technological development.

New technologies are emerging in fields related to oceanography that will eventually be incorporated into the study of oceanography.

Robotic systems are now incredibly sophisticated.

We're trying to bring all kinds of robotic technology into the ocean.

This is a small power generator using nanotechnology

It's smaller than a postage stamp, and you can generate electricity just by attaching it to your shirt and moving your body.

You can get power just by moving.

There are many devices that can be used continuously at sea.

You probably know more about image processing than I do. Stereoscopic images with four times the resolution of today's HD will be commonplace in five years.

it's really amazing

Thanks to the hominid analysis, we can now collect samples of events that occur in the ocean, such as submarine volcanic eruptions.

You feed the ejecta into the system, press the button, and the geneom analysis is performed.

Data is immediately sent to land

We'll be able to gain insight into the vastness of the ocean, not just the physics and chemistry, but also the basis of the food chain, based on a constant influx of data.

The power of grid computers is truly amazing.

Grid computing will soon be used for data reconciliation and almost anything else that involves data.

The power for that is generated at sea.

Next-generation optical fiber is also really wonderful

It's much more than today's fiber optics.

By supplying power and broadband transmission lines to the environment, we can incorporate all new technologies in unprecedented ways.

In five to seven years, we'll be using telepresence to collect information from anywhere in the ocean, and we'll be able to connect everything to the Internet and communicate with millions of people.

By laying power and broadband transmission lines across the ocean, we dramatically increase our capacity to adapt.

For example

When an earthquake strikes, new species of microbes never seen before erupt from the ocean floor.

We can analyze this in a new way.

Based on the seismic activity shown here, we have determined that a volcanic eruption has begun, and will dispatch a unit.

An army of autonomous machines, of course.

Rush to an active submarine volcano

We collect samples of eruptions from the ocean floor, which contain microbes that have never been on land before.

Once the container containing the sample is ejected and rises to the surface, it is picked up by an autonomous aircraft and brought to the laboratory within 24 hours of the eruption.

This is doable and the technology is all there.

I'm sure many of you know what happened on September 7th.

A team of surgeons in New York remotely performed a cholecystectomy on a female patient in France.

You can do amazing things on the seafloor, and if it's something that's interesting to watch, you can even do it live on TV.

We can extend a whole new telepresence to the world's oceans.

Here, I've shown you what the seafloor looks like, and the goal is to have a technology that allows you to interact with the ocean in real time from anywhere on the planet.

Amazing things happen

For example, what you can bring into the classroom, and even what you can carry in your pocket.

Many people have never thought of it, but the time will come when you will have the sea in your pocket.

it's not far away

Now, in closing, I would like to leave you with another poet's words.

In 1943 T.S. Eliot wrote "Four Quartets"

won the Nobel Prize in Literature in 1948

In "Little Gidding," Elliot talks about humanity as a whole, and of course the TED conference and Sylvia. "We never stop exploring. All our exploration ends with us returning to where we started, and knowing it for the first time. Through an unknown but memorable gate, the last place we find on earth is where it first came from."

Hidden in the source of the longest river The voice of the waterfall is unknown, because I don't look for it, but I still hear it, faintly, under the waves of the sea, in the stillness."

thank you

(applause)

I want to start by telling you two things about humans.

The first thing may sound obvious, but we Homo sapiens are a really smart species, and we're ridiculously smart enough to do things that other species aren't doing.

I'm doing it, it's a well-known fact

Because it is also a vain species

we like to show our cleverness

From Shakespeare to Stephen Colbert, if you look at the wise men, you'll see that humans are endowed with reason and talent, and are more intelligent than any living creature.

But the second thing I want to stress is that no creature is as smart as humans, but when it comes to decisiveness, we can make some incredibly stupid decisions.

grinning

Don't worry, I won't give out specific names.

But in the last two years, something unprecedented and stupid has happened.

We've also seen the disastrous consequences of man-made tools for resource extraction.

The financial markets we built should have been solid, but they collapsed.

But these two examples don't highlight the most pathetic mistakes, which I'd like to interpret as the reason why we make mistakes is because we've got a little bit of an embarrassment or a decision that makes us laugh.

Research by social scientists has shown that most people make some kind of routine mistake when they're put in a certain situation.

Mistakes are not surprising

people make mistakes

Do not move even if there is a warning

Negative opinions make us more likely to make the same mistakes the next time we face the same situation.

As a researcher of human nature, this is a mystery to me.

What I'm most interested in is, do humans, being such a smart species, continue to make these kinds of mistakes all the time?

Why can't smart people find a solution?

I was wondering what would be the trigger

I came up with a few things that could be the cause.

The first is the view that it's not our responsibility.

Humans are smart enough to create very complex environments, sometimes too complex to understand what we create.

Create an intricate financial market

I have a mortgage that I can't pay back

Of course, we also know that, in a way, we make things worse when we're put in a situation we can't handle.

If so the solution is quite simple

If you find technology that you can't handle, or an environment that has a negative impact, you can get rid of it and design something better, and humans will become the great species that you hoped it would be.

But is it not the environment that is in chaos, but rather the haphazardly created human being?

Social Scientists Explain Human Mistakes

I thought so when I saw how to find out

Humans tend to make the same mistakes over and over again

It makes me doubt the creation of humans.

If the problem is with humans themselves, the problem is that we don't know how to deal with it.

Maybe we need a design that accepts the fact that we're prone to making mistakes and avoids the problem.

What I wanted to explore with my students was

To find the difference between Possibility 1 and Possibility 2

What we needed was a creature that was clever and determined, but out of reach for the ingredients that would drive us crazy, without the technology, the culture, the language.

thus decided

Research collaborators are capuchin monkeys

They are also called New World monkeys because they diverged from humans about 35 million years ago.

We can say that our great-grandmother who named "great" five million times and their great-grandmother were the same person.

This monkey and man are very distant cousins.

Holly doesn't have the technology of a human.

They're smart and cute primates, but they don't have what it takes to drive people crazy.

perfect for this experiment

If you put Holly in the same situation as a human,

make the same mistakes humans do

Do you learn from your mistakes?

I decided to experiment

I came up with this idea a few years ago

Holly decided to see how we could deal with this problem.

even human error

too many subjects

where to start

I got lost

When we started doing this research, because of the financial collapse and the flood of foreclosures, we thought the financial realm would be a good subject to study.

Observe how monkeys make financial decisions and see if they make the same stupid mistakes that humans do.

That's when I ran into a second problem, and it's a bit of a methodological problem, but monkeys don't spend money.

Because there are no monkeys waiting in line at supermarkets or banks

question about money

The problem was how to make it a monkey.

anyway tell the monkey how to spend money

I decided to teach

This is an artificial currency that we used in place of money.

When I first started researching it, it was just called tokens.

At Yale, they used this currency to train monkeys to get food from humans.

Tokens are no big deal

it's just a piece of metal

With the money I brought back from my overseas trip and was no longer needed

At first the monkey didn't see its utility, so

Although I picked up the token that was put in the fence and looked at it,

didn't make any sense

But the monkey soon realized that if he gave him a token, he would get food.

monkey mayday practice

The two pictures on the left show my curiosity.

There's an experimenter holding out his hand, and Mayday senses that this person wants it.

If you pass it, you will get food

Any monkey can offer a token to a human and get food.

prepared a video

Mayday hands out tokens, waits happily, takes food

Boss-like Felix

wait patiently to get food

without much training

every monkey has a way

I remember

Is this the same as human money?

Or maybe monkeys just seem smart, but they really aren't, I wondered.

I wondered what monkeys would do voluntarily if they were really spending something comparable to money.

One might imagine that monkeys do smart things like humans give and receive money.

Are monkeys interested in how much they can buy with tokens?

to find out

created a monkey market

The monkeys in question usually live in social enclosures like zoos.

Lure them into a small enclosure that leads to a market when they want a treat.

We've made it a little more fun than a human market. When a monkey walks through a door, he's handed a wallet full of tokens, and you can use those tokens to get things.

Have a student become a salesman

each dressed differently

Over and over again, I taught the monkey how things work: products, prices, who you can trust.

The amount on the small yellow plate held by the experimenter is

You can buy it with one token

Each one is worth 1 token, but I set it so that you can get a lot of grapes from time to time.

Watch the video in action

Taken from a monkey's point of view

this is monkey honey

waiting for the market to open

One person is offering one pill, and the other is offering two pills.

Honey, who is good at discerning, chose someone who gave her two grapes.

It seems that there is something that can be learned from Honey

Most monkeys, not just honey, eat more and taste better

I chose someone who has

the monkey pays attention to the goods

interested in tokens

What surprised me was that, together with the economists, when we looked at the data on monkeys in our economic guides, they matched qualitatively and quantitatively what humans are doing.

You can't tell if it's a monkey or a human just by looking at the numbers.

At least for the monkeys and us, we felt we had introduced something that could be used like real money.

The question is, do monkeys make the same mistakes as humans?

There were several possibilities

What I haven't seen in the monkey economy is that they don't save like humans do.

I ran out of coins and went home

And at the same time, I've seen, embarrassingly, stealing.

He would try to swindle tokens from humans whenever he had the chance.

Therefore, like humans

I decided to see if monkeys do stupid things too.

If you leave the monkey economy alone, in a few years it may turn to humans for financial help.

I can't wait that long, so to save time

In the face of economic hardship, I decided to give monkeys a problem that humans tend to make mistakes with.

The best way to see how people make mistakes is to try it yourself, so let's do an experiment to see what our instincts are.

Let's say I give each of you $1,000.

that money is yours

Donation or anything

use it as you like

Suppose there is a more profitable option.

The first option is risky, if I flip the coin and it comes up heads.

another $1000 plus

Nothing when the back comes out

There is a high probability that it will increase, but it is a high risk

Another option is safety-oriented

The amount is $500

if you are sure to get

Which do you choose

Most people choose the safe option

If $1,500 is guaranteed, you don't have to bet.

It's a prudent choice

because people don't like to take risks

you might think it's reasonable

Let's see what happens if we change the situation for the same problem.

Imagine I gave you $2,000.

twice as much as before

you can buy whatever you like

Here's a choice, unlike earlier

Ask them to think about how they would lose their money. The choices are the same.

Risky options lose $1,000 when heads come out.

If you get tails, you don't lose anything.If you don't want to risk it, just give me $500.

I see people wrinkling their eyebrows

Perhaps you, like the subjects in this experiment, would not choose the safe option given this choice.

people tend to take risks

This is unreasonable because in both situations the options were the same.

$1000 or $2000 option and $1500 fixed option

But my intuition about the risks involved depends on the situation.

What do you mean

This has to do with at least two preconceived notions that come from a psychological perspective.

The first is the difficulty of thinking in terms of absolute numbers.

You have to weigh the $1,000 or $2,000 option against the $1,500 option.

But the options change, and it's easy to think in relative terms.

You get more, you lose less, and so on.

This is good, but changing your perception affects how you judge the validity of your options.

This leads to a second trend, which economists call loss aversion.

It means that you hate being in the red

because people hate loss

may try to avoid loss

What we saw in the last scenario is that the subject takes risks because they don't want to lose anything.

This can get really messy when we're prepared to lose, but we take a lot of risks.

It creates all sorts of embarrassing situations

The reason stock investors lose money because they don't sell stocks is because they think relatively.

People in the housing market were reluctant to sell real estate because they didn't want to sell at a loss.

We were curious if monkeys show the same tendency.

If you create the same conditions in a monkey market, would they do the same thing as humans?

So we gave the monkey a choice, a safe person who always did the same thing, and a risky person who did something different 50% of the time.

And then, like in the first scenario, you get a bonus, which is an opportunity to make money, but you also have the potential to lose it.

It looks like this

Introduce a new salesperson

They both have a grape, which looks nice

you will get a bonus

Because the person on the left gives me a bonus

You will receive a total of 2 grapes.

The person on the right is the risk type

Sometimes they give me nothing

Because sometimes you can get 2 grains

There are times when there are 3 grains in total.

this is the same one you faced

Will the monkey be risk-averse and pick someone who gives him a bonus each time, or will he be willing to take a big bonus when he gets nothing?

humans chose to be safe

The results were the same for monkeys.

Qualitatively and quantitatively, monkeys were just like humans -- they made decisions.

how to deal with monkey loss

to clarify

did another experiment

Here we meet two people who don't give us anything because we have a lot of grapes.

Makes a great impression

Three grapes make the monkey happy

But I know I can't get 3 grains

The person on the left is the safe type

Every time I pick up one grape and give only two to the monkey.

The person on the right is the risk type

The monkeys are happy because sometimes they give me 3 grains, but sometimes they end up with a big loss and they give me only 1 grain.

what happened to the monkey

For the safe type, you will receive 2 tablets each time. For the risk type, 3 tablets and 1 tablet will be mixed

What surprised us was that when we asked monkeys to make this choice, they made the same irrational choices as humans do.

Depending on how you start the experiment, monkeys choose the risk type.

It suggests that monkeys also see things in relative terms, and they don't treat losses and gains the same way.

What does that mean

First, when you give monkeys money of financial value, they do something similar to humans.

They act smart, but they do things they don't like, like stealing.

I do irrational things

Monkeys, like humans, make systematic mistakes.

So that's the first thing I'd like to point out, and I'm sure some of you are thinking of hiring a monkey financial adviser.

Monkeys are cute, but they're just as stupid as human financial advisors, so I wouldn't recommend them.

sorry

I said it wrong

You laugh because you know human weaknesses, right?

I know you answered the first question

Where do these mistakes start

Our desire was to tweak and improve the financial system and technology.

But what we've found is that these tendencies come from a much deeper place.

It's possible that we'll find the reason as we evolve.

Humans aren't the only ones who can see the stupid side

It may have been seen by monkeys since ancient times

If we believe the results of monkey experiments, this silly ruse may have been going on for 35 million years.

This age-old ruse has remained unchanged.

what else is there

It's hard to overcome stupid tricks

Humans evolved to prefer sweets and fatty foods.

I know how delicious it is

When I saw the dessert I didn't think so

positive for the body

I'm starting to think

My guess is that the same thing happens when it comes to financial decisions.

When stocks go down or real estate values ​​go down, we interpret it in an evolutionary sense.

It means that it's very difficult to overcome the preconceived notions that lead investors to failure or create foreclosures.

this is the sad reality

I also need to be happy

On the positive side, as I mentioned at the beginning, humans are not only smart, but they are also impressively intelligent in the biological world.

It's clever, even if you don't flap your wings

I came here by plane

If you use contacts like you're doing now

Everyone can see clearly even with myopia

In this way, humans can easily overcome the limits of their innate power using technology and other means.

But we have to recognize that there are limits

it's a nuisance

Writer Camus said, "Man is the only species that refuses to be who he is."

The irony is that unless you know your limits, you may not be able to overcome them.

Instead of thinking of it as an insurmountable limitation, we can recognize it, embrace it, and hope that the design world will find the answer.

This may be the only way to maximize human potential and call ourselves a respectable species.

thank you

(applause)

Last year, I was here to tell a story about swimming in the North Pole.

It's been three years since I last swam in the North Pole, but it feels like it happened just yesterday.

When I stood on the edge of the ice and tried to dive into the water, I felt like I had never felt such fear in my life.

the water is black

The water temperature was minus 1.7 degrees Celsius and 29 degrees Fahrenheit.

With a coldness that cuts you

A thought crossed my mind: if I fail, how long will it take my frozen body to sink to the ocean floor 4.5 kilometers below?

I told myself I shouldn't be thinking about these things

I knew I had to listen to music to push myself to dive into the freezing waters and swim a kilometer.I got myself pumped up with the help of beautiful opera songs and hip hop.There's nothing like going all out.Walking to the edge of the ice and jumping into the water.

This swim took 18 minutes and 50 seconds, but it was like 18 days long.

When I got out of the water, the pain in my hands was so bad that when I looked at my fingers, they were swollen like sausages. The human body contains water.

When I got out of the water, I immediately thought, 'I'm never going to do winter swimming again'.

Last year, I heard that the glaciers in the Himalayas were melting, and climate change was causing the glaciers to melt.

I heard that there is a lake called Imja Lake.

This lake was formed over the past few years by melting glaciers.

The glacier has completely melted away, leaving only a lake in its place.

I can confidently say that what we're seeing in the Himalayas is going to be the big problem we face in the future.

About two billion people, one in three people on the planet, depend on water from the Himalayas.

In addition to the current population growth, the water supply from glaciers is depleting due to climate change, which is very precarious.

China in the north and India, Pakistan and Bangladesh in the south.

So I decided to climb Mt. Everest, the highest mountain in the world, and to raise this issue, I decided to swim under Mt. Everest's summit.

I don't know if any of you have experienced it, but climbing Mount Everest takes a lot of effort.

We needed 28 big yaks to carry all the equipment, and we had a full-fledged film crew to send the footage around the world.

Altitude wasn't the only thing that was challenging about this swim.

The place to swim is 5300 meters above sea level

I mean, it's as high as heaven.

Breathing is difficult enough to cause altitude sickness

I feel like I'm being hit on the head all the time.

there was something worse than that

This year is the year we decided to clean up Everest.

So many people have died on Everest, so it was decided to collect the bodies of the climbers and take them home.

When you're purposefully climbing a mountain to take on the first challenge in human history -- when you're taking on the challenge of swimming where there aren't even a single fish -- when you see a corpse being transported, you feel human fragility, and you realize how much the forces of nature are greater than the power of man.

We climbed this mountain trail to the top

To our right, we could see the Khumbu Glacier.

Along this glacier - past a large pond

I arrived at a small lake looking up to the summit of Everest. I was as prepared as I was before.

I listened to the music and, as much as I could, roused my spirit and, in a ferocious spirit, jumped into the water.

I swam the first 100 meters as fast as I could, and then I realized the big problem.

I can't breathe

I gasped for air

I started choking and threw up underwater.

Everything happened so suddenly that I was lost and started to sink

The water was so shallow that I was able to push myself off the bottom of the lake and breathe in the air.

Go ahead, tell yourself

I shoveled the water five or six times, but my body was so empty that I sank to the bottom of the lake.

Frantically, I managed to get back on track and swim to the edge of the lake.

I've heard that drowning is the most painless way to die.

That kind of bullshit is also a good place

(audience: laughter) You can feel extreme fear when you swim to the edge of the lake.

Because the crew pulled me up

We hurried back to our campsite and we all

We talked about what went wrong, and everyone on the team was candid.

if you want to succeed

My advice is that you need to fundamentally rethink your strategy after 23 years of swimming.

I was told to forget everything I wore when I was in the British Army.

Hold back the speed and fighting spirit you've acquired until you try again two days later

I was asked to think of something

I don't want to swim fast

I was told to think about swimming as slowly as possible, not the front crawl, but the breaststroke.

Fighting spirit advised to eliminate

to swim with humility

It was important. We met two days later.

I climbed a mountain I stood by the edge of a lake

I looked up at Mount Everest, it's a breathtaking mountain, and I told myself I would slowly swim across the lake.

when you swim

I can't express how good it felt. I learned two important lessons.

I learned on Everest. I am grateful to the Sherpas who taught me.

What worked well in the past may not necessarily work in the same way in the future.

In everything I do, I ask myself what kind of mindset I need to be successful.

If we apply this lesson, we may continue to live, consume, and live the way we've always lived, but it may not be the way it used to be. The warnings are already here.

when i was born

The world population was 3.5 billion, now it's 6.8 billion.

It's estimated that there will be nine billion people by 2050. The second lesson is

It's a fundamental overhaul of strategy.

I want you to think about the fundamental changes you can make to make a positive impact on the environment and to ensure that our children and grandchildren live in a safer world, and above all, what a sustainable world can create.

I want you to promise me that you will definitely do one thing that will change the course of the problem, something that will make a big difference for you.

Promise me you'll do it. If you vow to do it, nothing is impossible. Thank you very much.

(applause)

I grew up on a small ranch in Missouri.

Lived on less than $1 a day for about 15 years

I got a scholarship, went to college, studied international agriculture and anthropology, and decided to give back to the world.

working with smallholder farmers

to reduce poverty

I intended to contribute to international development, but at some point I changed direction and ended up here.

Just because you don't get a PhD and don't teach, it doesn't necessarily mean you'll end up here.

Depending on your choice, I may be driving a taxi.

may be in new york

I started working with refugees, famine victims, and smallholder farmers, and what I realized was that most or all of them were people who were helpless or displaced.

What I've learned is to do methodological research on those people.

I did it, and I found out how many women were raped on the way to the camp.

I learned how many people were imprisoned, and I also learned how many of their family members were killed.

We looked at how long they were going to stay there and how much effort it would take to distribute the food.

And we've been able to predict how many body bags we'll need for people dying in camps.

These are God's jobs, not mine.

it's not what i was trying to do

In 1988, I went to a benefit concert for the Grateful Dead to save the rainforest.

There I met a man, he's the one on the left in this picture.

his name is ben he said

"What can we do to protect the rainforest?"

I said, "What do you do for work?"

"I'm making ice cream"

"Well, you should make rainforest ice cream.

If you use the nuts from the rainforest, you can say that it's better to leave the rainforest as a forest than to turn it into a ranch."

he said "understood"

Less than a year later, Rainforest Crunch, which he and I made, hit the shelves.

this was a huge success

After 30 days of buying and 21 days of selling, the total transaction amount reached 100 million yen.

i was excited about this

Furthermore, my credibility increased, and I was able to borrow up to 450 million yen without collateral.

They owned 15 to 20, maybe 22 percent of the world's Brazilian nuts.

I bought it at a price two to three times higher than the others.

In order for other companies to buy, they had to raise the price they paid to the people who harvested the Brazil nuts.

great success

50 companies signed contracts, 200 products were born, and sales of 10 billion yen were achieved.

but in the end it failed

why did it fail

Because the people collecting Brazil nuts are not the same people cutting down rainforests.

There was a difference between those who profited from the Brazil nut and those who profited from clearing the forest.

I was fighting the wrong opponent

should work on beef

should work on wood

We should have worked on soybeans, we weren't paying attention to these things.

Now let's get back to Sudan.

I talk to refugees and say, "Why don't the Western world realize that hunger isn't caused by the weather, but by policies and politics?"

One day, one of the farmers said something very profound to me.

"You can't wake someone who pretends to be asleep"

(Laughter) Let's move on.

we live on earth

there is only one earth

We must be aware of the fact that the earth is unique and finite to us.

we know the limits of the resources we have

you can use them in different ways

You may have innovative new ideas

But by and large the limits do not change

there is nothing more

There's a basic equation we can't rule out.

The population x consumption formula is inextricably linked to the planet, but it's currently out of balance.

Our research shows that humans live on the scale of 1.3 planets.

Since 1990, we've crossed the line in our lasting relationship with the planet.

Humans are consuming 1.3 times more

If we're farmers, we're eating seeds.

If you're a banker, you're nibbling on principal, not interest.

this is the situation we are in now

It is always said that the cause of this lies in "some problem"

population growth

Population growth is a big issue, but so is how much a person consumes.

For example, the average American spends 43 times more than the average African, and we have to recognize that there's a problem with this consumption.

It's not just about population, and it's not about other people, it's about ourselves.

But it's not just a matter of people themselves, it's a matter of lifestyle.

The evidence is very good. Again, we don't have a methodology that's been validated by experts by any means.

Can you say that this is not the problem?

Do you think this question is relevant to the question, "How should we use the earth's resources?"

Let's go back to the previous equation

In 2000 there were 6 billion people on earth.

The amount that each of them consumes, let's call that amount one unit of consumption.

So there were 6 billion consumption units.

The population will reach 9 billion by 2050, all scientists say.

By that time, we will be consuming twice as much as we do now. Scientists also agree that people in emerging countries will earn five times as much as they do now, and the global average will be 2.9 times as much.

As a result, we will consume 18 billion consumption units.

Have you ever heard that we should triple the number of goods and services we have today?

the numbers say so

I can't do that

Productivity can be increased

You can increase your efficiency

but at the same time we have to reduce consumption

If you don't use it less, you can't increase production.

and use less

must reduce consumption

All of these things are part of the equation above.

But it raises a fundamental question: Should consumers be able to choose a product that can be used continuously?

Should we be able to choose sustainable next to disposable items, or should everything on our shelves be sustainable?

Making all products sustainable on a limited planet - How can we do this?

US consumers choose a product in an average of 1.8 seconds

you are generous

In Europe it's about 3.5 seconds.

How do you evaluate all the scientific data that surrounds your product, and that data is updated weekly or daily?

how do you get information

you can't get

I have a question

From a greenhouse gas perspective, with sheep raised in the UK

New Zealand-grown, frozen, imported sheep, which is better?

Is feeding cows a lot better or worse than feeding them grass?

Are organic potatoes really less harmful than conventional potatoes?

In all cases the answer is "it depends"

Every case depends on who produced it and how.

there are other problems

How to avoid stepping on a landmine like this?

is not

Consumers have a lot of opinions about their product choices, but they don't have enough information.

Sustainability is a pre-market issue,

that we all have to consider

we must unite

create collaborative groups like never before

Cargill teams up with Bunge

coca cola and pepsi

Oxford and Cambridge

Greenpeace and WWF

We all work together, and so do China and America.

We need to think that our future is at stake, and that we need to manage the planet.

but nothing can be done

Even if we all tackle this problem, we need some strategy.

Where should we focus on what?

So let me start by saying, "Where?"

There are places in the world that are rich in biodiversity and that are very important from an ecological point of view.

We need to work on these grounds

We must protect these lands in order to preserve the diversity of species we know today.

what are the threats in these places

Here are 15 items that are the biggest threats in those places, because they lead to deforestation, sediment runoff, water use, pesticide use, overfishing.

Now, we have 35 regions and 15 priority products, so who can we work with to change these production processes?

6.9 billion consumers?

In 7,000 languages ​​-- 350 major ones alone -- it's going to be a lot of work.

It's not very efficient.

So should we partner with 1.5 billion producers?

this is also a daunting task

there must be a better way

Between 300 and 500 companies handle more than 70 percent of these 15 products, and I thought those companies were the most important.

If you can partner with them and change the way they do business, other businesses will inevitably change.

I worked on the 15 products I mentioned earlier.

here are 9 of them

I've put them side by side with the companies working on each one.

If you look at the first 20 or 30 company names for each product, you'll think, Cargill is here and there, Cargill is everywhere.

In fact, big companies like Cargill are popping up everywhere.

So we changed the analysis method a little.

So I thought, if I put these top 100 companies together, what percentage of the 15 products they buy and sell?

turned out to be 25%

So 100 companies trade 25% of the 15 most important products on the planet.

Join hands with 100 companies

We can work together with 100 companies

Why 25% is so important

Because if these companies demanded sustainable commodities, they could change 40 to 50 percent of their output.

They can move producers faster than consumers.

By asking companies, they can leverage their production much faster than waiting for consumers.

After 40 years, global organic farming accounts for only 0.7% of the world's food.

we can't wait that long

I don't have time for that

Humanity needs an accelerating change.

Even working with individual companies will not be enough.

We have to start working with the whole industry.

We held a roundtable where all of the value chain, from producers to retailers to large corporations, sat together.

We invited civil society, non-governmental organizations (NGOs), and researchers and scientists, to have an informed discussion, sometimes at high stakes, to understand what would have a significant impact on these products, what the global indicators were, what the acceptable impacts would be, and then set standards around them.

Not everything was fun and game-like.

In salmon farming, we started a round table about six years ago.

8 groups participated

As a result, companies representing 60% of global production and 25% of demand joined the discussion.

Three of the eight groups have sued each other.

But next week, we're launching a globally reviewed, vetted and certified standard for salmon farming.

there is a possibility

(Applause) So what motivates different companies to enter the debate?

It's risk and demand for large companies.

These are reputational issues, and more importantly, companies don't care about the price of their output.

A business cannot exist without a product.

Businesses worry about security of supply, so the biggest business risk is running out of production.

For the producers, if the buyer buys because of the way it works, that's what motivates them.

So these are the demands, and they're the arguments.

We got good results, two years ago we searched 100 companies.

In 18 months, we signed contracts with 40 of them to initiate supply chain initiatives.

And within 18 months from now, we're going to sign contracts to work with 40 more companies, and it's going to be a similar deal.

We're trying to get the chief executives of these 80 companies to join forces with the other 20 companies to join the discussion together.

we are doing our best

I'll do anything to get them into the discussion.

Cargill is one of the companies we work with that has already started -- it's still early days, but it's on the road to sustainability.

Cargill has funded research to double the world's production of palm oil without cutting a single tree for 20 years, and it's doing it by planting trees in the desolate land of Borneo.

Studies show that the highest net present value (NPV) of palm oil is associated with degraded land.

There's also an investigation into whether the palm oil supply will be accepted and what improvements need to be made in order for them to become an approved third party for the Credible Evaluation Program.

Why Cargill Is So Important

Because Cargill has 20 to 25 percent of the global palm oil market.

If Cargill makes a decision, the entire palm oil industry will move, at least 40 or 50 percent.

this is what matters

More importantly, Cargill and one other company account for 50 percent of the palm oil exported to China.

By encouraging Cargill to only export sustainable palm oil, we don't have to change the way Chinese companies do things one by one.

This is a pre-competition issue

Palm oil exported to China becomes a good product

would be great

Mars is following a similar path.

Many people think of Mars as a chocolate company, but they have made a commitment to environmental sustainability to only use certified ingredients in their seafood.

Mars buys more seafood for pet food than Walmart.

But we're doing something very interesting with chocolate, thinking about the future of business.

They realized they needed to improve their chocolate productivity.

20% of the trees produce 80% of the harvest in any existing crop. Mars is looking at the genome and working on the genome sequencing of cocoa trees.

We're doing this in partnership with IBM and the USDA, and we're making the results public property because we want everyone to have access to that data so that they can help us make cocoa more productive and sustainable.

And what we found was that if we could identify the traits associated with productivity and drought tolerance, we could produce 3.2 times as much cocoa as we do today on 40 percent of the land.

The rest of the land can be used for other things.

It means doing more with less.

That's what the future should be, and it's great that they've made this work public property.

Mars wants to be a chocolate company, not an information company, and it wants to be a chocolate company forever.

Now, a lot of people complain about the price of food, but the reality is that food prices are going down.

Take water, for example. The four main products tell us how much the farmers produced, how much water was used, and how much income the farmers earned.

When we deduct the water charges from farmers' incomes, we find that farmers spend so much money on water that they use their produce that they don't have enough money left over.

This is the definition of "externality"

This is a tax imposed by nature.

Coca-Cola is doing a lot of water work, but they're currently trying to sign a 17-year contract with a Turkish grower to sell their juice in Europe, and they want to be able to get their produce closer to the European market.

Europeans aren't just buying juice, they're also buying carbon, because the price includes the carbon in the trees that's taken to transport it to Europe.

Some carbon is bought with sugar, some with coffee and beef.

It's called "bundling," and it's about putting those "externalities" into the price of a product.

By informing policy and regulation what we've learned from private voluntary standards for the best producers around the world, we can do even better.

We can't just focus on finding the top, we have to move the rest.

The question is not what you think, but how you think.

Companies began to think differently

It's an adventure, there's no turning back

we will all share the adventure

Humanity really has to change the way we think about everything.

What is sustainable for a planet of six billion people is not sustainable for a planet of nine billion people.

thank you

(applause)

I'm going to talk about something in my own book that will resonate with something else you've heard somewhere else, but for those of you who don't, I'll relate it to you.

I'd like to start with what I call "official doctrine."

What is the official doctrine?

It is the official doctrine of all Western industrial societies.

Its official doctrine goes something like this: If we're interested in maximizing the prosperity of our citizens, the way to do it is by maximizing individual liberty.

One of the reasons is that freedom itself is good, because it's precious, it's worth it, it's the foundation of who we are as human beings.

To maximize freedom is to give maximum choice.

The more choices you have, the more freedom you have. The more freedom you have, the more you prosper.

This idea, I think, is so deeply ingrained that no one even bothers to challenge it.

It's also deeply embedded in our lives.

Let me give you a few examples of what modern developments have made possible.

this is my supermarket it's not that big

A word about salad dressings

My supermarket has 175 dressings, plus 10 extra virgin olive oils and 12 balsamic vinegars, so if you don't like one of the 175 ready-made dressings here, you can make your own.

Well this supermarket is like this

So, next, I went to an electronics store to build a stereo system, with speakers, CD players, tape decks, tuners, amplifiers, and so on.

You can build 6.5 million different stereo systems just by putting together the parts in one store.

I have to admit that this is a huge number of options.

Elsewhere in the world of communication

When I was a kid, there was a time when you could get any phone service from Marvel.

Phones were rented, not bought

As a result, it turns out that the phone never breaks.

Those days are long gone

We have an endless array of options before us, especially in the world of mobile phones.

These are the future shapes of mobile phones

My favorite is the MP3 player in the middle, the one with the nose hair trimmer and the crème brûlée burner.

If you haven't seen it yet at your local store, don't worry, you'll see it soon.

What this does is that when people come into a store, they're already asking a question.

Want to know the answer to that question now?

the answer is no

If you want to buy a cell phone that doesn't do anything extra, you can't do that.

Now, similar explosions of choice are occurring in other aspects of life that are more important than purchasing.

About medical care, in the United States already, when you go to the doctor,

Gone are the days when a doctor told you what to do.

Instead, you go to the doctor, and the doctor tells you that you can do A and you can do B.

A has these effects and risks

B has these effects and risks What do you want to do? is asked

So I asked, "Teacher, what should I do?"

Doctors say that A has these effects and risks, and B has these effects and risks.

what do you want

Then I asked, "What would you do if the teacher were me?"

And the doctor says, "But I'm not you."

And the result -- we call it "patient self-determination," which sounds like a really good thing -- but what's really happening is that we're shifting the burden and responsibility of decision-making from someone with some knowledge -- in this case, a doctor -- to someone who is ignorant and at least so unwell that they're not necessarily fit to make a decision -- the patient.

In the prescription drug market, there's a huge amount of marketing going on to us consumers, but when you really think about it, it's all nonsense and we can't buy it.

Why sell what we can't buy?

The answer is that we're going to get you to call your doctor the next morning and ask him to change your prescription.

This slide shows that even the drama of our identities has become a matter of choice.

don't inherit identity

When you invent and reinvent as much as you like,

What that means is that when you wake up every morning, you have to decide who you want to be.

When it comes to marriage and family, there used to be a common consensus that people should get married as soon as possible and have children as soon as possible.

The real choice was who to marry, not when to marry or what to do after marriage.

Everything is in vain now

I'm teaching wonderfully intelligent students, but I'm giving them about 20 percent less assignments than I used to.

It's not because the students are getting dumber, it's not because they're less enthusiastic.

It's because students are preoccupied with other things: "Should I get married or not? Should I get married now?"

Should I delay my marriage? Child first or career first? ”

These are overwhelming questions

And my students will answer these questions regardless of whether they complete all the assignments I give them or whether they get good grades.

And you should, because these are very important questions.

As Karl pointed out, we're lucky when it comes to work.

Because we have technology that allows us to work anywhere in the world at any time of the day, except the Randolph Hotel.

(Laughs) By the way, there is only one secret place where wireless communication works.

I want to use it so I won't tell anyone

What this means is that we have this wonderful freedom of choice when it comes to work, but we always have to make decisions over and over and over again whether or not we should work.

You go to your kid's soccer game, you've got your phone in your back pocket, your mobile device in your other pocket, and your laptop on your lap.

Even when they're all turned off, watching my kid mess up a soccer game, I'm constantly asking myself, "Should I answer this call?

What is your response to this email? Draft report? ”

And even if the answers to all of those questions are no, the experience of watching a kid's soccer game is a very different experience than when I had no questions to ask myself.

If you look around you, the big things and the little things, the material things and the life-related things, life is all about choices.

The world we used to live in was like this

"All as prescribed" means that there were some choices, but not all things were choices.

The world we live in now looks like this

The question that arises here is is this good news or bad news?

the answer is yes

(Laughter) We all know the good, so I want to talk about the bad.

All these choices have two effects, two bad effects.

One, which is paradoxical, is that this creates a sense of helplessness rather than liberation.

When faced with too many options, it becomes very difficult for people to choose.

I'll give you one very good example of this, in a study of retirement planning investment, by a colleague of mine.

I obtained information on about 1 million employees in about 2,000 workplaces from a huge investment trust company called Vanguard.

She found that for every 10 additional mutual funds offered by the company, participation dropped by 2 percentage points.

If you present 50 investment trusts, 10% fewer employees will participate than when you present 5. Why?

That's because when you're presented with 50 mutual funds, it's hard to decide which one to choose, and you put it off until you put it off day by day, and it just keeps piling up, and you end up never making a decision.

What you have to understand is that not only does this mean that when people retire, they're short on cash and they're forced to eat dog food, but it's also that they're giving up the money they're entitled to from companies because the decisions are so hard to make.

By not participating, they're giving up their right to $5,000 a year in funding that the company is more than happy to provide.

This helplessness comes from having too many choices.

and make the world like this

(Laughs) [Finally, about dressing, French blue cheese, which one from "lunch"? ] You want to make the right decisions that will have infinite repercussions in the future, right?

I don't want to pick the wrong mutual fund, much less the wrong dressing

So that's one effect, and the second effect is

Even if you overcome this feeling of helplessness and make a decision, you're less likely to be satisfied with the outcome of your decision than if you had fewer options.

There are several reasons for this

One is that there are so many options for dressings, when you bought one and it wasn't perfect, did you ever try one that was perfect? It's all too easy to imagine that we could have chosen something better.

So what happens is that the choice you didn't take makes you regret the decision you made, and this regret subtracts from your satisfaction with the decision you made, even if it was a very good one.

The more options you have, the more likely you are to be dissatisfied with the options you chose.

The second is what economists call the opportunity cost.

This morning, Dan Gilbert said in his talk that our value judgments are influenced by what we're comparing ourselves to.

It's easy to imagine that if you have to consider many options, you'll imagine the advantages of the options you didn't choose, and you'll be dissatisfied with the options you choose.

here is one example

Sorry for those of you from New York [I'm worried about parking spaces on 85th Street] Think of it this way [I'm worried about parking spaces on 85th Street]

Here's a Hamptons couple

live in an expensive mansion

It's a great day on a great beach I've got it all

What else do you want?

It's August and all my neighbors in Manhattan are out somewhere.

That's why the parking lot in front of the apartment is empty."

And every day for two weeks, I'm obsessed with the thought that I'm missing out on that great parking space.

Opportunity cost is subtracted from our satisfaction with our choices, no matter how good they are.

So the more options we have, the more attractive they are, the more they bounce back at us as an opportunity cost.

Let me give you another example

This cartoon shows many points

One is to live in the present and the other is to take your time

But if I'm going to give you one thing, if you choose to do one thing, it's also that you chose not to do the other thing.

I noticed this when I went to buy new jeans.

i always wear jeans

Before, there was only one type of jeans, and when I bought it, it didn't fit my body at all.

It was unbelievably uncomfortable, but after wearing it for a long time and washing it many times, it somehow got better.

So I went out to buy new jeans that I had been wearing for years and years.

I said, "I want a pair of jeans. This is my size."

Then the clerk said, "Would you like slim, straight or relaxed?

Button fly or zipper? Stonewash or acid?

Do you want to make it a damaged one?

Go boot cut or tapered or go on forever

I was so stunned that I couldn't say anything, but soon

He said, "I want the same thing that I used to have only one."

(Laughter) Because he had no idea what it was like.

I tried on a variety of jeans for an hour and left the store with the best-fitting jeans I've ever had, to be honest.

These many options allowed me to choose the best

But I felt bad

Why? I wrote a book to explain it to myself

The reason I felt terrible was that having so many choices raised my expectations of good jeans.

Originally, when I had only one option, I had no expectations at all.

As soon as it increased to 100, one of them should be perfect.

And what I got was good but not perfect

So I compared what I was expecting and what I actually got, and I got something that was less satisfying than what I was expecting.

Adding more options to people's lives forces us to increase our expectations of those options.

And that makes it less satisfying, even if the results are good [all look great, definitely disappointing].

No one in the marketing world knows this [it all looks great, definitely disappointing] because if they did, they wouldn't know what this is.

the truth is like this

(Laughter) [Everything was better when everything was bad] The reason everything was better when everything was bad is because when everything was bad, it was possible to have experiences that surprised me in a good way.

Right now, as long as we live in a wealthy industrial country living in a world where expectations demand perfection, the best we can hope for is that expectations are met.

Surprise in a positive way is no longer possible, because our expectations have reached the ceiling.

The reason you're here today, the secret to happiness, is to keep your expectations low.

(Laughter) [Yes.] (Applause) Let me tell you a personal story. I am married to an amazing woman.

I didn't compromise as much as I could

But compromising isn't always a bad thing.

Finally, one of the ramifications of buying jeans that don't fit properly is that if you only buy one type of product, think about why you're not satisfied. Who's to blame? The answer is clear.

With hundreds of different types of jeans, when you ask yourself who's to blame when you end up buying something you don't like, the answer is just as clearly you.

you could have chosen a better one

In front of hundreds of types of jeans, mistakes are unacceptable

So when people make a decision, and even if it's a good one, if they're not happy with it, they blame themselves.

In the last few decades, depression has exploded in industrialized countries.

I believe that one of the major factors -- but not the only -- that has led to the explosion of depression and suicide is that people's expectations are so high that they end up with unsatisfactory experiences, and when I try to explain these experiences to myself, I feel that it's all my fault.

And the overall result is that, in general, it's objectively good, but it's feeling terrible.

So please remember, everyone, that this is the official doctrine that everyone takes for granted, but it's all a lie, it's not true.

It's decided that some options are better than no options at all.

But that doesn't mean more options are better.

I don't know, maybe there's a secret number

I can confidently say that we've long passed the point where choice makes us prosperous.

So, as a policy issue, we're almost done with it. As a policy issue, we have to think about this: In industrial societies, what gives us options is material wealth.

We know that there are still many places in this world where choice is not the problem.

Their problem is that they have too few choices

So what I'm talking about is a problem unique to modern affluent Western societies.

So what's really irritating and frustrating is this: Steve Levitt told you yesterday that expensive, difficult-to-use child seats don't do anything and are a waste of money.

What I'm trying to say is that these expensive and difficult options aren't just useless.

actually do harm

It's going to lead us to the worse.

If we can transfer what makes so much choice possible in our society to a society with too few choices, then not only will the lives of those who have too few choices be better, but our lives will be better.

This is what economists call a Pareto improvement.

Income redistribution makes everyone happy, not just the poor, because it frees them from the burden of too many choices.

In conclusion, when I read this comic, [there are no limits - you can do whatever you want]

Sophisticated people should say, "What does this fish know? It knows that nothing is possible in this fishbowl."

Lack of imagination, myopic view of the world, that's how I initially interpreted it.

But as I kept thinking about it, I started to think that this fish might know something.

Because, ultimately, if you smash the fishbowl to open up possibilities, what you get is helplessness, not freedom.

If you smash the fishbowl to open up possibilities, you're making it less satisfying.

Increase helplessness and decrease satisfaction

everyone needs a fishbowl

What we have now has its limits, not only for us, but even for the fish.

But the metaphorical lack of a fishbowl is just a recipe for misfortune, and it can also be a recipe for disaster.

thank you

(applause)

The global issues I want to talk to you about today are the ones that rarely make it to the front page.

But in terms of its scale and importance, it's actually a very big problem.

You travel a lot, after all, this is TED Global.

But let me take you to a place you've never been before.

Let's start from China

This photo is from two weeks ago

The boy on my husband's shoulder actually just graduated high school the other day.

(Laughter) This is Tiananmen Square.

You've been there, this isn't real China.

Take me to real China

This is Dabie Mountain, located in a remote area of ​​Central China, Hubei Province.

Dai Manju was 13 years old

I lived with my parents, my two brothers and my great aunt.

I lived in a hut with no electricity or running water, no watches, no bicycles.

There was also a big pig in this wonderful house.

When Dai Manju was in sixth grade, his parents said, "I'm going to get you out of school. We can't afford the $13 tuition."

"I'm going to live in the rice fields for the rest of my life anyway."

"What is education good for?"

This is what often happens to girls living in remote areas.

Dai Manju was the brightest student in her grade.

After that, she spent two hours going to school, listening outside the classroom, and continuing her studies.

When we introduced her to the New York Times

I got a flood of donations, mostly 13-dollar checks. The readers of The New York Times are very generous, if you donate a small amount (Laughter).

We gave the money to the principal of the school.

he was very happy

And I thought, "Build a new school."

"Let's give every girl a scholarship" if they study hard and go to school.

So Dai Manju first graduated from middle school.

then go to high school

went to accounting school

Looking for a job in Guangdong, South China

I was able to find a job, and I found a job for my classmates and friends.

send money to family

I also built a new house for you.

This is not an intended investment

little external investment in girls' education

After watching Dai Manju over the years, I can tell you that she's gone from a negative spiral into a positive one.

It didn't just change my own life, it changed my home situation, my family, my village.

The village received a lot of attention

Of course, at that time, the whole of China was developing, so we were able to build roads to connect our villages with the rest of China.

This is the first of two "half the sky" claims.

So the central issue of morality in this century is gender inequality.

Slavery in the 19th century

The 20th century was totalitarian

What is attributed to our time is the cruelty that many people around the world face because of their gender.

Some of you may be thinking, "No, that's too exaggerated."

"I'm just exaggerating"

i ask you guys

Do you think there are more men or women in the world

How many do you think are more men?

please raise your hand

A few people, but how many do you think are more women?

Okay, that's the majority.

later people you are wrong

Of course you're right. In the Western world, where men and women have equal access to food and health, women outnumber women because they live longer.

But in other areas it's different.

In fact, demographers have shown that between 60 million and 100 million women are missing from the current population.

There are several reasons for this

For example, in the last half century, more girls have been killed by sexism than were killed on the battlefields in the 20th century.

Ultrasound diagnosis is also one of the causes.

Because poor nurturing conditions can lead to girls being aborted.

For example, this girl is in a feeding center in Ethiopia.

The center is full of girls like her

The amazing thing is that all my siblings in the same household are doing just fine.

In India, boys and girls have the same survival rate from birth to one year of age, because they're breastfeeding during that time, and it doesn't matter how much milk they produce.

Between the ages of one and five, girls die 50 percent more than boys.

The second argument of "Half the Sky" is that it puts moral judgments of right and wrong aside for a moment and thinks on a purely practical level that one of the best ways to fight poverty and terrorism is to educate girls and see women as part of the regular workforce.

For example, regarding poverty

There are three reasons why girls' education is a good thing

First, overpopulation will always cause poverty.

If you educate a boy, he will have fewer children, but only slightly fewer.

If you educate girls, they'll have far fewer children.

The second reason is about consumption.

This is kind of the hidden secret of poverty. Poor people not only earn very little, but they don't spend it very wisely. And unfortunately, most of the consumption is done by men.

As research shows, people who live on less than two dollars a day, people who are considered poor, put two percent of their living expenses into this basket: education.

Twenty percent goes into this basket, which is a waste basket for alcohol, tobacco, juice, prostitution and festivals.

If you take the 4 percent out of that basket and put it in this education basket, you can have life-changing results.

The final reason is that women can be the solution, not the problem.

Limited human resources should be utilized

It would be a shame not to take advantage of people like Dai Manju.

Bill Gates articulated this during a visit to Saudi Arabia.

I was speaking to an audience like you.

However, there are partitions in two-thirds of the venue.

There was a man on this side, there was a partition, and there was a woman on this side.

A man in the room stood up and said, "Mr. Gates, we are Saudi Arabia." "In technology." "We want to be in the top ten in the world."

"Can we be?"

So Bill Gates looked around the audience and replied, "If you don't fully utilize half the country's human resources, you'll never make it into the top ten."

This is Bill Gates of Arabia

(Laughter) So what exactly is the problem?

The first problem is human trafficking for prostitution.

I'm just going to say two things about this.

At the peak of the slave trade in the 1780s, about 80,000 slaves were brought from Africa to the New World.

What about modern-day slavery, which, according to State Department statistics, is roughly 800,000, ten times the number, because that's the number that's being trafficked across borders.

And that doesn't include the number of slaves that are traded within the country, but I'm sure that's also a significant number.

And if you look at the other aspect of the difference from slaves in the past, slaves were worth about 40,000 dollars in today's market value.

Girls being trafficked today cost hundreds of dollars, which means they're more disposable than slaves of the past.

But countries like Cambodia and Thailand are beginning to make progress.

We can't just watch girls be bought and killed around the world.

The second problem is maternal mortality.

The birth of a child is a wonderful event in our world.

But in Niger, 1 in 7 women die in childbirth.

Worldwide, a woman dies every 1 minute and 30 seconds in childbirth.

It's not that we don't have the technology to solve it. These women have three weaknesses: they're poor, they live in the countryside, and they're women.

For every one person who dies in childbirth, 20 survive and suffer postpartum trauma.

The most devastating trauma is what's called an obstetric fistula.

The hole that opens during a difficult birth allows excreta to flow out.

Let me tell you about the Mahabuba case.

she lives in ethiopia

I got married against my will when I was 13

She became pregnant and went into the woods to give birth, but because her body was still immature, the birth was difficult

The baby died and she got a fistula

I was dripping with my own urine and feces.

I mean, it stinks.

The villagers thought she was cursed and had no choice.

I finally left her in a hut on the outskirts of the village.

The villagers pulled the door off the hut so that the hyenas would come at night and attack her.

That night, with a stick from the hut

I fought a pack of hyenas with nothing but sticks.

The next morning, she thought it would help if she went to a nearby village with foreign missionaries.

I had a spinal nerve injury, so I crawled 50 kilometers to reach the missionary's home in a dying state.

When the missionaries opened the door and saw her, they immediately knew what had happened and took her to a maternity hospital in Addis Ababa, where she recovered, and the surgery cost $350.

Doctors and nurses thought she survived because of her wisdom, so they made her a nurse.

Mahabha is now saving the lives of hundreds of thousands of women.

She became the solution, not the problem.

She came out of a negative spiral into a positive spiral.

Now that we've talked about some of the problems, I'd like to talk about the solutions, there are predictable solutions.

There have been hints in the past: education and economic opportunity.

If you educate girls, they tend to marry later, have children later, have fewer children, and raise those children in a better environment.

Economic opportunities also bring change

Let's talk about Saima

She lives in a small village on the outskirts of Lahore, Pakistan.

At that time she was in a miserable state

She was beaten daily by her unemployed husband.

My husband loved to gamble, so he lost his job and took all his frustration out on her.

When she gave birth to her second daughter, I heard her mother-in-law tell her son, "You should get another wife."

"Saima can't give birth to boys," she said.

It was when my second daughter was born.

Just then, a village microcredit organization loaned her $65.

With that money, Saima started an embroidery business.

Her embroidery sold well and orders from vendors increased.

I couldn't keep up with the production on my own, so I decided to hire other women in the village.

In no time, 30 women in the village were working in her embroidery business.

And when she needed to hire a transporter to move the goods from the village to the market, she hired her husband.

So now we're together

Husband does transportation and sales, she does production and management.

A third girl was born. All three daughters are educated because Saima knows what matters most.

This is the final element: education.

Larry Summers, when he was the chief economist at the World Bank, said, "Probably the greatest return on investment in developing countries is girls' education."

Let's talk about Beatrice Vila

Beatriz lived in Uganda, near the border with Congo, and like Dai Manju, she didn't go to school.

In her case, she had never been there, not even a day.

Her parents, as they did with Dai Manju, said, "What's the point of spending money to educate this kid?"

"To this child who spends most of his life drawing water"

Right around that time, a group in Connecticut, the Niantic Community Church,

I made a donation to an organization called Heffer International, based in Arkansas.

Hefer sent two goats to Africa

One of them was sent to Beatrice's parents and the goat gave birth to twins.

twin goats began to milk

Parents sell the milk for money

That cash began to pile up, and soon my parents said, "Now that we have more money, let Beatrice go to school."

So, for the first time at nine years old, Beatrice was in a first grade class with six-year-olds, because she had never been to school.

anyway she was overjoyed

I quickly became number one in my class

She stayed at the top all the way through elementary school, middle school, and high school.

Two years ago she graduated from the University of Connecticut.

At my graduation ceremony, I said, "I am the luckiest girl in the world." "Thanks to the goats."

(Laughter) That goat was $120.

Can you see how a little help can make a difference?

But of course as a matter of fact

If you look at the example of American aid, it's not easy, and there are many books out there that criticize the way that aid works.

I have Bill Easterly's book

There is also a book called "Dead Aid"

Criticism is not wrong, because it's not easy.

Half of the well drilling projects fail after a year.

When I was in Zimbabwe, I went around the village with a village chief who wanted to raise money to build a secondary school.

he stuttered

it was a failed irrigation system

There was also a failed chicken coop a few meters away.

One year all the chickens died and no one is using the coop.

It's hard to help, but we're not throwing the baby out with the bath water, and it can be improved.

Learn from mistakes and keep improving

Through our individual efforts, we can and should create change, because together we can create an action.

Working together, men and women, is what we need to bring about change in society, the change we need to solve this big moral problem.

So let me ask you, what is the benefit for you?

You're probably thinking, why should I care?

I will tell you two things

The first is that research shows that when our needs in life are adequately met, many of us, and all of us here, at that level of living, there really isn't much we can do to increase our well-being in life.

One of them is to contribute to something more than yourself.

The second is a story that I would like to share with you.

It's the story of a person doing relief work in Darfur.

Working in Darfur, this woman has seen things no human should ever see.

During her stay in Darfur, she is strong and unwavering.

I didn't get depressed

And then I went back to America, it was Christmas break.

She saw a scene in her grandmother's backyard that brought her to tears.

it was a bird feeder

She realized how lucky she was to have been born in a country where safety was taken for granted, where food, clothing, and shelter were the norm, but where birds were fed in the winter to keep them from going hungry.

And with that great fortune comes great responsibility.

So like her, you and I, we all won the lottery of life.

And the question is: How should the lottery be held accountable?

know what is happening in the world

participate in exercise

Feel happy and help save the world

thank you

(applause)

Formerly known as Nataru - when I first saw the technology called Kinect, it put an end to the one-way drudgery of storytelling! I thought, I can recognize the player as if they were alive, and they stare back at me. I thought

A year ago, I showed a video demo of this technology at E3, the game show.

A woman named Claire used to talk to boys.

Then, the voices of "I can't do it!" flew around the Internet.

So today I'm going to show you a live demo of the game.

There are three big elements to this technology.

The first is the Kinect camera, which came out in November. The second is an AI that's brilliant, and it's been sitting in the dusty corner of Microsoft.

To put it bluntly, most of this technology is just tricks, but clever tricks.

Now let's move on to the demo.

this is dimitri

can you move your hand

he is sitting

No controller, no keyboard, no mouse, no joystick, no gamepad.

All he uses is his hands, his body and his voice, just like human communication.

let's continue to look

Introducing Milo

Between you and me... Milo was a little selfish when he was born.

To him who pretended to know and was also a fussy person

We moved him to give him a task.

He left London and came to New England, America.

My parents are too busy and uninteresting, so Milo creates you in his heart.

You're the other side of the world that Milo walks

can interact

Milo's mind is constantly affected through his interactions with you.

No two Milo are the same.

Each player develops a personality

looks like you found something

Shall I help you? Let's point to the snail

very simple at first

By the way, if it's a boy, it's a snail, and if it's a girl, it's a butterfly.

(Laughter) And that's where you meet Milo.

His facial expressions are completely made by AI.

For example, everything from the degree of blush to the diameter of the nostrils when angry is controlled.

We use body matching

When the player brings his face closer, Milo becomes tense and his facial expression changes, which is the result of a quest for authenticity.

then next hand

Let's move on to body manipulation

Instead of pushing your mouse or gamepad left and right, sit back and relax.

Even when sitting comfortably, the field of view changes according to the player's line of sight.

From now on, Dimitri will be next to hands and body

Shows you how to use your voice

Speaking of voice control, isn't there a lot of things that don't go well?

When you buy an airline ticket with voice control

I was sent to the wrong place...

we overcame it and made it happen

Milo: I think I'll stomp...

Peter: What about Dimitri?

Female: Even the small choices of crushing or not crushing affect Milo's character development.

Do you want me to trample you?

Say yes when the microphone appears (Peter: Squeeze)

Dimitri: Alright Destroy Milo!

Peter: Oh my god, you're a bad boy (laughs).

Did you see Milo in action?

You responded to "Okay, crush Milo"

The one used here was acquired by Microsoft.

It's a technology called Tellme

language database

player speaks

When you pick up a word, a tonal database identifies the tone and interprets its meaning.

Let's play a little more Let's see the operation using the body

It's like this

Milo: Is it deep?

It's deep...

Peter: Well, I'm going to drain Milo now.

let me tell you

The interesting thing is that men are going to try to compete right here.

When you teach them the first few times, they quickly start to beat you.

let's drain the water

it's easy to do

First, stand up and cut the water with a stone

It's easy

This technology knows from your position and movement that you were sitting and now you're standing.

Just like humans do, this technology makes Milo more human.

Woman: Let's improve

aim for the boat

Milo: Oh... sorry

Peter: To Dimitri in full-on battle mode

An 11-year-old who was beaten...that's amazing (lol)

Milo: yes

Peter: Milo was called by his parents.

Actually, Milo was told by his parents to clean up his room.

this is our turn

Let's clean up his room and work on his deep psyche.

Now it's finally time to speak with Milo, and I think that's the beauty of this technology.

This required a scene setting, so

We caused Milo trouble.

When Dimitri starts cleaning up, you can hear the arguments between his parents and Milo.

Mother: What is this stain! (Milo: It's not on purpose) Mom: It's brand new!

PETER: Apparently you got scolded for dropping sausages on a brand new rug.

It's a story that everyone has experienced

This is where Dimitri comes in. Cheer up.

Milo is having a hard time right now.

i have no friends yet

So now is the time to open the door that connects this and that.

Woman: Please encourage Milo.

hey milo cheer up

All parents are like that

Why are you here?

I don't know anyone...

you're going to a new school

you can make a lot of good friends

I miss my old house, that's all...

This house isn't too bad, Milo.

I have a garden and a pond

Draining was fun

That room...

did you clean it?

thank you

Peter: In about 45 minutes, Milo will notice you for the first time.

It's really inspiring to experience this in person.

Now, by all means, please spin the story of Milo's life. Milo has many adventures.

Some of them are dangerous

There are plenty of adventures that inspire me.I also go to school.

And above all, this is your story, so you can make Milo understand what's here.

His "heart" is in the cloud

It exists, which means it's getting smarter and smarter with every million people using it.

Your ability to recognize objects increases, your language skills increase.

It's been a huge thrill for me, because I can finally connect with technology without any distractions.

I love big changes like this, and I love the future that Milo brings.

Thank you for your attention

(applause)

Today I will talk about writing writing long

It's not mispronounced.

The Middle East is huge.Among all the problems, one thing is certain: we love to laugh.

Humor is a lovely way to celebrate differences

We need to take responsibility seriously, but we're not the ones to blame.

Don't get me wrong, there's no comedy in the Middle East

I grew up in a time when idols from Kuwait, Syria, and Egypt were laughed at to unite communities, like football.

(Laughter) Now is the time to laugh at ourselves, before others laugh with us.

This is the story of the beginning of stand-up comedy in the Middle East.

Working as a writer and author in London, I quickly realized that comedy connects people.

The best place to write a good comedy is stand-up comedy, which is a hit when it's good and a hit when it's bad.

In our ill-fated union, we are reminded of a man who has tirelessly supported comedians around the world over the last decade, especially those in the Middle East.

(Applause) Dean and Maysoon, best friends at the bottom of the screen, started a festival two years after 9/11 to change the way the world views the Middle East.

still going strong

An Iranian-Palestinian-Egyptian trio working in Los Angeles started an Axis of Evil comedy.

Wherever they go they are a big success

I didn't start the fire, but I'm pouring oil on it.

I moved to Dubai as the original leader.

My job was to connect the brand with audiences in the Middle East

An American director wanted a new local Arabic comedy.

If you have a strong Arabic accent, it's like, "I should be able to do it."

(Laughter) I have a friend in America.

Successfully created a new tribe

I want to take them out of hiding in the Middle East and push them to the pinnacle of success.

it wasn't easy

The plan had four stages.

We buy content from the West first and broadcast it.

Then I call my friends over and teach local amateurs how to do it.

And then we record it and broadcast it, and thus we have a new comedy with amateurs.

I was so excited that I gave a presentation to my boss, and his reaction was, "Well, I don't really understand."

So I went back to my studio and continued to support and produce comedy, and my couch was half my friend's home base.

Let's skip two years to the beginning of 2007

And with the Earth, we've moved on (Laughter), and as if by God's intervention, things came together and this revolution took shape.

Dots became lines First

The members recorded a Comedy Central special that aired in the United States, and it first became a big hit on YouTube.

The new French CEO is a positive PR and...

(laughs) He thought it was because of "Bon marche"

Let's say "value for money"

We created a show for Ahmed to showcase the new Axis in a packed venue in Dubai

As soon as the new CEO I invited saw a room full of laughing mavericks, his understandable reaction was, "Let's do it, then.

Please don't spoil another one."

So I headed off to work with an amazing team.

By chance, I found a funny guy from South Korea who speaks Arabic and is the perfect man for the Axis of Evil.

this is all true

Now, in preparing the tour, I reminded them to be culturally sensitive.

I taught the 3 B's, which are taboo, as they are called in the Middle East: Bleu content, Beliefs, and Bolitics.

Political criticism is no good in the Middle East

Without political critique, without sex, without religion, you're probably wondering how I'm going to make you laugh.

To answer that, I'll give you the example of a high-quality Western sitcom.

Has the Axis of Evil succeeded?

Within a month, we had thousands of adoring fans show up in five countries.

Reached millions of viewers on TV

In Jordan, even the king came to see us

It was so successful, in fact, that pirated copies were available in the Middle East before the DVD was released.

wherever you go

Everywhere I went, I auditioned for amateurs

The scene was broadcast as a documentary

Named "The Evil Trinity and Wang Ho"

Wang Ho is his real name

Thanks to our exposure on TV and the Internet, we've been able to get some great recruits to help our cause.

We just did a women's only live show in Dubai this year.

Look, the two women in the headscarves are laughing, too.

For me, Dubai is like a hand outstretched to someone who wants to make their dreams come true.

20 years ago it was an unknown place

but now

The world's tallest building stands with an innovative leader, and I believe this tower is a finger pointing to those who spread false narratives.

(Laughter) (Applause) We've come a long way in three short years, and we've come to speak in Saudi Arabia.

A lecture at the New York Festival is also decided

In the first lecture, we featured a Lebanese genius, Nemr Abu Naatha, who just gave a talk at the sacred grounds of a comedy club in Los Angeles.

It's just an explosion of images that we do our best to dispel.

(Laughter) I mean, for an outsider's view, see CNN's report on the second Amman Comedy Festival.

The reporter did a great job, and I'd like to thank him, but I seem to have forgotten about the automated news ticker at the bottom of the screen advertising emails to the person in charge.

For example, when Dean speaks, the ticker comes out, "United States: Crucial Confession."

If you're used to comedy, I wouldn't be surprised

Sadly, this reminds me of another B: the Middle East, as portrayed in the Western media: Bombers, Billionaires, Belly dancers.

Enough

We're not all fanatics who kill offenders.

We have positive stories and images.

In fact, experience tells us that we love to laugh out loud.

(Laughter) I've prepared three questions to test the veracity of the portrayal of the Middle East in the media.

1. Is the present correct Middle East being conveyed in the correct context?

(Laughter) 2. Do Middle Eastern characters ever smile without looking the whites of their eyes?

(Laughter) 3. Are Middle Eastern characters played alone?

There is an obvious misunderstanding that needs to be cleared

We started our activities locally

My challenge to the world is to use positive images of the Middle East in my stories.

Go to festivals, go online, get in touch and feel inspired.

Let's change the narrator together Let's correct the wrongs

Before I return to the Middle East, I would like to end with the words of one of the great sheikhs.

My father calls him "Arche Asbel," but my mother would call him "Shakespeare."

(Laughter) "I'm happy to go, not for exile, but for freedom."

thank you

(applause)

I was one of the starting members of the Axis of Evil Comedy Tour.

Among the other members was Ahmed Ahmed, an Egyptian-American who wanted to try performing in the Middle East before we left on tour.

He first gave a solo lecture

Next is the Palestinian Aron Qeda.

Then followed by me, who is of Iranian descent.

Being an Iranian American, as you know, is a problem in itself.

Relations between the two countries are not good these days.

It creates an internal conflict that I love myself and hate myself.

There's a part of me who feels we need a nuclear program, but I can't trust it.

It's a dilemma that I feel every day

I was born in Iran, now I'm American, so I can travel with an American passport.

The countries that you can go to with just an Iranian passport are limited, and the countries that will welcome you are Syria, Venezuela, and North Korea.

(Laughter) People who get passports in the United States will still say that they have a country of birth on them.

I remember when I also got

"Okay! Let's go on a trip!"

"Birthplace Iran" I felt like "Seriously?"

(laughs) "I want to go to various places."

Interestingly enough, I had no problems traveling with this passport in Western countries, despite the mention of my place of birth.

But within Arab countries there is a problem

Due to conflict with Iran

I recently went to Kuwait for a show with another American comedian, and when I showed my American passport at immigration,

"Oh! You're American, that's great."

Look inside and say "Birthplace Iran? Wait"

(Laughter) He started asking me questions.

Ask, "What is your father's name?"

I replied, "He's already passed away, but I'm Hosro."

He continued, "What is your grandfather's name?"

"He passed away a long time ago." "His name is Jabber," I replied.

He said "I'll be right back" and left What did my grandfather do

Without knowing why, I became scared (laughs).

The man comes back and says, "I've been waiting for you for 200 years."

"Two billion dollars owed."

I thought you would say

As you can tell from what I'm saying, I have an American accent, so as an Iranian-American, I think you'd think that I could take on any role.

So often in Hollywood, when a director sees a cast from the Middle East, he says, "Iranian, that's great."

Can you say ``I will kill you in the name of Allah''?

The director continues, 'I like it and hijack the hospital.'

(Laughter) You seem to be missing the point.

Don't get me wrong, it's okay to play the bad guy.

I want to play a villain I want to play a bank robber

I want to rob a bank in a movie, but let me do it with a gun.I don't want a bomb wrapped around my body.

(Laughter) Because I can imagine the director saying, "Maz, I put a bomb on your body."

why are you doing that?

Why would you blow yourself up if you're looking for money?

(laughs) Right

(Applause) "Give me the money or I'll blow myself up."

(Laughs) "Then let me blow myself up."

"Please do it outside."

(Laughter) But the truth is, good people are everywhere.

It's everywhere That's what I'm saying One person can ruin it

A few months ago in Times Square, New York

Pakistani Muslim man plots to blow up car

That night, by chance, I was in Times Square for a performance.

A few months before that, in Austin, Texas, there was a white American man who tried to crash a plane into the IRS, and I happened to be in Austin that day, doing a live show.

As a man from the Middle East, I can tell you that when all these things happen together, I feel a sense of guilt, watching the news,

It makes me feel like, "Am I involved?"

(laughs) "I didn't get the script. What's going on?"

(Laughter) The interesting thing is that the Pakistani Muslim man has made Muslims, Middle Easterners and Pakistanis around the world a bad name.

The second is that the Pakistani Taliban admitted their involvement in the attempted bombing.

Why did they take credit for the attempted bombing?

"What we meant was," "We tried."

(Laughter) "Furthermore."

"It makes sense to think"

(Laughter) (Applause) "I mean, it doesn't always work."

(Laughter) When the white people flew the plane, all my Middle Eastern friends in the country were watching TV and saying, 'No Middle Easterners, sorry, not Hasan, not Hussein.'

And when the name Jack came out, people were like, 'OK!' 'It's not Middle Eastern.'

But I was watching the news after that, and he said, "Just before the incident, he seems to have converted to Islam." "Damn!

Why what Jack?"

But the truth is, I'm lucky enough to do a lot of shows all over the world, even in the Middle East, in exactly seven countries.

I just finished my solo performance.

go to oman then saudi arabia

i went to dubai

Amazingly good people are everywhere

And you can learn great things about each place

I always recommend going to places like this.

For example, Dubai is a great place.

As you know they love the world

There's a shopping center called Dubai Mall, and it's very big, and we use taxis to get around.

When you're walking and you hear horns and you're thinking, "Why are you here?"

"I'm on my way to Zara's three miles away."

The odd thing is that Dubai's recession isn't reflected in the prices of frozen yogurt at the Dubai Mall.

Sold by the gram

it's like a drug deal

When you pass by the side, a man appears saying "This is your brother"

(Laughs) "Would you like some frozen yogurt?"

"Here, here, here."

"1g, 5g, 10g. How much do you want to eat?"

(Laughter) I bought five grams, and I said, "Ten dollars? What's in it?"

He replied, "It's the best one from Colombia."

Another thing you learn when you travel around the Middle East and Latin America is that there are no rules or regulations when it comes to building anything.

For example, I took my 2-year-old son to the Dubai Mall playground.

I took my son all over America

I took him to a playground.

it's different in the middle east

(Laughter) When I put my son on the slide, he started sliding with a whoosh.

I went downstairs and said, "Where is my son?"

(Laughter) "Take a taxi, go to Zara, turn left."

(laughs) “How about yogurt?

It's delicious, but it's a little expensive." The goal of my performances is to break stereotypes.

I also feel guilty about stereotypes, there are a lot of Indians in Dubai.

income is not so good

Forgetting that there are successful Indians, I assumed that all Indians in Dubai were workers.

during my performance

I was told, "I'll send a driver to pick you up."

I went down to the lobby and there was this Indian guy, and I thought, "It must be him."

Because he was looking at me with a beard and a cheap suit.

I approached and asked, "Are you picking me up?"

(Laughter) And I said, "Excuse me, why were you looking at me?"

"I thought you were picking me up," I replied.

(Applause) (Laughter) The goal of my performances is to break down stereotypes about us from the Middle East, about Muslims, and then, in a few years time, to make us positive.

I hope there will be more Hollywood movies to show

In the future, even the Middle East version of 007 may be aired

"My name is Bond, Jamal Bond."

(smile)

Until then, I will continue the performance to make everyone laugh.

thank you again

(applause)

I am Seth Pribach SCVNGR's "Chief Ninja"

drop out of princeton

I'm proud to be back in my hometown of Boston.

Yay Boston!

Good. Shall I name all the places I've been to?

I'm betting on building layers of games that cover the world.

It's a new concept, and it's very important. The last decade was the social decade, which built the framework for connecting with other people. The next decade is the decade that builds the framework of the game, the power of which influences the behavior of everyone, and determines which framework wins.

You said you wanted to build a game layer that covers the world, but that's not quite right, because we're already building it.

this is how i feel now

It's like the web around 1997

It's not good to mess around

It's not fun just because there are a lot of disparate things

Credit card schemes, airline frequent flyer programs, coupon cards, these loyalty schemes use the dynamics of the game to shape the layers of the game, but they're the bare minimum.

not a good design

It is unfortunate

But fortunately, as my favorite hero, Boo Boos at Work, says, "We can make it better."

The tool with which we build the layers of the game is the game dynamics itself.

So the gist of this talk is an introduction to four key game dynamics that, when used well, can influence behavior -- positively, negatively, and in-between.

I want a positive impact

I want you to think consciously, because this is an important stage in building a framework.

Before we get into that, let me explain why it's important.

My argument is that there are game layers that cover the world, and it's important to build them properly.

And the reason why it's important is that in the last decade, as we've seen, the social layer, the framework of connectivity, has been created, and the layers have been built.

There's a lot more to explore, and a lot of people are trying to figure out how to use sociality, but the framework itself is already there, and it's called Facebook.

No problem, right? Many people are happy with Facebook

i really like it too

Facebook created the Open Graph, which controls all of our networks.

Embracing 500 million people

So if you want to do something with the social layer, you already have a framework, the Open Graph API.

great if you like it

Sorry if you don't like it, there's nothing you can do about it

But the next 10 years will be different. It will be real.

We want to create a framework of productivity that everyone can embrace.

The social layer is all about connections

Game layers are about influence

It's not about putting a social mesh over the web so that you can connect with other people wherever you are, it's about using dynamics to influence the behavior of what you do and where you do it.

This is very powerful and will become more important than the social layer.

Invisibly, it will affect our lives more deeply.

So right now, it's really, really important. There's a game-layer framework that's kind of like Facebook or Open Graph, and we're consciously thinking about it, and we want to make sure it's open, that everyone can use it, and that it can be used for good.

That's why I want to talk to you about game dynamics, because the building is just beginning, and the more consciously you can think about it, the more you'll be able to use it the way you want it to.

We don't use glass or steel or cement to build our game layers.

The resources we use are not two-dimensional vacant lots.

Resources are mindshare, tools are game dynamics, and here are some game dynamics.

There are four, and SCVNGR says that with seven, you can make anyone do anything.

I'm going to give you just four things today, because I want to stay competitive after this is over.

(Laughter) The first one is very simple.

"Appointment Dynamics"

For this to succeed, the player needs to do something at a specific time and in a specific place.

This can be a little scary, because other people will be using power to manipulate what you do, where you do it, and when you do it.

Losing free will in a game can be scary.

I'll give you three examples of each of these dynamics. One is an example of how it's already being used in the real world, which I think makes a lot of sense. One is an example of what you'd find in traditional games.

The first example is one of Appointment Dynamics' most famous "service times."

I recently dropped out of Princeton and went to a place called a bar for the first time, and I saw this service hour everywhere.

It's just the appointment dynamics. Drinks are half price, but you have to go to the right place at the right time.

This game dynamic is so powerful that it affects not only our behavior, but our culture as a whole.

It's kind of scary how one game dynamic can change things so much.

This is also seen in normal games

You've heard of FarmVille

If not, you should try

nothing else can be done that day

FarmVille has more active users than Twitter

It has very strong dynamics, it's a virtual crop, but if you don't come back to water it at a certain time, it will die.

It's so powerful that they can just mess with the data and say, 8 hours, 6 hours, 24 hours, until your crops die, and you're going to change the life cycle of 70 million people that day.

The user goes back to that time like a machine

If FarmVille wanted to shut down the world's production activities, it would just cut the cycle to 30 minutes, and nobody would be able to do anything.

(Laughter) It's a little scary, isn't it?

But it can also be used for good

A company in Boston called Vitality makes products that help people remember to take their medications.

This is also a kind of appointment

It's something people can't do very well.

This product, called GlowCaps, lights up and emails you and does all sorts of things to encourage you to take your medicine.

This should go one step further and turn it into a game

If you drink on time, you get points, and if you forget to do something, you lose points.

We should be aware of the appointment dynamics and make more of the gameplay.

That way you can do good things in interesting ways.

Let's move on to the next dynamic

"Influence and Status"

This is probably the best known game dynamic, it's used everywhere.

it's in your wallet

You want the black credit card on the far right, right?

Somebody at CVS... no CD (Christian Dior)... I don't know... mine is a non-black debit card.

(Laughter) So I take out that black card.

This is also used in games

'Modern Warfare' is one of the best-selling games of all time

I'm level 4 but I really want to be level 10 I want to wear that cool red badge and show that I'm better than everyone else

It's very attractive. Status is a strong motivator.

It's used in more conventional situations, but I think it's actually more conscious to use it.

College, I was there for a year, so I think I have a right to talk about college, but college is a game, and it's not very well designed.

There are levels like C, B, A, etc.

And your status is like that "valedictorian of the graduates", isn't it?

I think everyone will work very hard if they become "White Knight Paladin Level 20" instead of being a valedictorian.

(Laughter) So college is also a game, and they're experimenting with various things.

We should do it more consciously Why are there games we lose?

Why does A go to F, B, and C?

It's the worst, why not level up?

We're actually experimenting here at Princeton, where you can take a test and you'll get experience points to level up from a B to an A.

this is so powerful

you can use it in interesting ways

The third is progress dynamics, which is about moving forward.

It's used everywhere, including LinkedIn.

I'm worried that my profile is only 85% complete

It's so ingrained in our psychology that progress bars and getting it to 100 percent make us feel compelled to follow simple, clear instructions.

Find a way to bring that blue bar to the right edge of the screen.

This is also used in traditional games

Pictured is a level 10 paladin and a level 20 paladin.

If you were to fight the Orcs of Mordor or Ra's al Ghul, you'd want to be the stronger one, right?

so everyone

I will work hard to level up

World of Warcraft (WoW) is one of the most successful games of all time

The average player plays six-and-a-half hours a day, and for the most dedicated players, it's like their job.

You're insane, and WoW has a leveling system.

Progress dynamics are very powerful

This can also be used as a way to urge good things

At SCVNGR, we're working on how games can be used to drive traffic and business locally, which is key to the local economy.

this is the game go to a place

Earn points for completing challenges

We've introduced progress dynamics into it, where if you go to the same place repeatedly, and if you do the challenges over and over again, you deepen your participation, and you get a green bar that stretches from the left edge of the screen to the right edge, and you get a reward at the end.

It's powerful, and I can see people falling in love with this dynamic. It can draw people to local businesses, create great loyalty, encourage participation, and bring great income and enjoyment and participation to the business.

This progress dynamic is powerful and can be used in the real world.

And the last thing I'd like to bring to your attention, and it's a fittingly awesome one, is the concept of collective discovery, where we all work together to achieve something.

This dynamic is that collaborative discovery is powerful in harnessing social networks to solve problems.

It's used by some popular consumer websites like Digg.

Digg is trying to find the most interesting news through collaborative dynamics.

Digg originally made this a game

Create a scoreboard and whoever finds the best news gets points.

This motivates me to find good news

But it was so powerful that a clique formed, and the top seven people on the scoreboard worked together to keep their ranks up, and they recommended each other's news.

The game becomes more powerful than it was intended to be

Digg got rid of leaderboards because they were too powerful and made you try to maintain your rank rather than show the best news.

So this dynamic should be used with caution

It's also used in McDonald's "Monopoly" campaign, where people who form small organizations win big prizes.

I've been searching all over for the "Boardwalk" sticker, but it works for real life too.

This is the DARPA Balloon Challenge, where they hid 10 balloons across the United States and said, "We're going to use our network to give the first person who finds a balloon a prize of $40,000."

The winner was a team from MIT, who used a kind of pyramid scheme, and they're giving away $2,000 to anyone who tells them where to find the balloon, but those who pass the information on to that person also get a piece of the money.

In 12 hours they were able to find all the balloons scattered across America.

really strong dynamics

Now, with 20 seconds left, let's wrap up. This decade has been the decade of social.

The next decade is the decade of gaming

Use Game Dynamics Build with Mindshare

can influence behavior

very powerful and exciting

Let's make it together Let's do well Let's have fun

We feel overwhelmed by information overload.

But maybe there's an easy solution, and that's to use your eyes more.

Information visualization helps you see the patterns and relationships that matter, and gives your information a design that makes sense, tells a story, and helps you focus on what's important.

If you can't do that, it's just a neat little appearance.

Let's see an example

This is the "billion dollar gram." This image was born out of frustration with the media reports about billions of dollars.

Those numbers don't make sense without context: $500 billion in pipelines, $20 billion in wars.

It doesn't make sense. The only way to find out is through visualization and relativization.

So I gathered a lot of data from different sources and drew different sizes of squares depending on the forehead.

Colors represent the use of money

Purple is military, red is donations, green is income, and so on.

What you quickly realize is that you can have different relationships with numbers.

literally become visible

And more importantly, we're starting to see patterns and connections between numbers that were scattered across multiple news stories.

Let's pick up some interesting parts

This green box is OPEC's revenue of $780 billion a year.

The little thing in the corner is the $3 billion fund for climate change.

Americans are incredibly generous, donating more than $300 billion a year to charity, while the total foreign aid of 17 major industrial nations is only $120 billion.

And then the Iraq war was predicted to cost $60 billion in 2003.

It seems a little bit inflated, the war in Iraq and Afghanistan has cost a total of $3 trillion.

I have this nice picture, so I can add another number.

When some new numbers come out, for example

What is Africa's debt to the West in this picture?

let's see

This is $227 billion of African debt.

So what does the recent financial crisis look like in this picture?

How much did it cost the world?

Doosh! I think it's the perfect sound effect for that amount of money. $11.9 trillion.

By visualizing information, we can transform it into a landscape that can be explored by the eye, a map of information.

And if you get lost in the information, a map of the information will help.

let me show you a different view

Imagine what the horror landscape of the world would look like

let's see

This molehill-like world's media in chronological order-

(Laughter) I'll get to that in a moment.

The high mountains represent a particular rise in fear that has captured the media attention.

let's look at some

This pink is swine flu

this is bird flu

The brown one is SARS Do you remember?

And the year 2000 problem was a terrible disaster.

This little green mountain is an asteroid impact.

(Laughter) Every summer, we talk about killer bees.

(Laughter) This is the fear that the media has been presenting from time to time.

As a journalist, I'm fascinated by finding hidden patterns.

This data hides some interesting, bizarre patterns that can be revealed through visualization.

let's highlight it

This line represents the fear of violent video games.

As you can see, there's a strange regular pattern, two peaks each year.

If you look closely, you can see that they appear in the same month each year.

Why?

November is the time of year when new releases for Christmas come out, and concerns emerge about their content.

But April isn't a particularly meaningful month for video games.

Why April?

In fact, since the Columbine High School shooting in April 1999, the media has quietly permeated the public psyche at this time every year to evoke fear.

There's retrospectives, there's anniversaries, there's trials, there's even copycat mass shootings, and that's what causes the terror.

Some patterns are different

There's a gap here that affects all the other news.

Why is there a gap here?

It started in September of 2001, and there's a very big object of terror here.

In the past year or so I've been working as a data journalist, I've heard the phrase constantly: "Data is the new oil."

Data is a ubiquitous resource that can be shaped to unlock new innovations and insights, and it's all around us and easy to mine.

Oil isn't a very nice metaphor these days, especially if you live near the Gulf of Mexico.

Because I think it's a rich and creative medium.

Over the years, we've sown a vast amount of information and data online, fed it with networks and connectivity, and nurtured it with the power of unpaid people and governments.

I may have stretched the metaphor a little too much.

But this is a really rich medium, and infographics and data visualization feel like flowers in this medium of information.

But when you look at it directly, it's just a lot of numbers and disparate facts.

Playing with it in a certain way, working with it, interesting things emerge and different patterns emerge.

Look at this

Can you guess what the data is?

Twice a year there's a big mountain, at Easter and two weeks before Christmas, and a small mountain every Monday that's flat during the summer.

let's hear the answer

(Audience: Chocolate) Is it chocolate?

You may want to eat chocolate

Do you have any others?

(Audience: Shopping) Shopping

shopping therapy may work

(Audience: Sick) Sick

let's see

(Peak of breakups based on Facebook status updates -- Laughter) (Applause) This is the information that Lee Byron and I collected from 10,000 "breakup" Facebook status updates, and we found patterns like this, where people are working out their relationships over spring break.

who would do that?

So we now have an unprecedented amount of data.

If you ask the right questions, treat it in the right way, and you get something interesting out of it.

That's why information is beautiful

I wondered if I could be beautiful too.

This is my visual resume

I can't say if it worked

Angular and dull in color

But I had something to tell you

I started out as a programmer, then a writer, for about 20 years in print, online, and advertising, and only recently started designing.

never went to design school

I never studied any kind of art

I just remembered it while doing it.

And when I started designing, I noticed something strange.

I knew design. It wasn't that I was very talented. I was just sensitive to grids and spaces and alignment and typography.

Through my long exposure to the media, I had inadvertently picked up the basics of design.

i don't think i'm special

We are all exposed to information design every day.

It flows through the web into our eyes. We are all visual humans. We all want information visually.

There's something magical about visual information

Effortlessly, it literally flows in.

And when you're deep in the information jungle, it's a relief to see beautiful graphics and lovely visualizations, like stepping out into the open in the jungle.

This curiosity led me to the work of the Danish physicist Norletlanders, sensory bandwidth in computer units.

This is the amount of information flowing through our senses every second.

vision is the fastest

As fast as a computer network

Then there's haptics, and then there's USB speed.

And hearing and smell are as fast as a hard disk.

And my poor taste buds are only as fast as a pocket calculator.

The red square in the corner is 0.7% of total sensation.

So most of the information flows through vision.

without realizing it

And the eye is extremely sensitive to changes in color, shape, and pattern.

The eyes like it and say it's beautiful

it's the language of the eyes

When you combine the language of your eyes with the language of your mind, words, numbers and concepts, you speak two languages ​​simultaneously, each reinforcing the other.

The eye catches and falls into the concept

That's how the two languages ​​work together.

We can use this new kind of language to change the way we see things.

Let me ask you a simple question. The answer is very simple. Which country has the largest military budget?

would be America

A whopping $607 billion in 2008.

It's so big that it fits the entire military budget of other countries.

gab gab gab

For reference, let's put Africa's debt side by side with the UK's budget deficit.

America seems to fit the notion that America is a provocative military machine that wants to take over the world with a huge military-industrial complex.

But is the US really the country with the largest military budget?

Because America is a very wealthy country.

It's so rich, in fact, that it's rich enough to hold the economies of the other industrialized nations, the top four economies.

So the military budget will inevitably grow.

In all fairness, let's shift perspective and introduce another data set: GDP, or country income.

Where is the largest share of GDP?

let's see

The situation has changed quite a bit

An unexpected country is coming up, isn't it?

The same can be done with the number of troops

Which country has the most soldiers?

Of course there are 2.1 million people in China.

You might think that China is a militaristic state, ready to mobilize a large force.

But of course China has a huge population

So if you do the same thing as before, things will change a lot.

China falls to 124th place.

Considering other data, it's a rather small army.

So in the context of the world, absolute values ​​like military budgets don't give us the whole picture.

doesn't tell the truth as it should

To see a more complete picture, we need relative numbers in relation to other data, and that's going to change how we see things.

As my mentor, Hans Rosling, said, "Datasets change mindsets."

If you can do that, you might be able to change your behavior too.

look at this diagram

I'm a bit of a health geek

I take supplements and take care of my health, but I don't know if it really works.

there is always conflicting evidence

Should I take vitamin C or wheatgrass?

This is a visualization of data on dietary supplements.

Such a diagram is called a balloon race.

The higher up you go, the more evidence there is that the supplement works.

The size of the circle is the popularity based on the number of Google hits

So, at a glance, we can see the relationship between efficacy and popularity, and by grading the evidence, we can also draw the line of "worth it."

Supplements above this line are probably worth looking into, but they're only effective for the symptoms listed below, and supplements below the line probably aren't worth looking into.

A lot of work went into this image

We took 1,000 studies from the biomedical database PubMed, summarized them, and graded them.

It was very frustrating, because I had 250 visualizations for the book, and it took me a month, but it was only two pages.

But it turns out that this kind of information visualization is a kind of knowledge compression.

It's about being able to squeeze a huge amount of knowledge and understanding into a small space.

Once you've collected the data and organized it, you can do some really cool things with it.

So I turned this into an interactive app that allows you to dynamically visualize data over the internet, and finally I was like, "Oh, that's cool."

automatically generated

It is also possible to display "only those that are effective for heart disease"

filtered

you only see what you're interested in

"No, I don't want synthetics. Just show me herbs and plants."

This app is generated from data

The data is stored in Google Doc and generated from that data.

It's a living picture of living data, and you can update it on the fly.

If new evidence comes out, just change one line of data

Doosh! image is automatically generated

you will be attentive

I'm alive

Visualization can go beyond data and numbers

I like applying information visualization to ideas and concepts.

It's a visualization of politics, my attempt to understand how the world works. How do ideas flow from government to society, to culture, to families, to individuals, to their beliefs, and how do they feed back and form cycles?

I like this painting because it's conceptual, it explores our worldview and gives us clues as to where other people's ideas are coming from.

i think it's really cool

What was most exciting about designing this for me was that as a journalist, as a left-leaning person, I wanted to make the left side look better than the right side, and I couldn't do that because it would have skewed and biased the picture.

To create a true big picture, I had to respect the right side of the eye as well, and at the same time, reluctantly, I felt confused and uncomfortable with how many of those qualities I had within me.

(Laughter) But it's not that bad. Looking at the political landscape doesn't feel as overwhelming as being told or forced to listen.

In fact, watching this makes me feel good about having conflicting perspectives.

Because it's visual, it's even fun.

What excites me is seeing how data can change the way we see ourselves, how beautiful and lovely data can change the course of our minds.

So let me sum it up: I think design is about solving problems and providing elegant solutions, and information design is about solving information problems.

There are many information problems in our society today: information overload and saturation, trust and crumbling trust, unruly skepticism, lack of transparency and even apathy.

I found the information too interesting

There's something like a magnet that draws me

Visualization of information can provide an improvised solution to such problems.

Even bad information can be visually beautiful.

And often we have a clear understanding, a quick answer to a simple question, like this recent volcanic eruption data in Iceland.

Which one emits more CO2?

A canceled flight or a volcano?

let's see

The data shows that the volcano produced 150,000 tons of emissions, whereas the canceled plane would have produced 345,000 tons of emissions if it had flown.

So this is the world's first carbon neutral-

(Laughter) (Applause) And this is a beautiful thing. Thank you very much.

(applause)

Let's go to Antarctica, the lowest point on Earth, to the apex of latitude, to the dry, windy land, and to the coldest land on Earth, where it's drier than the Sahara Desert and, in some places, colder than Mars.

Antarctic ice reflects the sun's rays so brightly that it blinds eyes without safety glasses.

Early explorers rubbed cocaine in their eyes to relieve pain.

The weight of the ice is so great that it sinks entire continents below sea level.

The ice is like a climate change map.

It records year-to-year variations in greenhouse gases and temperatures from before the last Ice Age.

No other part of the world has such a perfect record.

And it's here that scientists drill into the Earth's past and get clues about the future of climate change.

In January of this year, I visited the "Weath Divide," about 1,000 kilometers from the South Pole.

They say it's the best place to learn about the history of climate change.

Forty-five scientists from the University of Wisconsin, the Desert Research Institute in Nevada, and elsewhere are working to answer the most important questions about global warming.

What is the exact relationship between greenhouse gases and global temperature?

This is an urgent issue. Air temperatures are rising.

The temperature in May this year was the highest ever recorded.

Greenhouse gas levels are also rising

But what we don't know is the precise, precise, and direct impact of changes in greenhouse gases on climate patterns -- on monsoons, ocean currents, precipitation, cloud formation, and other things that affect the health and well-being of billions of people.

The expedition and all equipment were airlifted 1,400 kilometers from McMurdo Station, America's largest supply depot on the Antarctic coast.

The Weight Divide itself is a campsite in the snowfield.

During a storm, the tents would be tied together with ropes, and the crew would follow the ropes to their living tents and toilets.

The snow is so heavy that buildings are buried in snow in no time.

We actually chose this place because the snow and ice accumulate ten times faster than anywhere else in Antarctica.

Members dig and crawl out of the snow every day

It's a strange, freezing commute

(Laughter) But under the snow is a factory-like base of operations centered around an eight-million-dollar drill machine.

The drill is repeatedly inserted several kilometers deep into the ice layer, and like a biopsy needle, it removes ice cores containing gases and isotopes for analysis.

Ten times a day, it extracts compressed, cylindrical ice crystals three meters long that contain the pristine atmosphere and trace chemicals that snow has trapped year after year for thousands of years.

this is just a time machine

At the peak of activity earlier this year, the researchers were drilling 30 meters into the ice each day, or 365 years into the past.

They repeatedly remove the icicles, much like a hunter removes a spent shotgun shell from the barrel.

The icicles are then inspected for cracks, drill damage, cracks and chips.

More importantly, it prepares to send the icicles to 27 independent laboratories in the United States and Europe for testing and analysis, where they analyze 40 trace chemicals associated with global warming, some at concentrations as low as 1 in 10 to the 15th power.

Yes, it's a quadrillion with a Q.

The cylinder is cut to a length of 1 meter so that it can be easily handled and transported when it is delivered to a research institute located approximately 130,000 km away.

You could say that the cylinder is a parfait of time.

This ice was formed from snow that fell about 15,000 years ago, when our ancestors were coloring their bodies and creating an alphabet, a revolutionary technology at the time.

When you look at a cross-section of this ancient ice with polarized light, you see a mosaic of colors, each reflecting the state of the ice at that spot, with a pressure of one tonne per square inch at that depth.

The ice started out as fresh snow every year, and if you dig through the fresh snow, you'll see the ongoing process of ice formation.

A wall of still-fallen snow is lit from behind by the sun, and each layer represents the transition of winter and summer.

Storms churn the atmosphere, whipping up dust and soot, whipping up trace chemicals, trapping them in snowfall year after year for millions of years, creating something like the periodic table of the elements, currently over 3,300 meters thick.

Many different things are detected

Calcium from the world's deserts, soot from wildfires far away, methane from the Pacific monsoons, these substances drifted from the warmer regions to the colder lands.

The most important thing about this column of snow is that it traps air.

10% of this cylinder is ancient air, and this pristine time capsule captures greenhouse gases -- carbon dioxide, methane, nitrogen oxides -- that snowflakes were formed and preserved exactly as they were the day they fell.

Scientists are studying this

But don't we already know all there is to know about greenhouse gases?

Why do we need more research?

Don't we already know the effect of greenhouse gases on temperature?

You already know the impact of climate change on civilization, don't you?

In fact, we only know it roughly, and our understanding is incomplete, so we can't be sure about the impact.

we may be making things worse

Remember the most successful global environmental effort of the 20th century, the Montreal Protocol, when the nations of the world banded together to save the planet from the depletion of the ozone layer by the materials used in air conditioners, refrigerators and refrigerators at the time.

We banned these chemicals, but without knowing their impact, we started using alternatives, greenhouse gases whose individual molecules store more than 100 times more heat than carbon dioxide.

The process of cutting out the icicles requires extreme caution.

Scientists must ensure that no impurities are mixed.

And we have to guarantee that the ice won't melt for 10,000 kilometers of transportation.

It's like exchanging snowballs across the equator.

In fact, scientists have to make sure the ice doesn't get above minus 30 degrees Celsius, to keep important gases from escaping.

That's why they work in freezers in the coldest places on earth.

While working with the ice, the scientists warm another pair of gloves in the oven, and when the work gloves freeze to the point where they can't move their fingers, they put on new gloves.

Work is a battle against time and temperature

So far they've packed ice cores about 1,500 meters long for shipping to the United States.

This season, we manually brought the ice field to the plane.

The ice was immediately flown by the 109th U.S. Air Guard to coastal areas, where it was transferred to cargo planes across the equator to California, where it was transferred to trucks, zipped across the desert, and sent to the National Ice Core Laboratory in Denver, Colorado.

Antarctica was the last blank spot for those of us trying to understand our planet, a blind spot.

Early explorers sailed through uncharted regions to find places where the rules of time and temperature defied convention.

Ice is alive here

The wind that blows on the ice field gives the ice a voice

A voice that tells history

We must listen to that voice

thank you very much

(applause)

comics are short stories

I chose one with few lines

Sometimes it's not a happy ending

Why did you start doing comics?

I've loved scribbling since I was a kid, and if I keep on scribbling all the time, eventually I'll run out of career options.

all that's left is cartoons

Actually, I fell in love with the sea when I was a boy.

Especially fascinated by sharks

this is my early work

My mother took my red crayons away.

Today, I'm going to talk about a boyhood experience that changed my perception of the ocean and inspired my current work. If I can change the way I see the ocean in one day, I feel like it could be a catalyst for you, and especially children, to change their perspectives.

In the past, this was the "sea" that I thought of

just blue sea

You've always looked at the "sea" like this, haven't you?

the sea is an unknown world

There's a lot of folklore about the sea, and it's mostly negative.

So the result is a map like this, where the land is very detailed, but when you get to the coastline, the sea is just blue.

It was the same in school, as if "geography, science, and coastlines aren't tests."

as if to say

But on a family trip to the Caribbean, the day we flew over the islands in a little plane - what I saw

hills and valleys

in the forest

In caves, in secret gardens, when I was young- if I could breathe underwater, they'd be perfect places to hide

and most of all living things

The manta ray looked as big as the plane I was on.

I even saw sharks swimming in the lagoon, and that very day my "shark cartoon" was born.

From that day on, I lived on land - I was a normal child, and my mind was full of things under the sea.

Until I met the sea, these animals were the only living creatures-

I only paint animals with four legs and hair.

But when I go to the sea, my imagination is unmatched.

Even if you come up with a strange character, there are even more bizarre creatures in the sea.

And the gap in scale between this little seahorse and the humpback whale is like a science fiction movie.

I always tell my kids that the biggest creature in the history of the earth is

It's not a dinosaur, it's a whale. It's the size of an office building, and it's still swimming in the ocean.

Speaking of dinosaurs, sharks are basically the same fish that existed 300 million years ago.

If you could go back in time and see a dinosaur, it would have looked like this.

There are living dinosaurs, weightless and adapted to harsh environments - alien-like creatures in the ocean.

It's amazing, isn't it, Hollywood designers - I can't think of anything more impressive than this.

With these underwater particles in the background, it's like you're swimming through space.

If you look through a telescope and see this, wouldn't you be surprised?

Discovery of a new cosmic species

Instead, the camera looks at deep-sea fish, but it's hard to imagine that there's another "world" out there.

Even when I see a fish, I think, "You can fry it."

So I would like to take this opportunity to draw a little picture.

Shall we draw Onikime-kun?

I love drawing deep-sea fish.

Shall I turn on the lights too? Headlights, brake lights, and turn signals

These creatures come in all shapes and sizes, and it's easy to turn them into cartoon characters.

Some creatures really have the powers of comic book superheroes.

For example sea turtle

Like Superman's clairvoyance - he has a sixth sense

You can feel the geomagnetic field

Thanks to that, I can travel across the vast ocean.

I'll give you hands too

Next, this sea cucumber

I don't usually draw pictures, but

I'm an underwater spiderman

Unleash a sticky net – entangle your enemies

It shoots from the anus. It's a lot more fun than a superhero, isn't it?

(Laughter) But in order to cast the net, you have to lower your pants first.

(laughs) Fugu is also amazing.

It's like the Incredible Hulk from the cartoon

In a split second, you can turn into a big, powerful fish.

First, draw a puffer fish that is not inflated.

And a little video - let's try

Alright

can i grow up?

(Laughter) "What about me? (Blowfish)" You know, you can transform into a powerful fish at any time.

then swordfish

Can you imagine being born with a nose like a weapon?

You might be looking in the mirror in the morning and saying, "I might stab someone today."

Next, this lionfish

What if your friend was full of poisonous needles?

Are you hesitant to publish it on Facebook?

Speaking of my cartoon characters, the main character is a shark shaman

It's a great white shark

I broke the mold a little

I didn't want to plant the image of a ferocious carnivore –

he spends every day somehow

It's Homer Simpson with fins.

His buddy is Sea Turtle Fillmore

Using my sailing skills, I'm searching for her while sailing.

I have a date, but I'm not good at picking up lines

I'm destined to find her - I can't seem to find her -

Out of the spotlight - Hawthorne the hermit crab wishes he was a great white shark

I'd like to introduce you to another guy, Ernest, a juvenile delinquent - a fish.

If you have characters, you can create a story

Sometimes making a story is as simple as putting two characters in the same room and seeing what happens.

Imagine a giant squid and a great white shark in the same bathroom

(Laughter) Sometimes nobody knows - they take you to a place under the sea.

For example, I'll take you skiing to the Mid-Atlantic Trench, and there are submarine mountains in the Atlantic Ocean.

I also took him to the Sea of ​​Japan.It was full of giant jellyfish.

I even took him to a seaweed forest in California.

Now I'm going to show you a cartoon I made for marine biostatistics.

It's been fun, as you all know - this is a real project.

It was a great opportunity to introduce our readers to characters under the sea.

First, Ernest volunteers as a census taker.

Investigate and meet the famous stork

And the furry yeti crab The hard-to-find bat octopus To be a cartoon character - the perfect dumb octopus

I also made a story about the problem of marine litter.

When I was talking to a friend who is involved in bioconservation, I asked him, "What issues do you want people to know about?"

And one of my friends said, "Plastic in one word."

"It's not just plastic, it's a little more attention-

tell him there's something

decided to think about it together

I think he wanted to use the word "polyvinyl chloride," but you can't put that in a speech bubble.

I couldn't

So I created an adventure scenario.

A plastic bottle makes a long trip

My message to readers is that plastic isn't going away, it's just drifting away.

Most of them end up in the ocean. Adding characters makes for a decent story.

So I took him to Boise, Idaho, where he dropped a plastic bottle into a sewage treatment plant.

It flows into the Boise River, then flows into the Columbia River, then the west coast to the Pacific Ocean, and from there onto the Great Pacific Garbage Belt, a huge belt in the North Pacific that carries a lot of garbage that ends up back in the lagoon.

It's a story about two people with a simple plastic bottle.

PET bottles have a strong impression on me, and I think many people will think about the garbage problem.

I did the third story about a year and a half ago, and it was the most difficult.

I myself had a strong interest in the shark fin problem.

My main character is a shark, so I thought it would be a perfect way to bring this issue out to the public.

What's at stake is the practice of cutting off the shark's fins and releasing them back into the ocean.

It's cruel and useless

Nothing interesting, but I wanted to touch on this issue.

So I decided to kill the main character, who is a shark.

A shaman goes to a Chinese restaurant, where he draws a fortune telling that he will be caught by a fishing boat.

will die

fins cut off and thrown overboard

It's dead on the surface

I killed the main character who was in the newspaper for 15 years.

We received a lot of feedback from our readers.

Meanwhile, other characters are talking about shark fin soup.

After that, I did three comics about shark fin issues.

shaman is in heaven

It's good because it's the manga

You don't have to worry so much about developing distrust among your readers, because you can check the newspaper on your porch to see what the talking shark is doing.

I can do anything

A shaman who narrowly escaped death

Meanwhile, Arness finds his fins on the net.

In reality, there's a Chinese site that deals with fins.

Arness clicks the "buy now" button

It was delivered the very next day - I had surgery to fix it.

The US Marine Fisheries Service ended the series by calling on other nations to seek better shark management.

(Applause) Thank you.

Let me give you a final parable

I was thinking about the "Mission Blue" parable to save the ocean, and I had an idea.

Imagine you're in a very big, dark room.

You can take anything in the room, but you can't see anything.

There, I was handed a hammer as a tool.

Wandering around in the dark, I came across something that looked like a stone.

It's too big and heavy to carry around, so I decided to smash it with a hammer.

Carry that piece out into the light

It was a beautiful piece of marble

Say "This is worth it"

I'm going back to my room again, collecting the crushed pieces and hauling them out in bulk.

Then he finds another chunk, breaks it up, and carries it away.

As a result, I collected a lot of valuable things.

I soon find out that other people are doing the same thing.

So you have to get a lot of things as soon as possible! I get impatient

At that time, someone said, "That's it!"

turn on the light

When I realized where I was, it was the Louvre.

You took apart the pinnacle of precision beauty and turned it into a cheap commodity.

This is what humans do to the sea

One of Mission Blue's jobs is to yell, "That's it!"

And the explorer, the scientist, the cartoonist, the singer, the cook, each one of them lights up in his own way.

I hope my manga can contribute even a little.

That's why I like this job

thank you

(applause)

I am honored to be here again.

i love this wonderful gathering

I'm thinking, "What the hell is this?"

"Are you sure you're on the wrong slide?"

No no

Look at this amazing animal and think, who designed it? this is TED

technology entertainment design there's a dairy cow

It's a well-designed animal.

how to talk from here--

I've been thinking about it, but I'm going to quote an old poem by Joyce Kilmer, "Poems can be written by idiots like me, but only God can make trees."

You may say, "Well, God created the cow."

Of course God helped me a lot.

this is the ancestor of the cow

this is oryx

Designed by natural selection, a process of natural selection that spans over millions of years.

was domesticated thousands of years ago

Humans took control of them, and they continued to gradually redesign their livestock without their knowledge.

More recently, I've started reverse-engineering this livestock to figure out what each part is and what it does, and how we can optimize it -- improve it.

Now, why are we talking about cows?

Pretty much the same thing applies to religion.

Religion is a natural phenomenon, as natural as a cow.

evolved for over a thousand years

It has a biological basis, just like Oryx.

Domesticated, over thousands of years, humans have redesigned their religions.

We're here at TED, so let's talk about design.

What I've been doing in the last four years since I first met you What I've been doing in the last four years since I first met you You may have seen me at TED talking about religion.

You could say it's the reverse engineering of religion.

This way of thinking terrifies a lot of people, or it's a feeling of anger or anxiety.

I want to break this curse

I want to say that religion is an important natural phenomenon

We should study religion as hard as we study all other natural phenomena, like global warming, which Al Gore spoke so eloquently about last night.

Today's religion is beautifully designed.

They're very powerful social institutions, and the traits they have now come from earlier traits, which means -- they can be truly understood through reverse engineering.

Like cows, they're a mixture of design by evolution, design by natural selection, intelligent design -- more or less intelligent design -- and redesign by those who try to reform religion.

I don't talk about my books at TED, but I have just one slide about my book, because I have a message that I really want you to hear.

And I would be very happy to hear your opinion on this.

This is one policy that I proposed in my book, and I claim at the time that I didn't have a deep understanding of religion -- to suggest another policy.

And it just repeats a view we've already heard today.

So here's my proposal, which I'm going to take a few minutes to explain -- teaching all the children about the religions of the world, whether they're in elementary school, high school, public school, private school, or homeschooling.

What I'm proposing is that just as literacy, math, and American history are required subjects, we need a subject that teaches facts about all the religions of the world -- their histories, beliefs, documents, music, symbols, bans, requests.

And they should be presented to every child across the country in a direct, factual, undistorted way.

As long as you teach your kids that, you can teach them anything you want.

I believe that this is the maximum endurance that freedom of faith can afford.

As long as you teach your kids about other religions, you can teach them a few--anything, whatever the beliefs you want to teach--you can teach them.

But tell me about other religions, too.

Why do I say this?

Because democracy depends on enlightened citizens.

Informed consent is fundamental to our understanding of democracy.

Consent with false information is useless

Same as coined-- it doesn't count

Democracy depends on informed consent.

This is how people should be treated as responsible adults.

Note that children under the age of consent are a special case.

To quote Pastor Rick earlier -- parents are the custodians of their children.

not the owner

cannot own children

You owe it to the world and the state to raise them right.

You can teach them whatever beliefs you think are most important, but I'm saying that you have a responsibility to make them aware of other beliefs in the world as well.

I've spent some time on this because -- I'm looking forward to the reaction to this.

A critic in the Roman Catholic newspaper called it "totalitarian."

I think I'm actually liberal

Is it totalitarian to require literacy and mathematics? I think different

Is it totalitarian to require literacy and mathematics? I think different

I'm just saying the facts -- just the facts. I'm going to teach you only the facts of the world's religions without putting values ​​in them.

Another reviewer said it was "ludicrous"

It bothers me that some people find this ridiculous.

It's a natural extension of existing democratic principles that, to me, make sense, and I'm surprised that some people think it's absurd.

I know that many religions are so fixated on preserving the purity of their faith to the next generation that they leave their children ignorant of other faiths.

I don't think it can be defended.

I would be happy to hear your opinion later

let's get on

back to dairy cows

Photo taken from this web The man on the left is the important part of this photo

this is the admin

Dairy cows can't live without human care -- because they're domesticated.

they are like ectosymbiotes

their survival depends on people

Pastor Rick just talked about sheep.

i also talk about sheep

Lots of accidental convergence here

How clever a sheep that has a shepherd!

Consider what they got

All issues can be outsourced Protection from foreign enemies Ensuring food supply Health management

The price that many herds have lost is only free mating

what a deal

You may think, "How smart sheep are!"

Of course not. We all know sheep aren't great scientists -- they're not very smart.

It doesn't matter how smart the sheep are

They were blind, but they were also clever.

Who was it?

It's the magic of natural selection itself.

The man who discovered the structure of DNA with Francis Crick and Jim Watson once joked about what he called Augell's second law.

Leslie Orgel is a molecular biologist and a genius, and Orgel's second law is, "Evolution is smarter than everyone else."

This is not intelligent design -- although Francis Crick disagrees

"Evolution is smarter than anyone"

Anyone who understands Augell's second law will understand that the intelligent design movement is a hoax.

The design that the process of natural selection has discovered is amazing, it's unbelievable.

Biologists are again and again amazed by the wonders of what they discover.

But the process itself has no purpose, no foresight, no design.

Four years ago, in this place, I told a story about ants climbing up the top of the grass.

Why did the ant do that? The ant's brain is infected with a lance fluke -- a lance fluke that needs to enter the belly of a sheep or cow to produce offspring.

It was a scary story

Some people seem to have misunderstood

Spear flukes aren't smart

Between morning glory and carrot

they're not smart and they don't need to

What we learn from this is that you don't need to be intelligent to be profitable.

Design exists naturally, but it's not in someone's head.

there's no need

Evolution is like that

Question--Was domestication good for sheep? great for genetic adaptability

Here's what Paul McCready pointed out at TED three years ago.

I want you to remember a wonderful fact

He said, 10,000 years ago, at the dawn of agriculture, the human population, plus livestock and pets, was roughly a tenth of the one percent of the terrestrial vertebrates.

That was only 10,000 years ago, yesterday from a biological point of view.

How are you today? Anyone remember his talk?

98 percent

this is what we did to the earth

I spoke with Paul later, and I wanted to know how he did his calculations, what his sources were, and he gave me the paper where he did this.

There's a passage he didn't say, and it's so good that I want to read it here: "Over billions of years, chance has coated this unique -- sphere with a thin cover of life: it's complex, it's miraculous, it's wonderful, it's fragile.

And suddenly, we, the human race -- a race unbound by the checks and balances of nature that recently appeared on Earth -- grew in population, technology and intelligence, and seized violent power.

We are now holding the pen."

We've heard that the atmosphere is a thin layer of varnish.

Life itself is just a thin layer of paint on this planet.

And we're holding a pen. How did this happen?

Culture is the key to how we ruled the planet

And the key to culture is religion

Let's say a Martian scientist comes to Earth.

I think they are puzzled by many things

do you know what this is? let me tell you

In 2001, one million people attended a rally on the banks of the Ganges, probably the largest human rally ever, as you can see from the satellite images.

It's a big crowd This is the crowd in Mecca

Martians would be surprised by this too

You'll want to know how they all started, what they're for, how they perpetuate themselves.

i won't mention this

The ant I mentioned earlier is nothing special.

There are all sorts of interesting cases in other organisms, for example, a parasite that wants to get inside a mouse and get into the stomach of a cat, so it turns the mouse into a mighty mouse -- to eliminate fear.

So we turn the mouse into a mighty mouse -- we eliminate the fear, so the mouse can run outside and be eaten by the cat.

It's true, i.e. there is a hijacker--

You saw this slide four years ago, a brain-eating parasite that induces suicidal behavior for purposes other than the genetic adaptation of the host.

Is this happening to us too?

it's happening -- very cleverly

"Islam" in Arabic means "obedience"

means "renunciation of selfishness by the will of Allah"

not only Islam

so is christianity

This is a piece of parchment sheet music that I found in a bookstore in Paris 50 years ago.

It's written in Latin like this (Latin)

"The word of God is the seed, and the sower is Christ."

Same idea! Is it a little different

But in fact, even Christians are proud of the fact that they surrendered to God.

I quote a little

"The essence of worship is surrender

Those who surrender follow God's word, even if it doesn't make sense."

These are the words of Rick Warren

Taken from "The Five Purposes of Life"

I'm going to talk a little bit about the book I read.

I'm sure you all have a copy, I heard from him earlier.

I'm going to say a few words about this book from a design standpoint, because I think it's actually a great book.

First of all, about the goal. I just heard what his goal was: to give purpose to many people's lives.

Is it a good goal? Everyone would agree that it's great on its own.

he is totally right

There are many people who have no purpose in life, and giving them purpose is a great goal.

Give this an A+ rating

Goal achieved?

yes it sold 30 million copies

Al Gore is envious

(Laughter) Rick did what Al was trying to do.

great achievement

As for the method -- how did he achieve that?

It's a wonderful redesign of a traditional religious theme -- quietly dismissing the outdated -- and updating others -- with new interpretations.

It's one of the evolutions of a religion that's been going on for thousands of years, and he's just a talented modern practitioner.

You all know this already, you just heard him talk.

Great insight into human psychology Smart advice on every page

And he invites us to look deeper into the meaning.

thank you very much

For example, he included an appendix explaining different translations of selected Bible verses.

The book is clear, vivid, easy to read, and beautifully constructed.

There is just enough repetition

this is very important

Every time you read it or say it, your brain makes a copy.

Every time you read it or say it, your brain makes a copy.

(Laughter) Together with you -- every time you read it or say it, your brain makes a copy. Thank you.

Well, I'm going to pose a problem here.

Because I was completely honest in stating my high praise for this book.

i think i could have done better

I have something to say about the book and it would be dishonest to dismiss them.

I have something to say about the book and it would be dishonest to dismiss them.

I hope he corrects it in the revised edition, in the second edition of his book.

"Truth will set you free"

There's something in the Bible that I want to believe

What I'm trying to say is that some parts of the book don't seem to be true.

Some of them may disagree

that's not the main complaint

It's worth mentioning this line -- pretty much what he said, "Without God, we're all the result of chance, the cosmic astronomical chance --

There will be no purpose, no meaning, no importance in life -- you won't need to read this book.

There is no good or bad, and after a short time on earth there is no hope."

i don't believe this

By the way, Homer Groening's films offer a beautiful alternative to this claim, with meaning and reason for good and evil.

You don't have to believe in God to do good things or give yourself meaning.

But this is just a difference of opinion

it's not really what i'm worried about

How about this -- "God designed this earth for us to live in."

A lot of people will take this to mean that we don't have to do what Al Gore has been trying so hard to tell us to do.

I am totally dissatisfied with this word

And then I found this -- "All the evidence in the biological sciences supports and explains that the universe was designed as a fundamental purpose or intention that the universe was about life and humanity, and that having meaning in everything is at the heart of things. This is Michael Denton. He's a creationist.

Here I think, "Wait a minute."

reread again

I read it three or four times and think, "Does he really endorse intelligent design, creationism?"

"Does he really endorse intelligent design and creationism?"

not clear

So I thought, "I don't know." "I still don't know if I should be offended by this."

And I read this -- "First, Noah never saw rain, because before the flood God was irrigating the earth from below."

I wish I didn't have this sentence because I think it's a lie

After listening to stories about the history of the Earth that spans millions of years, I think that this kind of thinking about the history of the Earth discourages people from trying to understand science.

Rick Warren uses scientific terminology, scientific fiction and scientific information in very interesting ways.

One is -- "God designed you to carry out His special mission. He carefully mixed a DNA cocktail to create you.

i think this is wrong

I prefer to take this metaphorically.

One more thing--"For example, your brain can store 100 trillion things.

We can make 15,000 decisions per second.”

It will be interesting to see if I can find a fact that I can interpret in that way.

"Anthropologists believe that worship is a common urge to connect with God--

I wrote that the instincts that need us are woven into every corner of us."

I kind of agree with you intuitively, but I think there's an evolutionary explanation.

It seems to me that you're making the claim that if you want to be moral, if you want life to have meaning, you have to be a creationist -- that is, you have to reject the theory of evolution by natural selection.

On the contrary, I think it's very important to take evolution seriously to solve the world's problems.

Whose truth should we listen to?

This is from "The Five Purposes of Guiding Life" -- "The Bible should be the authoritative reference of my life -- The compass I turn to for direction -- The Advisor I consult to make wise decisions -- And the guide by which I measure everything."

and this is where i worry

Remember this passage from him I quoted earlier, "Those who surrender obey God's word, even if it doesn't make sense."

this is a problem

"Don't dispute the devil

With thousands of years of practice, he's better at arguing than you are."

Rick Warren didn't come up with this smart move.

this is the old trick

This is the result of a clever adaptation of religion.

It's a wild card that softens any reasonable criticism.

"Don't you like my interpretation?

Do you have a valid objection?

Don't listen!

It's the devil's whisper

And I think that's what's preventing us from the kind of reasoned citizenship that we want.

I have one more problem.

If you can lick, I hope you get a response to this.

"In the Great Commission, Jesus said, 'Go to all nations and make them disciples, baptize them in the name of the Father and the Son and the Spirit.

Tell them all that I have taught you.' The Bible says that Jesus is the only Savior who can save the world.

We've seen a lot of great world maps in the last few days.

It's not as pretty as the others, but it's here, and it simply represents the religions of the world.

And this is the current classification of different religions.

Do you want to work hard to incorporate them into your religion? "Don't listen to the other, that's the devil's whisper!"

From my point of view it's a very problematic ship to go into the future To me it's a very problematic ship to go into the future

When I drove to Maine recently, I saw this sign in front of the church: "Good without God is zero."

"Good without God is 0"

very clever meme

I don't believe it, but I think it's common -- it's not the phrase, it's the mindset -- and I think that's the big problem we face.

If you're like me, you know a lot of great, trustworthy, dedicated atheists and agnostics who are good without God.

And I'm sure you know a lot of religious people who don't do good deeds and hide behind their dignity, so I hope this meme is buried.

i hope this meme goes extinct

Thank you for your attention

(applause)

I'm going to talk about the political side of oil spills, I'm going to talk about why it's so important, I'm going to talk about the long, sweltering hot summers, and I'm going to talk about why we should be paying attention to this issue.

Before I can talk about the political side of things, I have to talk about oil itself.

This picture was taken in 2002 when I went to Prudhoe Bay in Alaska, and the Department of Mineral Resources Control was checking to see if it was possible to burn an oil spill in the ice, so I went to see it.

In this picture, in addition to crude oil, you can see chunks of ice, and you can see two bags of napalm.

napalm burns well

And oil is a symbol for us American consumers.

We're only 4% of the world's population, but we consume 25% of petroleum products.

To understand what petroleum is, you have to know its molecular structure.

This is what oil looks like when it burns

The blaze is making a loud noise

If you have the chance, please watch oil burn, you don't need to listen to any more political science or geopolitical lectures on oil.

burns into the retina

You see, it's burned into your retinas

Now let's talk about the chemical side.

Petroleum is a stew of hydrocarbon molecules

It also includes methane, which is a very small molecule made up of one carbon and four hydrogens, which evaporates easily.

there are all kinds of intermediates containing carbon

You know the benzene ring, it's carcinogenic.

And then you end up with this big, mushy object, which is made up of hundreds of carbon atoms and thousands of hydrogen atoms, vanadium, heavy metals, sulfur, and other stuff around it.

It is called asphaltenes and is used to make asphalt.

It becomes a problem in the event of an oil spill

I'm going to tell you about the chemistry of petroleum in water.

It's this chemical property that makes petroleum so nasty.

Oil doesn't sink, it floats on water

If it's a material that sinks, it's going to be different in an oil spill.

Another characteristic is that it pops open as soon as it comes in contact with water.

It spreads very thinly, which is why it's so hard to contain the oil.

What happens next is that the lighter material evaporates, and the toxic components dissolve into the water, killing the fish eggs and causing damage to small fish and shrimp.

And asphaltene, it's this substance that's deadly. Asphaltene is whipped by waves, and it becomes like frothy mayonnaise.

It swells three times, and in the water it creates an oily crust, which makes the process cumbersome.

has become a very viscous substance

When the Prestige sank off the coast of Spain, the petroleum emulsified into a cushion-sized substance about the consistency and consistency of chewing gum that floated on the water.

processing is a lot of work

Oil in water behaves very differently.

When the chemistry of oil and water hit politics, it exploded.

For the first time, American consumers will know that the oil supply chain is affecting them.

It's the "I got it!" moment, when you start to understand oil in a different context.

Let me tell you a little bit about the origins of these politics, and it's imperative that you understand why this summer was so important, and that it shouldn't be lost.

No one wakes up in the morning and thinks, "Hey, I'm going to buy a molecule with the C3-C12 structure, fill up my tank, and go to work that's exhilarating."

"Hey! I need to buy some gas!

It's unbearable, oil companies are drowning

They decide the price, I don't care

I don't know what to do

It's always been the case at gas stations, and in fact, gas stations are specifically designed to vent that anger.

Gas stations like this are made to look like ATMs.

I spoke with the designers, and they said that this shape is a way to vent anger, because no one thinks badly about ATMs.

(Laughter) You can see the situation.

But in fact, this sense of helplessness stems from the fact that many Americans feel that oil prices are set by a conspiracy, not by the influence of world markets.

And I also feel very helpless about our consumption, and that's a valid feeling to some degree. In the current system that we've created, having a good running car is much more important than a high school diploma if you're going to get a job.

it's a strange situation

And there's a strange thing about buying gasoline, too: it's not that you want to buy gasoline.

It's a BP gas station in downtown Los Angeles.

It's green. It's a sacred place for green.

You'll wonder, "How does this kind of child trick work?"

Because when we buy oil, we're really in cognitive dissonance.

On the one hand, I feel angry, and on the other hand, I want to do something else.

They want to do something other than buy oil, something that's good for the environment.

You'll be playing a role in deceiving yourself

I think it's a funny situation I think it's a funny situation

But it's what helped spread the "no oil" slogan.

This is a specific part of energy policy, but we don't talk about reducing oil consumption.

About energy independence and about hydrogen vehicles

We're going to talk about biofuels that haven't been invented yet.

So cognitive dissonance is part of dealing with oil, and it's a very important part of dealing with oil spills.

Oil policy has become very moral in the United States.

The oil industry is huge, and like a giant octopus, it's a mighty organization with technical, financial, and other departments, but we look at this industry from a moral standpoint.

Here's an early picture, they used an oil field like this.

"It's a filthy industry," said the journalist who first covered these fields.

It was also a way of thinking about people who are getting rich without doing anything.

I'm not a farmer, but I'm getting rich by using what comes out of the ground.

Mostly "Beverly Hills Residents"

But early on, this was considered morally problematic, long before it got weird.

And then John D Rockefeller showed up.

He entered this chaotic Wild East oil industry, and he rationalized it, consolidated the companies, multinationalized it.

It was terrifying, because Wal-Mart is the terrifying business model of the 1860s and 1870s.

Here's the root cause of thinking oil is a conspiracy

Journalist Ida Tarbell wrote a controversial expose about the Rockefellers that led to the introduction of antitrust laws.

But in many ways, the image of conspiracy has not yet been wiped away.

Here's a snippet of what Ida Tarbell wrote: "Nose thin as a thorn.

no lips

The dull eyes are puffy and wrinkled."

(Laughter) Yes, it's an image of this guy.

(Laughter) It's so well-known that it seems to have become part of our DNA.

this guy is next

You might be wondering why every time oil prices go up or there's a spill, the CEO is summoned to Washington.

We've had this practice since 1974, when we asked, "Why is there excess revenue?"

We've personified the entire oil industry into these CEOs.

We don't look at these issues from a legal or financial perspective, but from a moral perspective.

I'm not saying they don't have a responsibility to answer the question. I just think that if they're obsessed with whether or not they're greedy, they can't lead to legislation that can change the way the oil industry works, and it can't really go in the direction of reducing oil consumption, or reducing the dependence on oil.

I think this kind of behavior is just a distraction

But things get better, and as you saw last week, this gives you a sense of relief.

The oil spill thing is a big political stimulus.

This photo is of the Santa Barbara spill.

I have a picture of a bird

This photo inspired people

In 1969, when the Santa Barbara spill happened, the environmental movement as we know it today began.

earth day has begun

The National Environmental Measures Law was also introduced Air Pollution Control Law and Water Pollution Control Law were also introduced

it all started at this time

I think it's important to look at these pictures of birds and understand what happened to us.

We generally think we can't do anything at the gas station.

It's only by looking at these pictures that we can understand our role in the supply chain.

It connects the dots in the supply chain to each other.

We, as voters, have an "I got it!" moment.

That's why when oil spills like this happen, it's important.

I think it's important not to be a bystander or stop thinking on moral issues.

We need to address the core of the problem.

One of the things that happened during the two previous oil spills was that we worked on these symptoms.

We acted reactively rather than proactively.

What we actually did was extend the drilling moratorium on the east and west coasts.

It stopped drilling in the Arctic Wildlife Refuge, but it didn't cut oil consumption.

On the contrary, consumption continues to rise

The only thing that can reduce oil consumption is higher prices.

As oil fields wore out and drilling became more expensive, domestic production declined.

Only two percent of the world's storage is in the United States, and 65 percent is in the Persian Gulf.

One of the reasons for this situation is that since 1969, within Nigeria, in the oil-producing region of Nigeria, this delta region, which is twice the size of Maryland, has had thousands of oil spills a year.

When you import oil from a region with poor environmental regulation, you are exporting an oil spill.

Every year since 1969, there's been a spill the size of the Exxon Valdez.

I can understand the oil spill because I've seen it with my own eyes, but the area is on the battlefield.

An area twice the size of Maryland has 1,000 combat deaths each year, and it's all oil related.

If these people lived in the United States, they might be in this room.

I have degrees in political science and business administration, and I'm an entrepreneur, and I don't want to do what I'm doing now.

It means that other groups of people are paying for us.

And on the other hand, we're increasing the demand for oil, which means there's a price deception going on.

One of the areas where we're doing big oil projects is Chad, where Exxon is involved.

So the American taxpayers are paying, the World Bank and Exxon are paying.

The problem of thieves is very big there.

Year 2003

We were driving down a pitch black road, and a man in green appeared.

A man in an Exxon uniform appeared, and I knew there was no problem.

They're hiring soldiers to protect their oil fields.

But at the same time, the situation in Chad has become even more precarious, which means we're not paying for it at the gas station.

it's paid out of our tax dollars

We're doing the same thing elsewhere, where we're paying for policing in the Persian Gulf and securing sea lanes.

In 1988, we bombed two oil platforms in Iran.

That's what prompted the United States to become more involved in the region, but it didn't pay for it at the gas station either.

It's out of our tax dollars, and we can't even calculate the cost of that involvement.

Another place that supports our oil dependence and increasing consumption is the Gulf of Mexico, where drilling has not stopped.

What happened to the Gulf of Mexico ... as you can see, it's a resource chart for natural gas and oil.

It has become an overcrowded industrial area.

Our feelings about the Arctic Wildlife Refuge didn't apply here, but this is a bird sanctuary.

If you buy gasoline in the United States, half of it is likely to be refined in the Gulf of Mexico, where 50 percent of the refining capacity is concentrated and there are just as many offshore terminals.

So the people living in the Gulf Coast region are subsidizing us by paying for the poor environment.

And finally, families living in the United States are also paying for the price of oil.

Given the price of oil, the price at the gas station isn't that high, but on the other hand, we have the fact that we don't have any means of transportation other than using oil, and we end up spending a significant portion of our income on transportation, just for the dingy car we use to get to and from work.

If you make $50,000 a year and have two kids, you're going to have to work at least three jobs and also commute.

The cost of a car and gasoline costs more than taxes and medical care.

The same thing is happening to households with an average national income of $80,000 a year.

The cost of gasoline is not only a huge burden on the U.S. economy, but it's also a burden on individual households, and it's scary to think about what would happen if oil prices went up.

What I'm going to tell you now is what we have to do now.

What about the law and what should we be careful about?

First, don't be a bystander.

action must be taken

Let's pay attention to the molecule of petroleum again.

Stopping mining is a good thing, but we need to focus on the oil molecule.

And the other thing we need to do is not let ourselves be fooled into thinking that we can have a green world without using less oil.

We must focus on reducing oil consumption.

This diagram outlines how crude oil is used in the U.S. economy.

On this slide, the utilized energy is shown in gray, and the unused "wasted energy" is at the top.

So the energy wasted far exceeds the energy actually used.

What we need to do is not to make cars more fuel efficient or even more efficient, but to improve the economy as a whole.

We should eliminate unreasonable incentives to increase fuel consumption.

For example, in the insurance system, someone who drives 20,000 miles a year pays the same premium as someone who drives 3,000 miles a year.

I encourage you to drive more miles.

We have policies that encourage urban expansion, and there are many similar policies.

need to increase transportation options

We should make the price of gasoline reflect the actual cost of oil.

More than $10 billion a year in subsidies to the oil industry should be used to help middle-class families make better transportation choices.

I think it's about creating a market for more fuel-efficient cars, new cars, new fuels, and that's what we need.

We have to streamline everything. There must be a lot that can be done with this policy.

This policy is called STRONG "Secure Transportation Reducing Oil Needs Gradually." It's the idea that we should be STRONG instead of sitting on the sidelines.

Visit NewAmerica.net

The bottom line is that you don't just sit on the sidelines at the gas station, you have to actually take action.

Probably an oil tax, a taboo, no-fly zone topic in U.S. politics.

I agree that the tax of one dollar per gallon is too high, but if we can start this year, I think we can start at 3 cents per gallon, then 6 cents next year, 9 cents the year after, and so on, up to 30 cents per gallon by 2020. I think this can cut oil consumption significantly, and at the same time give people more time to react.

Let me explain why this method works

It's a gas receipt, if it's one year from now.

I'm going to start by paying the "strong America" ​​tax of 33 cents.

You're no longer helpless at the gas station.

And then write the warning text, the same text that's written on the cigarette pack.

"The National Academy of Sciences estimates that you need 29 cents in medical costs for every gallon you burn in your drive."

that's a lot of money

Now you'll realize that your tax dollars aren't enough to cover the cost of healthcare.

And I think we're going to start trying to connect all these wonderful systems together.

At the same time, I suspect they'll be trying to get the information they need about commuting, low-interest loans for new types of cars, and ways to reduce their dependence on gasoline anyway.

We believe that this combination of policies will reduce gasoline and oil consumption by 20 percent by 2020.

3 million barrels a day

But to do this, we have to remember that we are all hydrocarbon dependent beings.

So let's focus on the presence of this molecule, and don't be a bystander, and don't fall into the cognitive dissonance of getting green without doing anything.

We have to get down to the daunting task of reducing our dependence on fuel and this molecule.

thank you

(applause)

Introduce super cool friends

Thelma and Louise

(Laughter) I'm obsessed with cows.

These friends have recently been criticized for emitting methane and changing the climate, but to restore some of their honor, let me show you how important these friends are to solving the world's great problem of food security.

This problem is directly linked to child stunting in Africa, and it's getting worse.

Stunting due to malnutrition manifests itself in a slower rate of growth in human development.

According to UNICEF, stunting doesn't just happen suddenly.

Over a long period of time, the child suffers from recurring pain and weakness due to illness, poor appetite, poor nutrition and inadequate treatment.

Most children don't survive the harsh conditions

And even if they survive, they'll have short stature and long-term cognitive problems.

The number of children under five who are stunted is declining in most parts of the world.

Unfortunately, the only place where the number of stunted children hasn't declined is here in Africa.

In Africa, 59 million children, three out of 10 children under the age of five, are struggling to reach their full potential.

Protein is one of the most necessary nutrients for humans, and lack of the essential amino acids that make up protein in the diet of young children has been shown to lead to stunting.

Essential amino acids are called "essential" because they cannot be synthesized by the human body.

It must be obtained from food, and the most desirable sources are milk, meat and eggs of animal origin.

Plants are the main source of protein on the African continent.

There are millions of smallholder farmers who raise animals, but farming isn't that easy.

There's a big difference between livestock in rich and poor countries, and that's because of animal health.

Some livestock epidemics are contagious to humans, threatening the health of livestock farmers in poor countries as well as people around the world.

This is the world pathogen network

Based on the expanded database of infectious diseases, it shows the state of pathogenic bacteria around the world.

We can see that these pathogens share a host.

In short, we all share pathogens, diseases, with our closest species, our livestock.

It is a so-called zoonotic disease.

A recent study found that deadly zoonotic diseases kill 2.2 million people and sicken 2.4 billion people a year.

The director of the International Livestock Research Institute says, "The ones who suffer most from zoonotic diseases are the one billion poor livestock farmers."

We underestimate the importance of small farmers

Only now are we beginning to realize how important they are, how they affect our medical health problems, our biosafety and, more recently, our cognitive and physical health.

Smallholder farmers are at the scene of zoonotic outbreaks

I can say that they support our lives.

So they need a lot of knowledge, but many farmers don't know how to prevent and treat animal diseases.

so how do you learn

In addition to sharing the knowledge gained from each person's experience and trial and error, conventional agricultural improvement and extension projects require sending people to the local area or using radio broadcasting, which is costly and difficult to expand to a medium-scale with a growing population.

Is the outlook very bleak?

But now we're at an interesting tipping point in Africa.

We're changing the bleak outlook with innovative solutions, experimenting with technologies that are available at scale.

Knowledge doesn't always have to be expensive

My company developed a platform for agriculture called iCow.

I teach farmers how to best care for their livestock, and I do so using simple, inexpensive cell phone SMS messages.

Farmers receive three messages a week about best farming practices, and when they do what's written there, their yields increase -- in as little as three months or less.

The first thing to improve in production is, of course, animal health.

We use SMS because it's good for storage.

Farmers can save messages or write them down in notebooks - and that's how we effectively teach farming procedures step by step to the field.

We are all part of a global food network, a network that connects producers and consumers, you and me and all farmers.

Our main focus now is to bring together producers and consumers to take action and take responsibility, not just for food security, but for food security.

This beautiful animal is a hybrid between Sahiwar and Phlekfi.

They produce more milk than their Sahiwar mothers and are stronger and more resistant to disease than their Flekfi fathers.

The African Dairy Genetic Information Sharing Project (ADGG) in Ethiopia and Tanzania has used SMS and cutting-edge genomics to create Africa's first tropical dairy cow breeding center and milk yield recording center.

Farmers send their production data – milking records, breeding records, feed records, etc. – to the ADGG system.

The transmitted data is compiled using algorithms provided by world-class livestock research institutes, and then fed back to the farmer's hands, and all this is done via SMS.

Data as needed Feedback as needed, all used for productivity gains that can be achieved locally

Africa is now a very interesting place to farm.

Mobile phone subscriptions will reach 1 billion by the end of the year

With this power in your hands, you can ensure a hygienic environment in your animal husbandry system, ensure higher productivity and profitability, but also ensure that farmers have the right knowledge and, more importantly, their safety.

Working with smallholder farmers has a tremendous impact on food security.

Working with smallholder farmers is a powerful way to give every child the opportunity and the ability to function innately.

Millions of smallholder farmers and cool cows like Thelma and Louise could use their vitality to end child stunting in Africa.

thank you

(Thank you for applause

I love my job in marketing, but my first real passion was physics, thanks to one amazing teacher, back when I didn't have many gray hairs.

My teacher taught me that physics is interesting because it teaches us about the world around us.

So I'm going to tell you that physics can also teach us something about marketing.

Can you raise your hand for a second? Anyone who studied marketing in college?

Who studied physics in college?

In junior high school and high school?

everyone is studying

(Laughter)

Now let's talk about physics and marketing.

First, from the easy-to-understand Newton's law F = ma (force acting on an object = mass x acceleration)

Turkish Airlines, perhaps, would have been better off studying this law, (Laughter), before running the campaign.

(Laughter) Rearranging the equation a little, acceleration = force acting on an object divided by mass, which means that the more mass an object has, the more force it takes to change its direction of motion.

This is also true for brands: the bigger the brand, the more stumbling blocks, the more force it takes to change its positioning.

This is one of the reasons why Arthur Andersen didn't try to convince the public that he could do more than just auditing, and instead founded Accenture.

That's why it's hard to understand that Hoover isn't just a vacuum cleaner company, and why companies like Unilever and Procter & Gamble have separate brands like Oreo and Pringles and Dove and don't merge them into one.

So in physics, the more mass an object has, the more force it takes to change its direction of motion.

In marketing, the more famous a brand is, the harder it is to reposition.

I want you to think about your portfolio of brands and the brands you use for new businesses.

Remember Heisenberg's Uncertainty Principle?

Getting a little more professional

This principle states that it is inherently impossible to accurately measure the position and momentum of subatomic particles, because the measurement itself changes the state of the particles.

What I mean by that is, if you have an elementary particle, and you shine light on it, the light particle has momentum, so it pushes the elementary particle away.

The act of measurement itself changes the object of measurement.

Observation drives change

Same with marketing

Consumer behavior changes when observed

For example, in a focus group, almost no one would tell mothers who are talking about their proud children that they buy a lot of junk food.

But McDonald's sells hundreds of millions of burgers each year.

People who go shopping with me at the supermarket put a lot of fresh vegetables and fruits in their shopping carts, but they don't usually shop like that.

And I wonder how many people answer surveys that they watch porn on the Internet on a regular basis, very few.

But the most searched for on Google is porn

So the good news is that marketing is getting easier.

Through advanced point-of-sale and digital media usage, we can see what consumers do, not what they say.

So in physics, exact measurements of elementary particles are impossible because of the effects of the measurements.

The application of this to marketing is not to ask consumers what they will or will do, but to measure what they actually do.

And then there's the scientific method, which is fundamental to physics and science in general: observations can't prove hypotheses, they can only disprove them.

What this means is that you can gather a lot of data and strengthen a hypothesis or a position, but you can't prove it conclusively.

And it takes just one piece of rebuttal data to wreck a theory.

For example, Ptolemy, based on dozens of data, proposed that the planets orbit the Earth.

One solid observation by Copernicus shattered that theory.

There's something similar in marketing, where even if you invest in a brand over a long period of time, one counterexample to that positioning can destroy consumer confidence.

Look at BP, it's spent years and millions of pounds building its image as a green company, and it's been ruined by one silly accident.

so is toyota

For a long time, Toyota cars were beloved for their reliability, but then there was a massive recall.

Tiger Woods has also been the perfect face for the brand for a long time.

You know what happened after that

(Laughter) So in physics, you can't prove a hypothesis, but it's easy to disprove it, and all hypotheses are uncertain.

In marketing terms, no matter how much you invest in a brand, a week of notoriety can squander decades of hard work.

Be careful not to make mistakes that ruin your brand

And the last one is the second law of thermodynamics in the slightly esoteric world of entropy.

According to this, entropy, which represents the degree of disorder in a system, is constantly increasing.

Same with marketing

Twenty years ago, a single message, arbitrarily chosen by a marketing executive, could define a brand's image.

But that's not the case with us now.

It is possible to present a compelling brand image and message to the public, as the Conservative Party did with its election posters earlier this year.

But then you lose control

There are now digitized comment creation/distribution tools available to all consumers [Twitter: That election poster photo has been retouched, right? ] It is impossible to completely control the image of the brand

The brand will spread more and more.

[No digital processing] (Laughter) It gets out of control [I will deceive you with the power of data]

[He spoke at TED, so be nice.] (Laughter) I really liked his talk.

As a marketer, you'd be worried, but this is actually a good thing.

By diffusing the energy of the brand, the brand becomes familiar to people and blends in.

This energy diffusion is a democratizing force that ultimately is good for brands.

So what we learn from physics is the basic law that entropy always increases.

In marketing, the brand spreads.

It's no use resisting, so accept it and find a way to use it.

So in closing, I was told by Dr. Vatter that physics is interesting, and I hope you all realize that physics can also give you some special tips in marketing.

thank you

(applause)

Martin Luther King didn't say, "I have nightmares," when inspiring the civil rights movement.

"I have a dream," he said

and i have a dream

The dream is to stop thinking about the nightmares that await us in the future. This is a big challenge. If you look at all the big movies in recent years, almost all of them have portrayed humanity in an apocalyptic way.

"The Road" is one of the hardest films to watch in recent times.

It's a beautiful movie, but everything is devastated and dead.

Only one pair of father and son will walk the road to survive.

The environmental movement, which I'm part of, has been instrumental in creating this apocalyptic future.

For too long, we've been propagating a nightmarish vision of what might happen.

for worst-case scenarios and problems

focused

I haven't come up with enough solutions

He's used fear, so to speak, to get people's attention.

Psychologists would say that fear is associated with flight.

Animals fight or flee when frightened, deer, for example.

Be ready to run away at any time and stop moving

We do the same thing when we ask people to get involved in issues like environmental degradation and climate change.

They freeze up and run away because they're appealing to their fear.

The environmental movement should take a look at itself and think about what progress is.

What does it mean to turn people's fortunes around?

One of the problems we face is that what's cornered the market in terms of progress is progress in the financial and economic sense, whether it's in stock prices or GDP or economic growth, the assumption is that rising numbers will lead to affluence and better lives.

The idea that more is better appeals to human desire, not fear.

But wait, we in the West are rich enough.

Some parts of the world are not rich, but we are not.

And I also know that these numbers don't measure how prosperous a country is.

In fact, Simon Kuznets, who designed America's accounting system, said in the 1930s, "A country's prosperity can hardly be measured by its national income."

But we created a national accounting system based on production and manufacturing.

Was it in line with the times?

During World War II, we had to produce a lot of things.

In fact, it was so good at building certain things that it destroyed Europe so much that it had to be rebuilt later.

So the national accounting system became obsessed with production.

But in 1968, the visionary Robert Kennedy denied Gross National Product more eloquently than ever in the early days of a presidential campaign that unfortunately ended in assassination.

At the end of his speech, he said, "Gross national product can measure everything except what makes life worth living."

What do you mean, the metrics we use to measure social progress measure everything, but not what makes life worth living?

If Kennedy were alive, he'd want a statistician like me to figure out what makes life worth living.

They'll tell you to remake the country's accounting system based on important metrics like social justice, sustainability, and people's well-being.

In fact, social scientists around the world are asking these questions.

Here are the results of a global survey

listening to what people want

Not surprisingly, all over the world, people want happiness for themselves, their children, their families, their communities.

considers money to be of little importance

I think about money, but it's not as important as happiness or love.

we all want to love and be loved

money is also not as important as health

We all want to live a healthy and fulfilling life.

These are the natural human desires

So why don't statisticians measure these things?

Why don't we use these indicators instead of material wealth to measure our country's progress?

As an adult, I've been thinking about ways to measure happiness, ways of measuring happiness that take environmental constraints into account.

And at my current job, the New Economy Foundation, I created an index called the Global Happiness Index, and I believe that both humans and the planet should be happy.

So there are indicators that combine the two.

We believed that the ultimate outcome of a country was to enable its citizens to live happy and healthy lives.

Every country on earth should aim for that

But in doing so, we must not forget how much of the earth's resources we are using.

The earth is one, we must all share

One planet to share - this is the ultimate scarce resource

Economics focuses on scarcity

If we want to produce desirable results from scarce resources, we have to think about efficiency.

You have to think about the return on investment.

This is how we measure the yield of happiness relative to the use of the planet's resources.

is to measure efficiency

It's easiest to see this graph

The horizontal axis of the graph is the "ecological footprint," which shows the amount of resources used and the impact on the planet.

Large numbers are not desirable

The vertical axis shows the number of years you can live happily.

It's about the welfare of the country

It's like life expectancy multiplied by "happiness"

You could say it's a measure of the quantity and quality of life in a country.

The yellow dot is the global average

There are many countries around the average

At the top right of the graph are countries that are doing well and creating happiness, but spending a lot of resources to do it.

The United States, European countries, some Gulf countries, etc.

On the other hand, in the lower left corner of the graph, there are countries that don't produce much happiness, like sub-Saharan Africa.

In the words of Hobbes, it's a region where life is short and harsh.

In many of these countries, life expectancy is just 40 years old.

Malaria and AIDS are killing millions of people.

But there is also good news!

Countries represented by the yellow triangles are doing better than the global average and are in the upper left corner of the graph.

This is an ambitious graph

In the upper left, a good life is being done without sacrificing the earth

it's latin america

I have never been to the top country

Some of you may have gone

Costa Rica

In Costa Rica life expectancy is 78.5 years -

longer than America

According to a recent Gallup global survey, it's the happiest country on earth, happier than Switzerland, happier than Denmark.

And that

We're doing this using only a quarter of the resources that European countries use, a quarter.

in Costa Rica

What's happening?

I have some data

99% of energy is generated from renewable sources

It was also one of the first countries to commit to becoming carbon neutral by 2021.

In 1949, we abolished the army, in 1949.

And they're spending money on social programs like health and education.

Costa Rica has one of the highest literacy rates in the world

And with a Latin temperament

connected to society

(Laughter) We have to think hard about the future, and we shouldn't be aiming for a North American or Western-style society, but something like Latin America.

maybe society

The problem is the world average

to bring it up here

And to do that, we have to pull the countries at the bottom of the graph up, and pull the countries on the right to the left.

Then we can start building a happier planet

that's one way of looking at it

Another way to look at it is to track changes over time.

We don't have historical data for every country, but we do for rich countries in the OECD.

Happiness has gone up a little bit, but our ecological footprint has grown even more.

What the Global Happiness Methodology tells us is that we're becoming less efficient at using extremely scarce resources to produce desirable outcomes.

The point is, maybe everyone here wants to see society in the year 2050 without anything apocalyptic happening.

it's not that far away

half a human lifespan

Children entering elementary school this year will be my age in 2050.

It's not about the distant future

The UK government's greenhouse gas reduction measures are considered within this period.

So it's not like normal business.

Looking ahead to 2050

Businesses, organizations, policies, the way we live our lives will change.

The important thing is that we have to increase our happiness.

No one can say that it's okay for an election to reduce the quality of life.

No one would think that human progress should stop.

i want to move on

you must want to be richer

This is where climate change skeptics come in.

I want to improve my life

I try not to lose what I have gained

We have to get along well with those people.

We need to be more efficient

It's easy to draw graphs and things like that, but the important thing is that you have to change the direction of the curve.

That's where systems theory and systems engineers come up with feedback loops that use the right information at the right time.

Humans are motivated by the present

If you could put a little meter in your house and see how much electricity you're using and how much you're paying for it, your kids would immediately turn it off.

What would happen if we thought about it as a society as a whole?

Every night on the radio news, stock prices and exchange rates, I don't even know if the sterling is stronger or weaker.

I don't want that kind of news

I'd like to hear the news about yesterday's energy use in the UK and the US.

The news is that the goal of reducing carbon dioxide emissions by 3% each year has been achieved.

Then you can create a collective goal

I put it in the media and think about it

On the other hand, improving well-being requires positive feedback loops, such as building a national welfare accounting system at the government level.

In business, we think about the well-being of our employees, and it's deeply tied to creativity and innovation.

They are also needed on an individual level

Reminders are more important than data

In the UK, there's a strong public health campaign -- five servings of vegetables and fruits a day -- and they're telling you how much exercise you need -- but I'm not doing much.

How do these things relate to happiness?

What are the 5 things you should do every day to be happier?

A few years ago, with the government agency for science, we did a massive study called the Perspectives Program, which involved a large number of people, including a large number of experts, and produced a huge evidence-based report.

Our theme was "What are the five behaviors that lead to an improvement in happiness?"

What's important is that these five behaviors aren't the secret to happiness, but that happiness is created through them.

The first is connection, which means that our relationships in society are the most important foundations of our lives.

Are you spending your time and energy with your loved ones?

please continue to do so

Second, be active

The fastest way to get out of a bad mood is to go outside, take a walk, turn on the radio and dance.

Being Active Leads to a Positive Mood

Third is to pay attention

How much do you care about what is happening in the world, the changing seasons, the people around you, etc.?

Are you aware of what is bubbling up within you?

There's a body of evidence that mindfulness and cognitive-behavioral therapy are strongly associated with well-being.

And number four is to keep learning. It's important to keep learning. To keep learning for the rest of your life.

Older people who are curious and keep learning are much healthier than those who are just starting out.

Doesn't have to be formal learning

It's curiosity-driven, not knowledge-based

It could be learning a new dish, or playing an instrument that you couldn't play as a child.

keep learning

And the last one, the least economical action, is giving.

Generosity, altruism and compassion, all of which are deeply tied to reward mechanisms in the brain.

I feel good when I give

There's an experiment in which two groups are given $100 each.

Tell one to use it for themselves and the other to use it for others.

At the end of the day, when we measure their happiness, they feel much happier spending it on others than they do on themselves.

The 5 ways in this handy card won't cost the planet.

does not contain carbon

You don't need a ton of substance to get satiated

It's possible to be happy without sacrificing the planet.

Martin Luther King gave a wonderful speech on his deathbed

"Difficulties and problems await me, but I fear nothing and I care nothing.

For I have stood on top of a mountain and have seen the promised land."

He was a pastor, but the environmental movement, the business community, and governments, too, need to go to the top of the mountain, look into the distance, see the promised land, and have a vision of the world we all want.

And that's why we're creating big changes and opening up for the better.

Humans are happy-seeking creatures.

Find happiness in 5 ways

To do that, we need signposts like the Global Happiness Index that connect people and point them in the right direction.

Then we can create the world we all want, where happiness doesn't destroy the planet.

(applause)

The planet we live on is dominated by humans, putting an unprecedented strain on the planetary system.

This is bad news, but surprisingly, it's also good news.

Thanks to science, we are the first generation to realize that humans are sacrificing the stability and capacity of the planet for development.

The other good news is that the global crisis we're facing is so severe that we can no longer continue the way things have been done.

In fact, we are in a time of radical change, and we must embrace innovation, new ideas and methodologies.

This is a scientific journey for humanity to meet the challenge of achieving a sustainable planet.

On this journey, I would like to invite another person, a good friend who has always been absent from our environmental conferences, a stakeholder and a stakeholder who is uncompromising, the planet Earth.

So today, I would like to invite the Earth to the stage as a witness to this wonderful journey, and to reflect on the wonderful times we have enjoyed over the past 10,000 years.

This shows the Earth's environment over the last 100,000 years.

It's a very important period. Around the middle of the graph, humans appeared that were no different than we are today.

We were about as capable as the human race that developed civilization at that time.

This is the environmental condition of the earth

This is a graph showing the degree of temperature change as an index.

80,000 years ago, in the crisis, humans left Africa, 60,000 years ago, in the crisis, they migrated to Australia, and 40,000 years ago, in the crisis, they left Asia for Europe.

1,000 years into this era, humans stopped hunting and gathering.

We've gone from a population of about 2 million people to 7 billion today.

The Mesopotamian culture invented agriculture, domesticated animals and cultivated plants.

Rome, Greece, you know what's beyond

As far as we know, it's only this time of year where the problem is with the Earth

So there are four pressures. First, of course, is population growth. Now, it's not just numbers.

It's not just that we're going from 7 billion to 9 billion, but it's also a question of equity.

It's because of the few rich countries, the 20 percent that have been riding the wave of the industrial revolution since the mid-18th century, and the majority of the people on the planet.

You want to develop, you have the right to develop, you yearn for an unsustainable life, and you're putting a lot of strain on the planet. The second pressure on the planet, you know, is climate change.

The big issue is the political interpretation of science that stabilizing greenhouse gases at 450 ppm would avoid an average temperature rise of more than 2 degrees Celsius, and avoid the danger of a sea level rise of 6 meters from the melting of the West Antarctic Ice Sheet.

You might wish that the pressures of climate change were on a robust, resilient planet, but unfortunately the third strain is ecosystems that are declining like never before in the last 50 years.

A rapid decline in ecosystems is occurring across the globe, including the decline in the ability of forests, land, and biodiversity to regulate long-term climate. The fourth strain is abrupt change.

So far, ecosystems have been linear, predictable, and controllable. But there's a well-grounded way of thinking that we need to abandon that methodology. In fact, sudden change is a universal phenomenon, and it often happens that a system suddenly exceeds its limits and becomes irreversible.

It's putting a serious strain on us, and in fact we may be entering a new geological epoch.

We are living in an era in which humans are the main driver of change on a planetary scale, and from a scientist's point of view.

what is the evidence what is the evidence

Unfortunately there are enough like hockey sticks

It's not just carbon dioxide that is accelerating change, it's fundamentally about human survival.

It doesn't matter what parameter you choose: nitrous oxide, methane, deforestation, overfishing, soil degradation, species loss, etc. They all show the same pattern over the last 200 years.

It's been 10 years since World War II, and it's very clear that human activity has accelerated tremendously since the mid-'50s, and for the first time we can see the impact on a global scale.

I can definitely say

No matter what area of ​​academic research you do, you're bound to discover something very important, that humanity may be reaching a point where this ascent should stop, and that we may be entering one of the most challenging and interesting decades in human history on Earth.

It's not enough just to recognize the increasing pressure on the planet. We must recognize that the system has multiple steady states, split at certain junctures. In this ball-and-dip diagram, the depth of the ditch is the resilience of the system.

When you get stressed by climate change, erosion, diversity loss, you lose the depth of your pits, your resilience.

So you end up in a situation you don't want, where new rules of biophysics, new species take over, and the system gets caught there.

Diverse organisms live in low-nutrition reef-building corals

We're under pressure from overfishing, unsustainable tourism and climate change.

Losing their resilience and replacing them with soft corals leaves an unfavorable system that cannot support economic and social development.The beautiful ecosystems of the Arctic.

It's a global biome, and it's been thought that it's been in good shape all along with the effects of climate change, and it looks like we've crossed the breaking point in 2007.

No scientist could have predicted the sudden change.

It's gone down by 30 to 40 percent, given that kind of upheaval in the system.

The rules may have changed, we may have fallen into an undesirable situation

The color of the surface changes, the energy absorption increases, and the system may get stuck, which means that humanity is in danger.

The biggest warning is the red flag By the way, speaking of the red flag standing here

It's just that a submarine sent by a certain country has planted a red flag on the bottom of the Arctic Ocean to control its oil reserves.

The behavior of wetlands, forests, monsoon systems and rainforests is non-linear.

I asked myself the first question, "Should the earth stay in a hollow?" You have to ask yourself.

Are we compromising this extremely stable Holocene state? In fact, the situation mankind has brought upon itself

Are we getting too close to the tipping point, which could lead to catastrophic changes in human development that we don't want at all? Nobody wants to stand there.

where he actually stands

You're not even allowed to go there. The water is foamy and slippery.

There's a fence, and from there it's a danger zone, and we've been doing it for the last couple of years.

We've got a new methodology. Gone are the methodologies of analyzing graphs and numerical volatility and trying to predict the future and minimize the impact on the environment. Now ask yourself.

What are the most important environmental processes that must be maintained for our safety in the Holocene now? With the development of earth system science

Was it possible to find the breaking point where the non-linear change begins? Humanity can live safely

Tolerance – can you set a fence? Published in Nature at the end of 2009

Based on years of analysis, research has come to the following conclusion: By actively overseeing just nine tolerances, we can ensure that we have the space in which we feel safe to operate, one of which, of course, is the climate.

You may be surprised that it's not just the climate

Of the many systems on Earth, there are three that are particularly important.

The three major systems are climate change, stratospheric ozone depletion, and ocean acidification. These three large systems provide scientific evidence of the greatest variability in the geological history of our planet.

It's the behind-the-scenes system that regulates and protects the planet's resilience: disruption of the planet's nitrogen and phosphorus cycles, land-use change, the rate of biodiversity decline, freshwater use, etc. Systems that regulate global biomass, carbon removal, diversity, etc.

air pollution from greenhouse gases, pollutants such as sulfides and nitrides, air pollution from greenhouse gases, pollutants such as sulfides and nitrides, and chemical pollution, all of this as an integrated whole.

Here are some guidelines for the development of the Anthropocene, based on the understanding that the Earth is a complex, self-regulating system.

There's a lot of evidence that "one for all, all for one" is linked like the Three Musketeers, deforesting and pushing the boundaries of the land.

It undermines the ability of the climate system to remain stable, surprisingly possibly.

The issue of climate may be the easiest of all the transformations for sustainable development, and this picture is the evolution of humankind.

It's an acceptable range for us to live in safety. Humans can live safely within this black line.

It's a quantitative tolerance, as shown in this study. The yellow dot in the middle is the starting point.

So it's pre-industrial, and at this point, it was barely acceptable, but in the '50s, it started to spread outward.

In the 1960s, the Green Revolution and

Expanded further with the Haber-Bosch process of converting atmospheric nitrogen into other substances, humans are currently taking in more nitrogen from the air than the entire biosphere uses.

It was never out of tolerance, and now it's out of tolerance on three conditions.

The rate at which species are being lost is about the sixth mass extinction, similar to the time when the dinosaurs went extinct. Nitrogen, climate change is also a problem.

We're rapidly reaching the limits of land, water, phosphorus, and oceans.

Humanity can use a new way of thinking to light up around the dark, straight highways we've been riding on the past too fast of industrialization.

How serious is the situation? Is sustainable development a pipe dream?

science does not answer

enough to make this revolutionary change

The scientific material is there, and it's been shown that it's possible to switch gears for transformational change at different scales.

It means that the 200 countries of the world must move in the same direction at the same time, by changing the political and administrative frameworks.

The key to responding to this turbulent era of global transformation is to move from the efficiency and optimality mindset of our current linear chain of command to a more flexible and adaptive way that leaves redundancy in both social and environmental systems.

We must invest in fostering sustainability, to withstand shocks and to remain in the desired niches, the forces and powers to make change from crisis to innovation.

We need to invest in our resilience to bounce back from the crisis and our resilience to the inevitable change. This is the new paradigm.

It's something that no government, at any scale, has done.

So where is this change happening?

this change in thinking

Are there any successful examples applied at the local level? There is actually

There are more and more success stories, for example in Latin America.

In the 1950s and 1960s, this region was primarily plow-plowed, but that was not sustainable. Yields were dwindling and the soil wasted. Eventually, it became a life-threatening problem. Innovation and entrepreneurship arose in countries as diverse as Paraguay, Uruguay, and Brazil. In some countries, increasing the area of ​​mulching and no-till farming has resulted in higher yields and lower carbon emissions at the same time, such as Australia's Great Barrier Reef.

Tourists, fishermen

Governments and scientists in the Great Barrier Reef region have realized that if we continue to manage the Great Barrier Reef as it is, the Great Barrier Reef will be doomed.

Overfishing, unsustainable tourism, and more have put the Great Barrier Reef in jeopardy, requiring innovation and new thinking to solve the problem.

Incorporation, and from there a whole new way of operating has been put in place: making the system more resilient, embracing redundancies, investing in the whole system as an integrated whole, and allowing a lot of redundancy within the system.

Wetlands in southern Sweden, as in other countries, were seen as polluted and nasty, causing flooding in urban areas, but here too, the crisis has spawned new coalitions.

Locals stood up and created sustainable urban plans, which turned crisis into opportunity.

What about the future?

One big challenge awaits

It's feeding nine billion people, and we really need a new green revolution.

To stay within tolerance, agriculture needs to go from being a source of greenhouse gases to being a sink, and we have to do it on the land we have.

Humanity cannot expand further

Because it would exceed our tolerance, and we can't continue to consume water like we do now.

Already, 25 percent of the planet's rivers don't reach the ocean, so change is needed.

Interestingly, myself and African researchers

Research has shown that even the most vulnerable, small-scale, rain-fed farming styles can be revolutionized through irrigation between dry and wet seasons, sustainable sanitation that circulates fertilizer from toilets to fields, and changes in farming that can triple or even quadruple yields on the same land we are currently using.

Elinor Ostrom says that empirically all regions of the world can manage shared resources, and that requires trust, action-based cooperation, and institutional innovation at multiple scales -- institutions where people work together to manage global shared resources.

Stop Dependence on Fossil Fuels Now

We know we need to move to a low-carbon economy in record time. What do we do?

There's been a lot of talk about things like carbon taxes and emissions trading, but it's going to be difficult.

But energy policies like feed-in tariffs, for example, are actually being implemented in China, for example, in coastal wind farms, and in the United States, while offering price guarantees for investment in renewable energy.

Poor people's electricity bills are subsidized, they lift people out of poverty.

in the energy sector

It can solve the problem of climate change and at the same time inspire innovation, a case that can be quickly applied across the planet, so the potential is definitely there.

I can enumerate the many transformational opportunities that exist around the world, the keys to their success.

The red thread is a change of mindset. Instead of plunging into a bleak future, instead of looking into the future and looking at the present, what kind of grounds are we playing on?

Think about the boundaries and guide innovation within those boundaries.

but here a slow change

We can't wait, and there's scientific evidence to prove it.

it's a very harsh situation

We're on the cusp of the biggest change, the biggest development since the industrial revolution.

It's going to be more dramatic and exciting than the process that got us to where we are now, while staying within acceptable bounds.

Science tells us that we can have a prosperous future. If people all over the world at the same time, at the local level and the global level, could work together to make a difference and bring resilience to our finite planet, thank you.

(applause)

Interpreter: What I'm feeling right now is that what I meant to say has been said by all the other speakers.

(Laughter) All I have left to do is thank you for your kindness.

But in order to thank you all for your kindness, I'd like to tell you a short story about myself.

Ever since I was a little girl, I've had a lot of different responsibilities.

all the plans were already made

I was given clothes to wear and told where to go.

But before that ceremonial life began, I lived with my family in eastern Tibet.

When I was seven years old, all of a sudden, a search team came to my house.

They were looking for the next Karmapa, and I found them talking to their parents, and then I was told that I was the Karmapa.

People often ask me what it was like these days.

What does it feel like when a search team comes and whisks you away and your life changes forever?

What I usually say is that I thought it was a very interesting idea at the time.

I thought this would be fun, and I'm sure I could play with all kinds of things.

(Laughter) But it didn't turn out to be as funny and fun as I imagined.

I was placed in a very tightly controlled environment.

And soon I had a lot of responsibilities, an education, a lot of things.

I was almost separated from my family, including my father and mother.

I didn't have many friends to hang out with, but I was expected to do my duty.

So the fantasy of living a happy life as a karmapa was unfulfilled.

Rather, for me, it was like being treated like a statue and sitting like a statue in one place.

And yet, even though I've been separated from the people I love, even more so now, of course.

At the age of 14, I fled Tibet, becoming more and more distant from my mother and father, relatives and friends, and my homeland.

Yet there was no feeling of separation in my heart, and my love for them never parted.

I still feel a very strong connection to my love for them and my country.

Although not often, I still keep in touch with my mother and father.

Only occasionally do I talk to my mother on the phone.

When I was talking to my mother, what I experienced was the feeling that the love that binds us is bringing us closer and closer with each passing second of our conversation.

That's just a small part of my background.

The other thing I would like to share with you is ideas. I think it's great to have a place like this, an environment where so many people from different backgrounds and backgrounds come together to exchange ideas and build friendships.

I think this epitomizes our general view of the world, which is that the world is getting smaller and smaller, and everyone in the world is enjoying more and more opportunities to connect.

This is great, but there's also something we need to remember: we need to make that same change within ourselves.

In parallel with the progress and opportunities that are happening on the outside, there should be inner progress and deeper connections, as well as connections on the outside.

Over the past week, we've been talking and listening to a few things about design.

I think it's important to remember that we need to continue to push our efforts when it comes to designing the mind.

We've heard a lot about technology, but what's important is that we remember to invest a lot of energy into improving the technology of our minds.

So while I'm generally happy with the wonderful progress that's happening in the world, I also have the impression that our ability to connect with each other on a heart-to-heart, mind-to-heart level is hampered.

I have a feeling that something is blocking me

I have an interesting relationship with this concept of heart-to-heart, heart-to-heart connection, because as a religious leader, I've always tried to be open and dedicated to others, to create a real heart-to-heart, heart-to-heart connection with others.

So there's an interesting paradox there.

But I once had a very shocking experience, when a group of people from Afghanistan came to visit me, and we had a very interesting conversation.

We're talking about the Bamiyan Buddha, which, as you all know, was destroyed in Afghanistan some years ago.

But our conversation was based on the differences in how Muslims and Buddhists approach spirituality from traditional aspects.

Of course, Islam teaches about the concept of idolatry, so you don't see the embodiment of divinity or spiritual liberation in the way that Buddhism does.

So when we were talking about the differences between Islam and Buddhism, and how many people perceive the tragedy of the destruction of the Bamiyan Buddha statue, I suggested that we could look at this in a positive light.

In the case of the destruction of the Bamiyan Buddha, we saw a solid material fall and disintegrate.

Couldn't we think of this as akin to the fall of the Berlin Wall, where the fall of the wall that separated people into two groups opened the door to greater communication?

In this way, we can always think positively so that we can understand each other better.

In terms of development, which we've been talking about in this conference, I feel strongly that the developments we're making should be used to improve our basic way of life, how we live in the world, rather than adding more burden to us as human beings.

Of course, I am pleased to see the progress and growth that is taking place in this wonderful and wonderful country of India, but at the same time, as some will admit, this progress has, in some ways, come at the expense of our own footing.

It's like climbing a tree, and what we do to climb a tree is actually weakening its roots.

And that's why I think, ultimately, the problem is not just getting information about what's going on, but turning our attention to it, so that our motivations change to be more sincere and genuinely positive.

Over the past week, we've heard stories of the terrible plight that so many women around the world endure every day.

Even with all this information, we often don't choose to pay attention to it.

We don't choose to let it make a difference in our hearts.

I believe that the way the world moves forward -- the way that we bring outward development into harmony with the source of our true happiness -- is to allow the information we have to make real changes in our minds.

I believe that sincere motives are very important to our future happiness, our well-being as human beings, and it's about putting ourselves into what we're doing right now.

Whatever work you're doing for the world right now, put yourself in it and enjoy your work.

We've all gathered here this week, and we've taken a million breaths together, but perhaps nothing life-changing is happening before our very eyes. We tend to miss the subtle changes.

Sometimes we create for ourselves grandiose notions of what happiness looks like, but I think if we pay attention, we'll find that there are signs of happiness in our breath, too.

You all have so much to offer the world, and I'm going to take a few moments to say thank you for being so lucky. We're here to meet, to exchange ideas, to actually create high aspirations and energies within ourselves, to use this space as a catalyst - to take good deeds, momentum, positivity, spread it, and plant it in every corner of the world.

His Holiness Karmapa: Tomorrow is my story

Lakshmi has done an incredible job. It's hard enough just to invite me, but of course she worked hard to make this talk happen.

I felt unwell and had dizziness.

He said, "I have to give a talk tomorrow."

Lakshmi had to deal with me, but I am very grateful that she gave me the opportunity to come here.

and thank you all

(Applause) His Holiness Karmapa: Thank you very much.

(applause)

Hello everybody

"Sawubona"

In South Africa, where I'm from, "saubona" ​​is the Zulu word for "hello."

It's a beautiful and powerful statement. It literally translates to "You exist because I see you."

what a beautiful greeting

But how can we see ourselves?

How to see your own thoughts, feelings, stories that help you move forward in an increasingly complex and tense world?

I've spent my life wrestling with this all-important question.

Because it all depends on how we treat our inner world.

How to love, how to live, and how to raise and guide children

Until now, the way we perceive emotions is fixed, whether it's good or bad, positive or negative.

In complex situations, this pedantic way of thinking is toxic.

We need more emotional agility to truly recover and grow.

In this mission, I began my journey not from the sacred halls of learning that are colleges, but from the troublesome and delicate events that I have encountered in my life.

I grew up in a white township in apartheid-era South Africa, where the whole country was desperate not to see.

deny the fact

That denial allowed racist laws to stand by for 50 years, and people believed nothing was wrong.

But before I realized what that denial meant to my country, what happened to me made me realize the devastating power of denial for the first time.

One Friday my father passed away

At the time, my father was 42 and I was 15.

That day, my mother whispered to me to say goodbye to my father, and I was on my way to school.

I put down my rucksack and walked down the hallway to the center of the family, my father, who was on the floor with cancer, on the brink of death.

My father had his eyes closed, but he knew I was there.

Whenever I was by your side, I always felt like my father was watching over me.

I told my dad I loved him, said goodbye and headed off to school.

While I was in school taking science, math, history and biology classes, my father passed away.

May passed, July, September, November, and I spent it with my usual smile.

without lowering grades

When people ask me how I'm doing, I shrug my shoulders and say, "I'm fine."

I was praised for being a strong child

I was a master of "okay"

But at home, we were all struggling. My father's small business stopped working when he got sick.

My mother was alone raising three children, mourning the loss of a loved one, and was being chased by debt collectors.

Our family was devastated financially and emotionally.

I became depressed and isolated very quickly.

I learned to cover up the pain in my heart by eating

Repeated binge eating and vomiting

I refused to accept the sadness as it is

No one noticed, and I assumed that in this positivist society, no one would want to know.

But there was one person who didn't believe my "overcoming grief" story.

My eighth grade English teacher looked at me with passionate blue eyes and handed me some blank notebooks.

I said, "Write down how you feel now."

"Tell me your true feelings

I write because I think no one will read it."

That's how I was told to let go of my sadness and heartache.

It was so simple, but in my mind it was a revolution.

It was this revolution that started 30 years ago with this blank notebook, and that's why I have my life's work today.

In that secret, quiet dialogue with myself

Like a gymnast, I began to move past stubborn denial and move on to what I now call "emotional agility."

Life is beautiful because it's fleeting

youth is limited

Even if you're walking around the city, attracting everyone's attention, before you know it, no one is paying attention to you anymore.

I used to nudge my children, but before I knew it they were gone and had their own lives, leaving only silence where they used to be.

I can stay healthy until someday I'm diagnosed with an illness

The only thing that is certain is that it is uncertain, and yet we do not handle this fragility well or properly.

According to the World Health Organization, depression is now the number one cause of disability worldwide, surpassing cancer, surpassing heart disease.

And in an era of unprecedented complexity, technological, political, and economic change, I feel that people are becoming more and more obsessed with how they feel about themselves.

Obsessed with my feelings to an abnormal degree

I can't get out of my thoughts

Trying to be right

I am devastated by the news

On the one hand, we try to lock up our emotions, push them aside, and only accept those emotions that are considered "right."

In a recent survey I conducted of 70,000 people, I found that one-third -- one-third -- do you think you have "bad emotions" when it comes to things like sadness, anger, and grief.

I was deliberately trying to push those feelings aside.

We do this not only to ourselves, but also to our children and other loved ones. We may inadvertently dismiss negative emotions as embarrassing, and in our rush to resolve them quickly, we may not be helping them to value those emotions.

Consider naturally occurring feelings that are natural and good or bad

The idea that being positive is the right thing to do is pervasive.

Cancer patients are naturally told to just stay positive.

Women are told not to get too angry

There are more stories like this

this is arrogant

It's a tyranny of positivity

it's cruel

Ruthless dashi

it doesn't help

We do this to ourselves and to the people around us.

If there's one thing we can all say in common with all of the things we keep thinking about, suppressing, and forcing ourselves to act brightly, it's that they're all just shoddy responses.

The failure of apartheid was inevitable, but if there's one lesson to be learned from it, it's that stubborn denial does nothing.

someday it will be impossible

For individuals, families and society

As you can see from the ever-melting ice caps, it's not possible for the planet either.

Research on emotional repression shows that feelings of being relegated or ignored become stronger.

Psychologists call it "amplification"

If you have a delicious chocolate cake in your fridge... the more you try to ignore it...

(Laughter) You're becoming more and more obsessed with desire.

When you ignore your negative emotions, you may think you're in control, but instead, you're in control.

The pain in my heart always comes out

definitely

who will be the victim

we are

It's the kids, it's the co-workers, it's the community.

don't get me wrong

I'm not against happiness

i like being happy

I'm actually pretty happy

But if you pretend to push out your natural emotions by trying to stay positive, you won't be able to develop the skills to deal with the world as it is, because the world isn't what you want it to be.

After asking hundreds of people how they don't want to feel,

I got an answer like, "I don't want to be disappointed, so I don't want to try."

"I want this feeling to go somewhere"

I say "Yeah

But that's like aiming for the dead."

(Laughter) (Applause) Because only dead people aren't haunted or harassed by emotions.

(Laughter) Only the dead don't get stressed, they don't get hurt, they don't get discouraged when they fail.

Hard feelings are inevitable in life

If you want to build a meaningful career, if you want to raise a child, if you want to make this world a better place, stress and unpleasant emotions are inevitable.

Discomfort is the price you pay for living a meaningful life.

So how can we change our rigid thinking and develop emotional agility?

When I, a young schoolgirl, wrote down my feelings in a notebook, I began to throw away my feelings of how things should be.

Instead, I began to open up to my true feelings.

pain

sorrow

sense of loss

regret

Now research shows that full acceptance of all emotions, even the most troubling and difficult ones, is essential to resilience, living strong and being truly happy.

But emotional agility isn't just about accepting emotions.

I know accuracy is important too.

In my research, I found that language really matters.

We tend to choose words too easily to express our emotions.

"Stress" is the word we hear most often.

"Stress" is very different from "disappointment", nor is it the anxiety that "I made the wrong career move."

When we can express our emotions in precise words, we can understand more clearly why we feel that way.

And that activates what scientists call the "readiness potential," in the brain, so that it can take specific actions.

But it's not just anything, it's what works for you.

Emotions are data

Emotions let us shine a light on what's important to us.

We don't often have strong feelings about things that don't matter.

If you read an article and it makes you angry, that anger may be a sign that you care about fairness and equality.

If you open your mind to negative emotions, you can create behaviors that are in line with your values.

just an important warning

Emotions are data, not control towers.

You can follow your emotions, and your emotions can inform your values, but you don't have to follow your emotions.

I stand by my son who is annoyed by his little sister, but I don't buy into his idea of ​​giving my sister to the first person I see at the mall.

(Laughter) Emotions are ours, not the other way around.

Understanding the difference between what you truly feel and what you do based on your values ​​opens the door to your best self through your emotions.

So what do we actually do?

If intense and painful emotions come your way, don't rush to get rid of them.

I try to capture the outline of that emotion and write it down in my heart's notebook.

What are those feelings trying to convey?

Please don't say "I'm angry", "I'm sad" or "I'm"

When you say "I am," it sounds like you are the emotion.

You are you, your emotions are just a source of data.

Instead, try to notice the emotion as it is, like, "I'm aware of feeling sad," or "I'm aware of feeling angry."

It's an essential skill for families and communities.

important in the workplace

In my research, I've looked at what can help you perform at your best at work, and one of the strongest drivers for that is personalized attention.

Being honest with your emotions increases engagement, creativity and innovation in your organization.

Diversity isn't just about groups, it's about each individual.

Emotional diversity is one of them.

Highly agile and resilient individuals, teams, organizations, families and communities are only possible when we are open to our natural emotions.

Then you should be able to say, "What is this feeling trying to tell me?"

"What actions would be in line with my values?"

“On the other hand, what actions would make you move away from me?”

Emotional agility is the ability to listen to your own emotions with curiosity and compassion, especially the courage to act in line with your values.

When I was young, I was afraid that I would die someday, so when I woke up in the middle of the night

My father gently stroked and kissed me and comforted me.

But I never lied

"Susie, we're all going to die one day.

Of course it's scary."

My father didn't trick my child into keeping me out of the face of reality.

It took me a while to understand the power of the way my father guided me through those nights.

My father taught me that to be brave is not to be afraid, but to keep going even when you are afraid.

At the time, neither of us could have imagined that only 10 years later, our father would be gone.

The time we are given in life is really precious and precious to us.

When it comes time for us to face the fragility and fragility of life, at the ultimate stage, we will be asked, "Are you agile?"

"Are you smart?"

Don't hesitate to say "yes" in the moment

It's the only "yes" that can be said by continuing to have a dialogue with your heart throughout your life.

please take a look at yourself

Only when we see ourselves can we see others, that's the only way we can keep moving forward in this fragile and beautiful world.

"Saubona"

thank you

(laughs) Thank you.

(Applause) Thank you.

(applause)

Everyone, think about your big personal goals.

Seriously, you have to feel it yourself to understand.

Stay focused and think about your big personal goals Are you ready?

Imagine you decide to work on it

Imagine saying that to someone you meet today

Imagine them praising you and looking at you

it feels good to say it out loud

Don't you feel like you're already one step closer to your goal?

The bad news is that you have to keep your mouth shut, because the feeling of talking makes you less likely to actually do it.

Psychological experiments have repeatedly shown that telling people about your goals makes them less likely to be achieved.

When you're aiming for a goal, there are steps to take and hard work to do.

Originally, you shouldn't be satisfied until you realize it.

Psychologists have found that when you talk about your goals and get their approval, it becomes a kind of social reality.

As if it's already come true, my mind is delusional

And by feeling satisfied, you're less motivated to actually put in the effort you need to make.

This means you should talk to your friends about your goals so they can get support.

It goes against conventional wisdom, doesn't it?

let's see the evidence

In 1926, social psychologist Kurt Lewin called this "compensatory behaviour."

1933 Vera Mahler shows that the mind feels real when it is recognized by others.

In 1982, Peter Golwitzer wrote a book about this, and in 2009 published new experimental results.

Here's an experiment: 163 people take four tests.

Write down your personal goals on paper

Half of the people tell everyone they're going to do it, the other half keep it a secret

And then they're given 45 minutes to do the work that brings them closer to their goals, and they're told they can stop whenever they want.

All those who didn't say their goals spent the entire 45 minutes, and when questioned afterwards, said they felt they were still a long way from achieving their goals.

But those who divulged their goals stopped after, on average, 33 minutes, and when questioned afterwards said they felt much closer to their goal.

What if this is true?

Resist the temptation to tell people your goals

Let's save the gratification of social recognition for later, and understand the psychology of confusing what we say and what we do.

If you have to say it, do it without feeling complacent. For example, "I want to run this upcoming marathon, so I have to train five days a week.

So folks, the next time you want to talk to someone about your goals, what should you say?

yes well done

(applause)

I decided my path when I was 17.

I was standing in the open a few miles from the coast on a hot summer night in Florida.

I was waiting for a miracle to happen

That summer, I had the opportunity to work as an intern at NASA's Kennedy Space Center, and the miracle I was waiting for was the launch of the Space Shuttle Columbia, carrying the Chandra X-ray Observatory, which would allow scientists to see the rim of a black hole.

the sky was filled with light

It was as if the day had come in the middle of the night

I immediately felt the roar of a rocket engine that made my heart tremble.

It's not a miracle, it's the work of thousands of people working together as a team to accomplish the impossible.

I wanted to join such a team

So I decided to apply to a university where I could study aerospace engineering.

The next year, I started my engineering training at MIT and participated in a student project to build a space robot.

Everything went according to my plan, but I was confused about something very important.

My hesitation came during the summer vacation

I went to a school in Kenya and volunteered to teach English, math and science to girls aged 5 to 17.

They taught me a Swahili song

I spent most of my time getting to know them and enjoying their time together.

These girls and their community leaders were looking to overcome huge barriers to help them reach their full potential in life.

I wanted to join the team

I wanted to be part of a team that breaks down barriers and help improve the lives of girls around the world.

But I was afraid that studying space engineering wouldn't do me much good.

This Kenyan team may not be able to use the technology I learned about space.

But to my delight, I later learned that I was wrong.

I went back to my NASA internship, this time when my supervisor told me that countries like Kenya have been using space technology for decades to improve their lives.

That's what made me realize I could do a job that involved both space and development.

this idea is not new

In fact, in 1967, countries all over the world came together to create the Outer Space Treaty.

The treaty made a bold statement: "The exploration and use of outer space must continue for people of all nations, regardless of their level of economic or scientific development."

We've been working for decades to make this ideal a reality, but it hasn't happened.

Forces like colonialism, racism, and gender inequality have excluded many people from the benefits of space, leading us to believe that space is only for a select few, the rich and the elite.

But we cannot accept this attitude, because the world has a vitally important mission to improve the lives of all people.

This mission roadmap derives from the 17 Sustainable Development Goals set by the United Nations

All countries and territories in the United Nations have agreed that this is their priority from now until 2030.

This development goal is a great opportunity and opportunity of our time, a chance to end extreme poverty and ensure universal access to food and clean water.

As an international community, we must strive to achieve our goals.

Technologies cultivated in space support sustainable development

In fact, six space-related services can help us reach the Sustainable Development Goals.

Let's take a look at some examples of those six services and the goals they support.

Are you ready?

Then

Communications satellites bring telephone and internet connectivity to every corner of the globe.

especially important in disaster recovery

When Typhoon Haiyan hit the Philippines, there was an urgent need to repair the local communications network, and teams brought in balloon-style satellite antennas that could communicate with communications satellites.

This was very helpful during repairs and restorations.

Navigation satellites tell us where we are through the satellite's position.

Scientists can use this technology to track endangered animals in the wild.

This sea turtle is equipped with a device that receives location information from navigation satellites and transmits that information to scientists via communications satellites.

Scientists can use this knowledge to make better policies and decide how to conserve rare species.

earth observation satellite

tells us what is happening in the environment

Currently, there are about 150 satellites operated by more than 60 government agencies, and that's the number of Earth observation satellites alone.

Recently, the number of earth observation satellites by companies is increasing.

Most government agencies provide data from observation satellites online for free.

Some of those satellites provide images like this one taken by their cameras.

This image is farmland in Kansas

But most earth observation satellites don't take pictures at all.

to measure

The collected measurements are then turned into a beautiful world map, like the one shown here, by a complex numerical model, which shows global ocean currents and ocean temperatures.

You can also look at atmospheric salinity, smoke and dust, global rainfall and snowfall, annual cycles of vegetation on land and in the ocean.

Scientists use precipitation and vegetation information to understand which parts of the globe are at risk of drought or famine, and to inform aid agencies so they can prepare food aid before starvation becomes a serious problem.

In space, there's an orbital experiment module on board the International Space Station.

The space station and everything inside it is in free fall as it orbits the Earth, and is virtually unaffected by gravity.

This state is called "microgravity".

When astronauts are placed in a microgravity environment, their bodies react as if they are aging faster.

Bones and muscles weaken, cardiovascular and immune systems change.

Scientists will study how to keep astronauts healthy in space, and apply the training and techniques they do to astronauts to humans on Earth to improve our health.

Every time we develop astronauts, space exploration, or spacecraft technology, we can use those inventions to improve life on Earth.

this is my favorite

It's a water filtration system. A key component is the technology that filters the water from the International Space Station.

now used all over the world

Space is also an endless source of inspiration through education, research, astronomy and traditional stargazing.

Today, nations around the world are engaged in accumulating their own knowledge of engineering, science and space to promote their own development.

Introducing new satellite engineers from around the world

Erica Avello is from Venezuela

Erica is training as a satellite engineer for Venezuela's National Satellite Project.

The software she designed enabled her team to design better power systems.

This is Adele Castillo-Durán from the Philippines.

Adele is a meteorologist and satellite engineer, so she uses data from satellites in her own weather forecasts.

and finally Hara

Hala is from Sudan, and when she was studying electrical engineering as an undergraduate in Khartoum, she and her fellow students planned to build a satellite.

Hala then received a scholarship to graduate school in satellite engineering.

All of the stories I've shared here show how space can really contribute to sustainable development for the benefit of all.

But we have more work to do, because there are barriers that keep people out of space and limit the impact of technology like this.

For many people, Earth observation data is complicated.

Satellite service is too expensive

Microgravity research seems out of reach.

This is what drives me as a professor at the MIT Media Lab.

We recently launched a research group called "Derivative Uses of Space Development."

We are working to remove the barriers that limit the benefits of space.

And we're also trying to develop future applications that will go a long way towards sustainable development.

We will continue to do this until the day comes when we can say that the universe is truly useful and usable for everyone.

thank you

(applause)

This strange-shaped plant is Yareta

What looks like moss covering a rock is a shrub with thousands of branches, each ending in a clump of little green leaves, so dense that you can even stand on them.

This one is from Chile's Atacama Desert and is about 3,000 years old.

It is also a close relative of parsley.

For the last five years, I've been working with biologists, traveling around the world looking for organisms that have lived for more than 2,000 years.

A project that straddles art and science

There is also the element of environment.

I also want to create tools for people to step out of their mundane timelines and think more deeply about timescales.

The reason I said at least 2,000 years is that I wanted to start at the beginning of the AD and work backwards from there.

This is Jomonsugi, which grows wild on the isolated island of Yakushima.

This tree was one of the reasons for starting the project.

When I was traveling to Japan to take pictures, I heard about this tree, which is said to be 2,180 years old, and I knew I had to go there.

After returning to my home in New York, I came up with this project.

It has slowly emerged

I've long wanted to bring my interests in art, science and philosophy together, so when it hit me, I was ready.

And when I started looking into it, I was surprised to find that this effort had never been done before, whether in art or science.

And I'm simply amazed that there isn't even a branch of science that deals with the world's longest-lived populations.

What you're looking at now is sphagnum moss. It's about 3,000 years old.

Visiting Greenland is like taking a trip to the past, not just to the far north.

It was the most primitive and remote place I'd ever visited.

I had a special experience

I took a boat to a distant fjord, and when I was dropped off, the archaeologist who was waiting for me was nowhere to be seen.

I can't even send an SMS or an email.

In the end, I managed somehow, but when I was left behind, I felt the weakness of human beings.

A few days later, I was fishing in a glacier creek near our camp, and it was so full of fish that I could catch a 30-centimeter trout with my bare hands.

It was as if we had visited a time when the earth was more innocent than it is now.

There was also lichen there

It grows only 1 cm in 100 years.

When we look at these plants, we can think about human lifespan in a new way.

What you're looking at now is a picture taken from above in eastern Oregon.

The headline "Finding Almiraria's Death Ring" feels eerie.

Almiraria is a predatory mushroom that kills certain types of trees.

Or to put it mildly, it's known as "the giant mushroom." It's one of the largest living organisms in the world.

With a biologist who studies mushrooms, we got a map and GPS coordinates, chartered a plane, and started looking for dead rings, the circular patterns that Almiraria kills on trees.

I don't know if you can see it in this picture, but there is Almiraria on the surface of the earth.

If you go to the ground, you'll see that Almiraria is attacking this tree.

The white substance you can see between the bark and the wood is the felted mycelium of Almiraria, which is slowly strangling the wood by blocking the flow of water and nutrients.

This strategy has worked, this one is 2,400 years old.

Moving from Underground to Undersea

Brain coral from Tobago, about 2,000 years old.

I overcame my fear of the deep sea and found

It is located at a depth of about 18 meters.

Damaged coral surface

A school of bream ate it, and I was lucky not to die.

It's not affected by the recent oil spill.

However, we could have easily lost one of the most ancient forms of life on Earth, and the full devastation of the accident remains to be seen.

I think this is the most silent and living creature on the planet.

It's a cloned population of Aspen aspens in Utah, and they've been around for 80,000 years.

It looks like a forest, but it's actually a single tree.

It's one giant root, and each tree is a trunk that emerges from it.

So what you have here is a giant, cohesive, identical individual that's been around for 80,000 years.

This tree is male and theoretically immortal.

(Laughter) This is also a clone tree.

This spruce tree is about 9,550 years old, but it's like a baby.

To protect the tree, it's not revealed where it grows.

I spoke with the biologist who discovered this tree, and he said that the elongated growths in the middle were probably due to climate change.

The vegetation is changing because the summit is getting warmer.

It's possible to do harm without having direct contact with plants.

This is the Fortingall yew tree, just kidding, this is the Fortingor yew tree.

(Laughter) I included a picture of a sheep because people often ask me if there are any animals in my projects.

No animals except coral

Do you know how old the longest-lived turtle is? Guess what?

(Audience: 300) RS: 300? No, the oldest tortoise is 175 years old, not far from 2,000 years.

You may have heard of the 405-year-old mantis shrimp found on a beach in Iceland.

But this clam died while it was being aged in the lab.

One of the most intriguing recent discoveries is a kind of "immortal jellyfish," which was observed in the lab to revert to its polyp form after reaching adulthood.

That said, I don't think jellyfish can live that long in the wild.

Back to the yew story

This tree is protected in a Scottish churchyard.

Churches all over England have a lot of old yew trees, but if you do the math, you'll find that first there were yews, then there were churches.

Let's move on to another region

I once had the opportunity to travel to Limpopo, South Africa, with a baobab expert.

I've seen many baobabs, but I think this one has the longest lifespan.

The tree is about 2,000 years old and is called the Sagori Baobab.

I think all these old trees are stamps of history.

They carry thousands of years of history within themselves, documenting events in the natural and human worlds.

If you look at the baobabs, you can see that clearly.

These baobabs are carved with human names, and they also record events in the natural world.

As the baobab ages, the center becomes pulpy and hollow.

And it's a natural haven for animals, and it's been used for shady human behavior, in bars, prisons, and even toilets.

There's another unusual tree that I like.

It's a Welwitschia tree, which grows only along the coasts of Namibia and Angola, and is adapted to collect moisture from the sea fog.

this is actually a tree

A primitive conifer

with fruit in the middle

The leaves form two large piles, but they're actually two leaves that are being torn apart by the harsh desert climate.

It never loses its leaves, so it has the honor of being the plant with the longest leaves.

When I asked a biologist at the Kirstenbosch Botanical Gardens in Cape Town where the welwitschia came from, he said, "If you go to Namibia, you'll find fossilized forests, and all the logs there are giant conifers, but there's no indication of where they came from.

The biologist thinks that the floods of northern Africa brought these trees tens of thousands of years ago, from where a remarkable adaptation to the desert environment occurred.

I think it's the most romantic case of longevity.

This is what we call the subterranean forest.

A botanist at the Pretoria Botanical Garden told me that there are plants that have adapted to this area.

Bushveld is a dry, fire-prone place, and what these trees are doing is, if this is the top of the tree and this is the ground, then the whole tree has moved into the ground, and only these leaves are showing above the ground.

That way, if a fire were to come, it would only burn your eyelashes.

can recover quickly

These trees, too, are propagated by cloning, and the oldest are about 13,000 years old.

There are some plants in America that are just as old.

This cloned Mexican terrestris is about 12,000 years old.

You can find Mexican terrestris anywhere in the western United States, but this individual has a unique round shape.

Little by little it expands outward from its original shape

It's also an individual with the same genes, with a united root.

I have plants nearby that I can call "friends."

A cloned Mojave yucca about a mile away, over 12,000 years old.

similar round shape

Younger clones are scattered around

Both the yucca and the tribulus terrestris are on Land Management property, not protected by national parks.

In fact, it's supposed to be a place for off-road car fun.

So let me show you probably the oldest living creature in the world.

It's a Siberian actinobacterium that's been around for 400,000 to 600,000 years.

A few years ago, a team of planetary biologists discovered it while exploring some of the harshest climates on Earth, looking for clues to life on other planets.

It's this bacterium that was found in permafrost surveys.

What's unique is that it repairs DNA at freezing temperatures.

So it's not sleeping, it's been living and growing for 500,000 years.

This bacterium is also the most vulnerable of the longest-lived organisms: it can't survive when the permafrost thaws.

This map is a compilation of the longest living creatures you'll find all over the world.

The blue flag is where I took the picture, and the red flag is where I'm going.

Antarctica is also flagged

I want to find 5,000-year-old moss on the Antarctic Peninsula.

I plan to work on this project for the next two years.Five years have passed, and at this stage, I feel like I understand the significance of this work.

The world's oldest living creatures are both a record and anthem of the past, a call to action in the present and a beacon to the future.

These creatures have survived for thousands of years in deserts, permafrost, mountaintops and ocean floors.

It has endured unknown natural threats and human encroachments, but some of it is at stake.

By going to find these organisms, I hope to stimulate interest in their amazing vitality and contribute to the creation of an environment where they can continue to live well into the future.

thank you

(applause)

There is a passage that makes you nod if you are right

When I started saying this about 12 years ago, I was talking about the developing world, but it seems like you're here from all over the world.

Put a map of your country in your head, and as you've probably noticed, every country on the planet has a place that fits the bill.

Such places are also problem areas.

So, ironically, the best teachers don't want to go where they're most needed.

To tackle this problem, we started a very simple experiment in New Delhi, India, in 1999.

In short, in the slums of New Delhi, they embedded a computer into the wall.

They don't speak English because they can't go to school, they've never seen a computer, they don't know anything about the Internet.

Connect this to a high-speed internet connection and place it at a height of one meter.

I turned it on and got some interesting results that I'll talk about later.

We tried it all over India, and then we tried it all over the world, and we found that when kids want to know how to do it, they learn it.

Here's a video of the first experiment, with an eight-year-old boy on the right teaching a six-year-old girl how to use a browser.

This is a boy in the middle of Central India, and this is a village in Rajasthan. The children recorded their own music and played it back to each other.

After seeing a computer for the first time, I was able to get through it in four hours.

In another village in southern India, boys were trying to build a video camera to film a bumblebee.

It's downloaded from places like Disney, and it's been 14 days since we set up the computer in the village.

All of this led me to the conclusion that children can learn to use computers and navigate web sites on their own, and that anyone can do it, no matter where they live.

This gave me a little bit of hope, so I decided to see if my kids could do something else with computers.

First, in Hyderabad, India, we had a group of English-speaking children with a strong Telugu accent use a computer.

This computer has a speech-to-text feature like the one that comes with Windows, so I had them input their speech.

However, when I type in my spoken voice, it displays a nonsensical string of characters, so I say, "No matter what you say, I don't recognize it."

I said, "I'll leave it for two months.

Let the computer understand your story."

“What are you going to do?” asks the children.

I replied, "I don't know."

(Laughter) I just walked away.

(Laughter) Two months later, the results have already been published in the journal Information Technology and International Development, and there was a change in the accent.

Everyone talks like educator James Tooley.

(Laughter) We did it ourselves.

After this, I started experimenting with other things that the children could learn on their own.

I was surprised when I got a call from Columbia from the late Arthur C. Clarke, who said, "I want to see what you're doing."

He can't go out, so I went.

He said two interesting things: "A teacher who can be replaced by a machine should be replaced."

(Laughter) And then, "When kids are interested, there's education."

I think of him every time I see it on set.

(Video) "This definitely works for people, because kids quickly pick up on how to do it, and they're engrossed and looking for something interesting.

If you're interested, it's the same as being educated."

We also did this experiment in South Africa.

This is a 15 year old boy

(Video) "I play games, like animals, and I listen to music."

When asked, "Have you sent an email?"

He said, "Yeah, we've reached the other side of the ocean."

This is Cambodia. Cambodia is also rural. And let's face it, they're playing boring math games that they wouldn't do in a classroom or at home.

"It's boring"

should throw it back

But when you put it on the side of the road and the adults go away, the kids brag to each other about what they can do.

This is where children operate

you're probably trying to do a multiplication

We tried it across India for about two years, and towards the end of it, the kids started using Google search for their homework.

My teacher said, "My English improved exponentially." (Laughter) "Everything improved rapidly."

“It made me think really deeply about everything.”

(Laughter) Yes, it is.

If you can google it, you don't need to cram your knowledge.

By the end of the next four years, we found that children were fluent on the Internet and able to find their own materials.

At that time, the University of Newcastle in England raised a huge amount of money to improve the education of Indian schools.

When I answered the phone call from the university, "I'll do it in Delhi,"

They said, 'You can't manage a million pounds of university money while you're in Delhi.'

So in 2006, I bought myself a heavy coat and moved to Newcastle.

I wanted to know the limits of this system.

The first experiment in Newcastle was the same one we did in India.

I set myself an impossible goal: "Can 12-year-olds living in villages in South India and speaking Tamil learn biotechnology on their own in English?"

I was predicting, "The test will be 0. Hand over the computer, come back and test, 0 again. 'Some learning needs a teacher.'"

Collected 26 children

So I said, "It's a very difficult subject.

Don't be surprised if no one understands it, it's all in English."

said so and left

(Laughter) Leave the computer to the kids.

When I came back two months later, 26 children had gathered very quietly.

When I asked, "Did you see anything?"

I replied, "I saw it."

When I asked him, "Did you find out anything?", he said, "Nothing."

So I said, "How long did you do this before you decided you didn't know anything?"

Answer "I saw it every day"

When I asked, "Nothing after two months?"

A 12-year-old girl raised her hand and actually said, "I don't know anything other than that improper replication of DNA molecules causes genetic diseases."

(Laughter) (Applause) (Laughter) It took me three years to put this out.

It has just been published in an academic journal.

The person who reviewed the paper said, "It's too good to be true." That's a disappointing statement.

A girl who studied by herself was acting as a teacher.

here is the child

I'll confirm, but it's not English learning.

I cut it by editing, but when I asked "Where is the neuron?"

This kid said, "Neuron? Neuron?" and moved his eyes and pointed to his head.

Not a very elegant gesture

The children's test scores improved from 0% to 30%, which is an education outcome that would be unthinkable in a community like this.

But 30% is not a pass

When I found out that there was a young female accountant in the area where the children played soccer together, I asked her:

"Can you teach these kids biotechnology to the point where they can pass the test?"

"What are you going to do? I don't know anything."

I said "I'm going to be a grandma"

"What?" she asks

I taught him, "Stand behind your children and keep encouraging them.

Say things like "Like" and "Wow"

"What's that?" "One more time." "Show me more."

Test scores have improved by 50 percent, scores scored by students in an upper-class school in New Delhi with biotech-savvy teachers.

I came back to Newcastle with these results, and I knew that there was definitely something going on here that needed to be taken seriously.

I've been through many faraway places, but I've come to the one that feels the furthest to me.

(Laughter) It's a small English town called Gateshead, about 5,000 miles from Delhi.

In Gateshead, we brought together 32 children and adapted the old method.

I divided the children into four groups and explained

"You decide which group you belong to.

Use 1 PC per group, not 4

I'm watching from behind, so you can't cheat

It's okay to switch groups

If you think you don't fit in with the group, you can move from one group to another

You can look over your shoulder at the other group's work and come back to your group and take credit for it."

And he added, "That's what a lot of scientific research does."

(Laughter) (Applause) Children are eagerly asking, "What am I supposed to do?"

Therefore, we set six questions from the Secondary Education Graduation Qualification Examination.

The first group was the best, and they solved it all in 20 minutes.

The bottom group took 45 minutes

They used newsgroups, Google, Wikipedia, Ask Jeeves, whatever they knew.

"Is this knowledge-enhancing learning?" the teacher asks.

I said 'Try it

come back in two months

I will have you take a paper test.No computer use or consultation."

Using a computer to solve it as a group, they got an average of 76 percent correct answers.

Two months later, when I ran the test, the result was 76%.

I think the children remembered it vividly in their minds, and I think it was the result of their discussions with each other.

You can't do that with a child who uses one computer alone.

What's more, completely unbelievably, my scores improved over time.

Teachers say it's all thanks to the kids continuing to Google after school.

After the experiment, we also recruited here in England for the role of a grandmother.

Then the grandmother in England was very energetic,

200 volunteers quickly gathered

(Laughter) One of the things they asked me to do was stay at home and sit on the Internet for an hour once a week.

I had them do this for the last two years, and over 600 hours of teaching was done via Skype, which the kids called Grandma Net.

Granny Net is over there somewhere

Grandma can be reflected in any school

"You can't catch me"

"Repeat"

"You can't catch me"

(child) "You can't catch me"

"I am the gingerbread man"

(Child) “I am the gingerbread man.”

"Okay, well done."

Back in Gateshead, a 10-year-old girl took 15 minutes to dig deep into Hinduism.

knowledge that I know nothing about

There were two kids watching a TED talk.

I wanted to be a soccer player

After watching eight TED talks, he said he wanted to be Leonardo da Vinci.

(Laughter) (Applause) It's a very clear example.

I'm building something like this right now, a self-learning environment called SOLE.

The equipment here allows kids to sit in front of big screens and surf the Internet at high speeds, of course, in groups.

You can use Obachan Net when you need it

This is SOLE in Newcastle

Someone from India helped me

Let's finish by saying just one last thing.

When I visited Turin, Italy in May

Removed a teacher from a group of 10-year-olds

I speak only English and the child only speaks Italian, so there was no way to communicate.

When you start writing questions in English on the blackboard, look at it

"What's that?" the children ask

I said, "Let's do it for now."

Kids type in google, translate to italian, go back to google in italian

15 minutes later ... the next question is "Where is Calcutta?"

This only took 10 minutes

I asked a very difficult question

"Who is Pythagoras? What did he do?"

After being quiet for a while, he said, "Teacher, you spelled it wrong.

It's Petagoras," said the children

Twenty minutes later, right-angled triangles started appearing on the screen.

I got chills down my spine when I saw that

I'm a 10 year old kid

"I might have learned the theory of relativity in 30 minutes and more..."

(Laughter) (Applause) What happened?

We just got our hands on a self-learning system.

A self-learning system is one that builds itself without explicit external intervention.

What's more, self-learning systems always emerge, which means that the system starts doing things that you didn't expect it to do.

Because it seems impossible at first glance, you might react that way.

I think it's possible to speculate at this stage that I do. Education is a self-learning system, where learning is an emergent phenomenon.

It's going to take years to prove it experimentally, but I'm going to try.

For now I'm thinking

We need 100 million people for every 1 billion children. There will be many more on the planet. We need 10 million SOLE units.

I'm sure you can change everything

thank you

(applause)

The moment I say "school," various memories come to mind.

Whenever I leave the classroom after an exam, my teacher always says, "Hey you

how was the exam I ask

With a big smile, I answered, "It's perfect."

But I couldn't understand why people say "Tell me the truth" and then they don't like it when you tell them the truth.

My school life passed like this, but I couldn't get used to that life either.

So often at night, until I fell asleep, I would seek help from unknown beings, because for some reason I couldn't believe in the god my parents worshiped at their altar.

So I thought, "Well, let's ask the unknown for help," and a helping hand began to appear in every aspect of life.

My brother taught me how to draw

And when I was in eighth grade [8th grade], about 13 years old, I started working part-time at a billboard painter named Putu.

Eventually the school started to support me as well.

It's like, "This kid can't study, but let's put him in a drawing contest."

I got by with a little skill, and it helped me find my place in school.

I won a prize in one of the contests I entered, and I got a little transistor radio.

But I couldn't wait until I got home

I heard it loud on the train

If you take a train in India, you'll often see people listening to the radio on the train, and some on their mobile phones.

I was 13 years old at the time, and I was just listening to the radio.

It's just that I was next to you

He asked, "Where did you get that radio? What's the price?"

When I said, "It's an art contest prize,"

He said, "I teach at an art college.

I think you should study at art school

Quit school and come to art school."

And the reason I'm telling you this is because maybe the person next to you could change your life.

It all depends on whether you're paying attention to those things.

It was because of that event that I was able to enroll in an art school after two years. And even now, I continue to ask myself what I want to do with my work and art.

Looking back, what happened then and now, over the last 10, 15 years, most of my work revolved around three things, and it wasn't intentional.

The reason I started by talking about my past is because when I think, "What is it that makes me who I am?," it's the person's past.

That's why, when you look back, you think that the only way to understand the past is to trace it, because you can't go back.

Whether it's ruins, music, paintings, writing, whatever.

it's a sign of that moment

And exploring that fascinated me

I was creating my work around this idea, but instead of searching for what the traces were, I started capturing the traces.

I will show you some works

This is a work called "Self In Progress"

It is a mark that it was exactly in this body

The most interesting thing about that process is that this sculpture is simply my own imprint.

It's like a 3D photo

There's an element of performance, an element of sculpture, and an element of feeling very close to yourself.

It is, so to speak, a fossil to the future.

Then, gradually, I started exploring different methods to capture the tracks.

Like I said, the process of taking the mold was a really good experience. Normally, we're free to walk and move our hands and bodies, but as soon as it hardens, you can't move a millimeter -- after all, it's gypsum.

This is the fingerprint of our thumb. Whatever we do, consciously or not, leaves a mark.

So I thought, "Let's keep our fingerprints, our footprints, our human footprints."

This is the trail of fire This is the trail of the sun

There's always something I've wondered about when I'm trying to capture traces: Do traces only remain when an object touches something else? Couldn't it be caught some other way?

This work is just the focal length of the lens, and it's just showing what's on the other side.

It was just putting the paper at that focal length, and it was an etching print, but I captured the image from the sunlight.

This work is "Dawn to Dawn"

Here, we placed a coconut rope on a three-meter piece of paper and burned it.

It took me about 24 hours to make this line

The piece was where the fire eroded the paper, and here's the detail.

Trajectories exist, but perception and context play an important role in understanding them.

Do we understand what it is, or are we trying to understand our assumptions?

Now I want to think about perception, because the evidence exists, but you play an important role in making sense of it.

For example, it's a trivial event

How many of you have seen cows crossing the road on the way from Bangalore to Mysore?

please raise your hand

If you ask for an opinion on the cause of something, everyone interprets it differently.

For example, a school teacher might say, "To cross over to the other side."

about why the cow was crossing the road

Everyone's answer will be different. Harry Potter, for example, would say, "For the Greater Good."

Martin Luther King would say, "There will come a world where all cows will freely cross the road without questioning their motives."

(Laughter) If Moses showed up and saw the same cow walking down the road,

No doubt you'll say, "God came down from heaven and said to the cow, 'Thou shalt cross the road—and the cow crossed the road and said, holy cow!'

(Laughter) Freud would say, "The very thing you're worried about is your sexual insecurity."

(Laughter) If you asked Einstein, he would say, "Whether the cow crosses the road or the road under the cow is moving depends on what criteria you use."

(Laughter) If the Buddha were to see the same cow, he would say, "This question itself denies the nature of being a cow."

(Laughter) What we see is just a projection of what we normally think, and most of the time we don't see it.

it depends on the perception of the individual

And context What the heck is this?

It might be enough just to show you this little piece of paper.

I believe that there is no real meaning

The meaning of what we create does not exist

it is created in the head

Look at this piece of paper, you'll say this is the width and this is the length.

we are taught in school

But if you tear the paper in the middle -- you don't change the width here, but it changes the meaning.

So what we perceive as meaning does not exist there.

It's just human nature that we've been trained to find such meanings in order to perceive reality.

This is from that period, most of my works are like this, and this one is called "Light Makes Dark."

caught with a lamp

The lamp doesn't just create light, it also creates darkness.

This is a work that explores that

This is called "Limit Out"

It shows how limited our human senses of sight, hearing and touch are. Can we really see?

this is a true negative

It's a recess in the wall that's about 15 centimeters deep, but it actually looks like it's sticking out of the wall.

Walls are like skins - this is the first skin and this is the second skin and that is the third Each one makes sense

And it's just pulling on the gallery walls.

It is called "Inward Out"

in my life-sized mold

It's a 20 cm dimple

During the process of working with creators, there was always something I wondered about. Now, moving on to the question of perception, every time I see a bird in flight, I wonder, Is there something behind it? Is there some kind of evidence?

Is there a way to capture such concepts as visual art?

I didn't find that method

But the solution came to me, and that was after I was inactive for about six or seven months, and when I was changing air fresheners in the bathroom, a solid substance turned into a vapor.

My name is Odonil

This is the work I made with that material.

I found the process of making this sculpture interesting, and I sent a letter to a company called Balsala, which makes this fragrance called O'Donil, and said, "Dear Sir, I am an artist and enclosed is a collection of my work.

Could you please help me make this sculpture? ”

no reply came

So I thought, "Why don't you ask the management support section of small and medium-sized enterprises?"

So I said, "I want to start an air freshener company."

Then, "Is that so?

This is the price of the project proposal and I'll send you all the details."

I ended up talking to them, and it's actually not about starting a business, it's about creating work.

Please come to my exhibition."

Then he came

This work is from the Devi Art Foundation in Delhi.

In India, no one talks about art, they talk about the value of art.

Buy this for 3,000 rupees and in two months it will be worth 30,000 rupees

There have been attempts to do so, but some collectors collect works whose value may be depreciated.

This is Anupam's collection, but in the end there will be nothing left for him, because it will evaporate.

This is how it looks in a few weeks, and this is how it looks in a few months.

The point is to challenge preconceived notions.

Someone might say, "Oh, it's a portrait," but in a few months it might not be a portrait.

You might think it's a solid, but eventually it evaporates and it's no longer a solid.

You may say you don't understand this, but that's not true either, because it's really the same gallery or

Because it is in the air that drifts in the museum

Everyone smokes it, but they just don't realize it.

When I was making this piece, my parents saw it and said, "Why do you always deal with negative things?"

So when I asked, "What do you mean?"

"Light creates darkness, and this time it evaporates.

Don't you think it reminds me of death?"

I don't think it's the case, it's that the moment a small solid stuffy thing evaporates, it becomes one with the whole.

But my mother said, "But for some reason I don't like it."

They say, "As a sculptor, can't you create something out of nothing?"

I said "that's impossible"

That is, creating a sculpture is something you can do by collecting dust, or you can destroy a sculpture and get dust, but you can't create dust out of nothing.

So I made this piece for my mother.

It's a work called "Emerging Angel"

This is day one, and it's just a representation of one object transforming into another.

This is the same sculpture, just a few days later.

This is what it looks like after 15 to 20 days

Through a small gap between the glass box and the wood, air can pass under this statue and create something different.

This work convinced me

The evaporating image convinced me that there are many possibilities for capturing the invisible.

The work you're looking at now is called "Shadow Foreshadow."

What I'm trying to say is that humans can't see shadows or light, they can see the source of light.

We can only see the reflection of light, not the object itself.

So even though the night sky looks dark, it's actually always full of light.

But you can see it if the light reflects off the moon

It's the same thing in the darkroom.

We know light exists when a tiny dust particle reflects it.

So the truth is that we can't see darkness or light, we can't see gravity or current.

So I recently started exploring, and the further exploration is how to express the space between this object and the other through sculpture.

As a visual artist, you can see this and that, but how you actually sculpt that space is another matter.

There are two perspectives when it comes to sculpting this.

This surface appears as an object

The other surface also appears as part of the floor.

This work is an experiment in projection.

A cardboard box and its shadow

Second, the moment you put the invisible into the visible world, it takes on the properties of the visible.

and cast a shadow

That's why I decided to sculpt it.

and it also becomes an object

Shine the light again and the third

What you see is just a shadow of a shadow of a shadow

But at that point there will be no shadow.

So I thought, "Ah, I'm done with this."

You can see the detail

This is a work called "Gravity"

It's called "Breath." I cut two holes in the gallery wall.

This is a fake wall, but it's about three cubic meters.

This hole allows air to flow back and forth

We can see where the phenomenon is happening, but the phenomenon remains invisible.

This is a work from the exhibition "Invisible" at Thalwar Gallery.

This is a work called "Kaayam Kayan"

here is the detail

What I'm trying to say is that our senses are limited and we can't see and hear everything.

We don't feel that we're touching the air, but like the wind, we can feel it when it's fast.

Everything that makes up our reality exists through finite senses.

What I'm looking for is if I can use these works as symbols and signs.

And to get to the bottom of it, we have to go beyond that. There are things on the other side of the wall that are illogical and invisible.

because when people walk, they leave footprints

But if you try to analyze the footprints in isolation from the whole, you lose sight of their significance, because the real process lies between the footprints, which are just the passage of time.

thank you

(applause)

I'm going to talk a little bit about conflict.

disillusioned and

talk about death

And it's about rediscovering idealism in a chaotic world.

I'm also going to talk about lessons, lessons about how to deal with the turmoil and chaos of the 21st century world.

I don't believe in simple and clear explanations

For example, in describing life and history, I would not believe the explanation that decision A led to outcome B, which in turn led to outcome C, and I would not believe the streamlined and simplified explanations that we might expect.

Believe it's accidental, and one of the reasons is that the way I became a diplomat was accidental.

I was born colorblind

can't distinguish most colors

That's why I always wear only grays and blacks, so I have to let my wife choose my clothes.

Ever since I was little, I always wanted to be a fighter pilot

I loved spending time in my country cottage watching the planes fly over.

It was my childhood dream to become a fighter pilot.

I took the Royal Air Force pilot's exam, and of course I failed.

I couldn't tell when the lights were blinking, and I couldn't discern the colors.

I had to rethink my career, but it was easier than I thought, because it was something I had been passionate about all my childhood: international relations.

I was a child who perused the newspaper

News of the Cold War, INF negotiations over intermediate-range nuclear forces, and proxy wars between the United States and the Soviet Union in Angola and Afghanistan

I'm obsessed

I had a strong interest in these things.

Ever since I was little, I wanted to be a diplomat.

One day, I was going to tell my parents about it -- my father, who still denies the story, said, "Dad, I want to be a diplomat."

My father replied, "Then you have to be very smart."

(Laughter) Make up your mind

1989 Became a British diplomat

There were 5,000 applicants that year, and only 20 were successful.

As you can see from these numbers, it's an elite group, and you've joined an exciting and fascinating crowd.

Diplomat was, then and still is, a very good profession, and I enjoyed it all and enjoyed my social status.

Wearing a good-looking suit and leather-soled shoes, I was enraptured by my position as a person deeply involved in international affairs.

go to the Gaza Strip

Directing the Middle East peace process at the British Foreign Office

He also served as a speechwriter for the British Foreign Secretary.

I also met President Arafat.

I also negotiated with the diplomatic corps under Hussein at the United Nations.

After the fall of the Taliban, I went to Kabul to serve in Afghanistan.

So I got into a C-130 transport plane and went to see the leaders in the mountains, and we talked with them about how to eradicate al-Qaeda from Afghanistan.

exciting and challenging

it was a very interesting task

It was an excellent organization and a very close-knit group.

Looking back, my peak as a diplomat was around the time I was posted to New York.

He had previously served in Germany, Norway, and elsewhere, but in New York, he was assigned to the British Delegation to the United Nations Security Council.

I was in charge of the Middle East. The Middle East is my specialty.

There, I worked on the Middle East peace process, the Lockerbie issue, and more, but that's a story for another time, and among other things, I was responsible for Iraq, weapons of mass destruction, and the British sanctions against Iraq, which called for their disarmament.

As chief negotiator on the British side, I immersed myself in that task.

Anyway, in the sense that it was massive and dramatic diplomacy.

It was a very exciting task.

There were several wars while I was stationed in New York.

I drafted the United Nations Security Council resolution of September 12, 2001 for the United Kingdom, condemning the previous day's terrorist attacks, an event that had a deep impact on those of us in New York at the time.

So my experience in New York was both the best and the worst.

living in luxury in new york

Even though I worked long hours, my house was on the top floor of an apartment in Union Square.

You can almost imagine what life would be like for a single British diplomat in New York, right?

(Laughter) It was a very fun life.

But in 2002, after my mission ended, I decided not to return to London, even though I had a mission waiting for me there.

I decided to take a special research leave and spend it at the New School University.

It was a vague, vague feeling, but I felt something was wrong with my job and with myself.

I was exhausted and disillusioned for reasons I don't know for sure.

I decided to step away from work for a while.

The Ministry of Foreign Affairs was very generous

I was able to take a special unpaid leave of absence while still maintaining my diplomatic status without actually serving.

it was good treatment

Some time later, I asked to be assigned to the United Nations Mission in Kosovo, which was then under the control of the United Nations.

Two things happened in Kosovo, and this was another example of the contingency of life, because these two things were turning points in my life.

But these two are separate events.

One was in the summer of 2004, when an official Commission of Inquiry was finally formed and decided to look at how classified information about weapons of mass destruction was used by the British government before the war in Iraq began, a very limited issue.

I testified before the commission in absolute secrecy.

I was very knowledgeable about Iraq and its weapons of mass destruction. In my testimony, I said three things: first, that the information was exaggerated by the government;

Indeed, an internal investigation made it clear that Iraq's weapons of mass destruction could not pose a threat to the United Kingdom, much less to the countries surrounding Iraq.

Secondly, the government's complete disregard for all possible alternatives to war is, in many ways, even more shameful.

I won't introduce the third one.

I testified anyway, and I was in trouble.

by testifying

It resulted in criticizing colleagues, ministers, and others who were believed to have been in favor of a "war based on lies."

i was in trouble

didn't feel good

After listening to my patient wife over and over again with my complaints and frustrations, my embarrassments and hesitations, I decided to leave the British Foreign Office.

There's a scene in the movie "The Insider," starring Al Pacino, where Al Pacino, disappointed by the response of CBS leaders to the man who whistleblowered a tobacco company, says at the end, "I can't go on here anymore. Something's broken."

It's my favorite movie

I feel something broken inside me

I couldn't carry on the duties that I used to enjoy sitting with the Foreign Minister and the Prime Minister with a smile on my face.

I thought I would jump off the cliff with a run-up

It was very uncomfortable and didn't feel good.

I started falling

It's still falling without stopping

But somehow I got used to this feeling

It's a much better feeling than standing on a cliff wondering what to do.

The second happened in Kosovo, give me some water

The second thing happened in Kosovo, and it gave me the answer to the question that I've been stuck on for so long: "What am I going to do with my life?"

I love diplomacy, I have no other career, and I thought I would be a diplomat for the UK for the rest of my life.

It was my goal to become an ambassador. The ambassador is my teacher, my hero, my top diplomat.

Many friends who remain at the Ministry of Foreign Affairs

accrued pension

I let it all go

Now let's talk about that

That year, in Kosovo, a tragedy happened, and I was there.

In March 2004, riots erupted throughout what was then the autonomous province of Kosovo.

18 people killed in riots

was in anarchy

It was a terrible sight. Many troops were stationed there, but even the police and the military could not stop the riots. They rampaged through the town.

The only thing that could stop the mob was its will, until it was satisfied with destruction and slaughter.

I witnessed a very tragic situation

I tried to persuade him with my Albanian friends,

Couldn't hold back the mob

This riot taught me some complex facts that may not be apparent at first glance.

One of the reasons for the riots over the course of several days was that the Kosovars were deprived of the right to decide the future of Kosovar.

At that time, diplomatic negotiations were taking place over Kosovo's future, but the government of Kosovo, much less the people of Kosovo, were not invited to participate in these negotiations.

In a strange diplomatic system, in a negotiating process about Kosovo's future, Kosovars were left out of the loop.

Naturally, the people of Kosovar were dissatisfied with the current situation.

The riots were also a manifestation of that dissatisfaction.

That's not the only reason. It's not that simple.

The reason is more complex, and I don't mean to oversimplify the facts.

is one of the reasons

That's when I had an idea. To be precise, my wife told me

"Why don't you advise the Kosovar people?"

"Why don't you give diplomatic advice to the government of Kosovo as a hired diplomat?"

Kosovo did not have a Ministry of Foreign Affairs

Diplomatic corps not recognized

There was no recognized diplomatic agency.

I came up with it

The idea of ​​a hired diplomat was the starting point for the world's first foreign policy advisory non-profit organization, Independent Diplomats.

My first contract was when I returned from London, after completing the United Nations mission to Kosovo.

I told the Prime Minister of Kosovo, who was with me at dinner, "I can give you diplomatic advice. I have the knowledge and the experience."

"Let me help you with your country's diplomacy."

Putting glasses together, the prime minister replied, "I'll definitely ask you."

So I became a foreign policy adviser to the government of Kosovo.

He has served as a diplomatic advisor to the Prime Minister of Kosovo for three consecutive generations, and has also advised negotiators involved in multilateral negotiations.

Kosovo became independent

"Independent diplomats" currently have offices in five locations around the world, providing foreign policy advice to seven or eight countries, or political organizations, as they're called.

Customers include Northern Cyprus and

It's the Burmese opposition, and if you've never heard of it, the Autonomous Government of Southern Sudan will become an independent state in a few years.

The Polisario Front in Western Sahara is one of our customers, and they've been fighting Morocco for 34 years to fight for self-determination.

We are also advising small island states on the upcoming United Nations climate change conference in Copenhagen.

And by coincidence, when I was in my early days as an "independent diplomat," I showed up at a senator's party, and I bumped into the man behind me while holding my glass like this.

A conversation started with the man, and I told him what I was doing, in a slightly grave tone, starting an "independent diplomat" in New York.

I was the only one on staff, and when I told my wife and I were going back to New York,

I was advised to meet a colleague in New York.

In fact, I was an employee of "?What If!," a company that provides innovation.

After that, a lot of things happened, and around the time I started "Independent Diplomacy," I decided to join "?What If!" in New York.

"?What If!

"Watching them develop new flavors of chewing gum and cola has been very helpful in developing new strategies for the people of Kosovar and the Saharawi of Western Sahara.

I began to realize that there is more than one method of diplomacy. Diplomacy is, in other words, a business of solving problems, just like business.

"Independent Diplomat" now tries to incorporate what he learned from "?What If!"

With everyone in one room, discussions happen here and there.

I move my seat with a laptop computer in my hand to change my way of thinking

We also bring in subject matter experts who don't know our customers to bring fresh ideas to the problems we work on.

Because of our difficult position in the international community, the job is not easy.

In doing so, I've learned some lessons, some personal and some political, but in some ways they're the same thing.

My personal lesson is that the experience of jumping off a cliff is actually a good thing, and I highly recommend it.

It's good to mess everything up and jump off at least once in your life.

The other is a bigger lesson about today's world.

The "independent diplomat" is part of a new global movement, a world that is becoming more and more divided.

The state is not as important as it once was; state power is dwindling.

Non-state powers are on the rise.

called non-state actors

Corporations, mafia groups, well-meaning NGOs, it can take any number of forms.

We live in a more complex and differentiated world than before.

If the government's ability to intervene in a problem that affects us is diminishing, who will respond to the problem instead, who should be held accountable?

it's us

We are the ones who act on behalf of the government.

we have to accept this reality

It means that we can no longer say that international relations, international affairs, the turmoil in Somalia, what is happening in Burma, etc. are irrelevant to us and should be left to the government.

I can link each and every one of you here with the so-called "Six Degrees of Separation" to the al-Shabab militia in Somalia.

I won't go into details, but the interesting thing is that the fish you eat is what connects you to the Somali militia.

we are closely tied

It's not just Tom Friedman's theory, it's actually true of any case.

It's about not relying on politicians, we need to take action ourselves.

The embodiment of this example could be called an "independent diplomat."

To give you an example, the way the world is changing can be seen in the work of the United Nations Security Council.

United Nations started in 1945

The Charter of the United Nations is designed to settle disputes between member states -- between states.

In today's UN Security Council, 80 percent of the agenda is about internal conflict, involving non-state groups, guerrillas, separatists, terrorists, who are not groups of traditional governments or state actors.

This is the state of the world today

Realizing this fact, and looking back at what was going on at the UN Security Council and the situation in Kosovo, I realized that the people most affected by the work of the UN Security Council were not being invited to talks, they were not being given a voice.

I thought I had to do something

Let's start with the general method

With the staff of the "independent diplomat", the United Nations Security Council and

I have visited nearly 70 United Nations member states, including Kazakhstan, Ethiopia, and Israel, and I have told the UN Secretary-General and many others, "From people who are actually affected."

"It's a mistake not to listen"

"We need a system in which Kosovars can participate," "so that they don't just listen to their ideas."

"I can tell you what you think."

"It's an exchange of ideas."

"Incorporating other people's ideas will make your decisions more" "effective and lasting."

it's right

very reasonable

Of course, everyone agreed and said,

"You're right." "Please contact me again in six months."

Of course nothing happened. Nobody did anything.

The United Nations Security Council still does its job the same way it did a long time ago.

This effort was unsuccessful, so I decided to think of other ways.

I was thinking, "I want it to work the way I want it to." "I'm dealing with a government like that."

So we came up with the idea of ​​setting up a meeting.

An "independent diplomat" is currently preparing a meeting with the UN Security Council with the parties to the conflict on the UN Security Council's agenda.

We're going to involve rebel groups in Darfur, dissidents in Aceh, North and South Cyprus, and other parties to a mountain of chaotic conflicts.

We also invite them to New York to sit in a quiet room, in an informal setting without press coverage, where the parties and the Security Council exchange views on each other's interests.

This is a place of dialogue, it happened for the first time.

People who know a lot about politics will think it's ridiculously difficult, and I agree with you.

The chances of you failing are pretty high, but if you don't do anything because you're afraid of failure, you have no chance of succeeding.

Compared to when I was a diplomat, my strategy has fundamentally changed. I believe it's all about results. Frankly, neither process nor technology matters.

Ahmadinejad remains in the hands of the Iranian government, which holds them as political prisoners even as they preach technology to Iranian demonstrators who use Twitter as a tool for their demonstrations.

Technology is not bringing political reforms to Iran

You have to look at the outcome and ask yourself, "What can I do for the outcome?"

This is politics in the 21st century, and in some ways, the "independent diplomat" is a way of embracing the divisions and changes that affect us all.

Thank you for your attention

I'm a very cultural person. My iPod is my go-to commute. I listen to Wagner, Mozart, pop singer Christina Aguilera, country singer Josh Turner, black music's Kirk Franklin concertina, symphonies, whatever.

But I'm also a bookworm, I've read everything from Ian McEwan to Stephanie Meyer.

I also read the "Twilight" quartet.

My home theater is my life, and I watch tons of DVDs, on-demand movies, and TV.

"Law & Order: Special Victims Unit," "Thirty Rock," starring Tina Fey, and "Judge Judy," where real-life parties fight for real sentencing.

I'm sure many of you are just as passionate about these things as I am, especially "Judge Judy."

In fact, many of the people who work in these industries fear that technology will put their jobs in jeopardy, and they might lose their jobs.

At first, the Internet was hailed as a great marketing tool that would solve all kinds of problems, but now we're realizing that it's rather too powerful.

Every situation is different, but arts groups and artists are competing for the attention of potential ticket buyers with the 3,000 to 5,000 different ads the average person sees in a day.

So technology is our biggest competitor for leisure time.

5 years ago In my 30s, I was mostly on TV and a little on the Internet.

I was spending 20.7 hours, my 20s was even longer, 23.8 hours, and most of it was on the internet.

And now, most college students spend 20,000 hours online and 10,000 hours playing video games before starting school. We live in a cultural context where video games sell more than music and movies combined.

We also fear that technology has changed the assumptions of cultural consumer behavior.

Thanks to the Internet, you can always get what you want, delivered to your doorstep.

You can buy custom jeans for your body shape at 3am or 8pm.

The performing arts have limitations, such as specific opening times, difficult access to venues, parking, and so on, and they can't meet the demand for personalization and customization.

What's next for consumers accustomed to downloading music online 24/7 for 99 cents or for free, asking them to pay $100 for tickets to a symphony, an opera or a ballet?

It's a very big question for those of us who work in this field.

But this is not just for us

We are all in the midst of a fundamental restructuring of culture and information technology that is shaking and destroying industries like newspapers, magazines, and book publishing.

In the world of the performing arts, outdated collective bargaining agreements are stifling and banning digital copying and streaming. They're also stuck in the ideal 19th-century artist-audience relationship, sticking to big venues and sticking to a business model of charging exorbitant amounts for tickets and making money.

In the face of Tower Records' bankruptcy, we fear, "Will tomorrow be mine?"

Everyone I know in the performing arts feels like a line from Adrienne Ricci's book, "Dreams of a Common Language," that says, "We've been thrown into a country with no language and no law.

you have to create something

The map in my hand is from many years ago."

If you love the performing arts, don't you think it's good that I'm here?

(Laughter) (Applause) Rather than seeing the performing arts as dying out, I'd rather see it in a period of change, like the 16th-century Reformation.

The transformation of the arts has been spurred by technology, much like the Reformation, in which the printing press actually ushered in the change.

Both reforms are based on intense debate, internal self-doubt and massive restructuring of outdated regimes.

And in essence, both reforms raise the question: Who has the right to do this?

Why do we have the right to do that?

Do you need an intermediary to experience mystique and spirituality?

I think Chris Anderson, editor-in-chief of Wired magazine and author of The Long Tail, was the first to raise the issue.

He wrote many years ago that with the advent of the internet, web technology and small cameras, the means of artistic creation were democratized for the first time in human history.

In the 1930s, anyone who wanted to make a movie had to work for Warner Bros. or RKO, otherwise who could have provided the equipment for filming, lighting, editing, recording, etc.?

But who in this room doesn't know that there's a 14-year-old girl who's making movie after movie right now?

(Laughter) Similarly, the means of art distribution have also been democratized for the first time in human history.

It was also distributed by Warner Bros. and RKO in the 1930s.

Now we have YouTube and Facebook, so you can share your work with the world from the comfort of your own bedroom.

These two shifts are causing a massive redefinition of the cultural marketplace, where everyone is now a potential creator.

What we're seeing right now is a turbulent time when the whole world is changing, and audience numbers are declining rapidly.

But poetry writers, singers, church choirs, the performing arts audience is far greater than we could have imagined.

Amateurs with this level of professionalism are also called amateur professionals.

You can see them on YouTube videos, in dance competitions, at film festivals.

While they greatly expand our perception of the possibilities of art, they challenge and undermine the cultural autonomy of traditional arts institutions.

Ultimately, we live in a world characterized by participation rather than consumption.

But I will make it very clear that, just as the Reformation did not spell the end for ecclesiastical organizations and priests, art institutions will continue to be important.

It offers artists the best opportunity to live a life of economic dignity, not luxury, but dignity.

It's also a place for artists who can and want to have a certain amount of money and people to base themselves in.

But it's arguably short-sighted to think of arts organizations as being the whole arts community.

It's true that we tend to think of amateurs and professionals as polar opposites. But in the last five to 10 years, we've seen some really interesting changes. Among professionals, instead of putting concert halls and performing on stage at the center of their work, more and more artists are focusing on women's rights, human rights, global warming, AIDS relief, and so on.

Today's dance scene is led not only by the Royal Winnipeg Ballet and the National Ballet of Canada, but also by the Liz Luhrmann Dance Exchange, a professional multi-generational dance company whose dancers range in age from 18 to 82, working with genetic scientists to represent the helical structure of DNA and working with nuclear physicists at the European Organization for Nuclear Research.

For today's professional theater community, not only the Shaw Festival, the Stratford Theater Festival, but also the presence of the Los Angeles Cornerstone Theater is very important. This is a community of artists from ten different faiths and beliefs after 9/11, including Bahian, Catholic, Islamic, Jewish, and Native American gay and lesbian communities.In addition to the individual projects of the participants, we created one big play, exploring differences and finding common ground, an important step towards healing beyond the walls of the community. It was decided to take a step

Performers like Rhodessa Jones are helping prisoners articulate the pain of imprisonment in women's prisons. Writers and directors are working to help young people find non-violent avenues. And there are many, many more.

In fact, I don't think the performing arts are on the brink of extinction, but rather that they're poised to play a more important role than ever before.

As we have long argued, the arts are vital to local economies.

In fact, for every dollar spent on a ticket, five to seven dollars goes into the local economy, whether it's the cost of a meal at a restaurant, the cost of parking, the cost of buying fabric for a costume, the tuning of a piano, and so on.

But art is going to be even more important to the economy in the years to come, especially in areas we can't even imagine today.

EQ, the ability to listen, empathize, guide change, and motivate others, is becoming more and more important in business leadership.

We must confront the fallacies of focusing solely on the market and the failure of our social conscience to work. We must understand and celebrate the power of the performing arts to shape the character of individuals and nations. The individuality of young people is especially important, because they are more prone to emotional urges than to digest their experiences properly.

Last but not least, in the world we live in now, where immigration laws have become a burden and reality TV is booming with shame, morning and night, in train stations, bus stops and airports in the United States, we hear these words over and over again: "Ladies and gentlemen, if you see anyone or anything suspicious, please let your local staff know."

But art brings people together and encourages openness and curiosity about people who are different from us.

If ever there was a time in human history when we needed this kind of potential for the performing arts, it's now.

We're here, I think, not because of technology and entertainment and design, but because of a common purpose.

We are committed to empowering societies, alleviating human suffering and creating a more compassionate, positive and empathetic world order.

I hope that all of you who are striving to pursue this goal will embrace the performing arts in your daily life, no matter what your goals are.

The Doris Duke Charitable Foundation promises to extend a helping hand of friendship in the future.

Thank you for your attention and I wish you all the best

If we're going to really understand the problems we face in the ocean, we have to look not just at biology, but at physics.

To solve the problem, we have to start studying the ocean in a more interdisciplinary way.

I'm going to give you an example today, and I'm going to talk about climate change in the ocean.

sea ​​level rise

ocean warming

And ocean acidification. If "What are you most worried about?"

When asked, "What are you most afraid of?"

I would say ocean acidification.

Only recently has it begun to attract attention

I'll explain later

I was in Copenhagen in December, some of you may have been here too.

At that point, as I'm sure you all realized, it was an eye-opening and very frustrating experience.

How can you not hear a single word of "Ocean" for three or four hours in this big negotiating venue?

It doesn't show up

There was time for speeches by the leaders of the nations gathered there, which were to be given by the leaders of the island nations and the low-lying nations.

Thanks to some very strange alphabetical coincidences, many low-lying countries like Kiribati and Nauru have been placed at the end of a terrifyingly long line.

It was marginalized at the bargaining table.

One of the problems is proper goal setting.

No clear target

It's not clear how to set it. No clear goals?

I'm sure you've heard the phrase "two degrees," which means we should limit the temperature rise to 2 degrees.

However, there is little scientific backing for that number.

Other atmospheric carbon dioxide concentration

Should it be 450? 400?

There's not much scientific backing for this either.

The scientific backing for these stated targets is grounded in research on the ground.

If you ask me, the marine community would argue that if the target were to be set, it should be lower.

From a marine standpoint, 450 is too high.

Compelling evidence suggests it should be 350.

The current concentration of carbon dioxide in the atmosphere is 390 ppm.

We can't just try to stop at 450. We should accept that we're overshooting, and then the focus should be on how much overshoot and how to get back to 350.

Why is it so difficult?

Why are you not sure?

The problem is that the climate system is a complex mix of factors.

Various natural factors contribute to climate change

There is an interaction between the atmosphere and the sea

In the Galapagos, the influence of El Niño and La Niña

But a large El Niño warms the entire planet.

If the eruption releases aerosols

it also changes the climate

The ocean stores most of the exchangeable heat on Earth.

So anything that affects how surface and deep seawater mixes changes the oceans on Earth.

We also know that the amount of solar activity is not constant.

These are the natural causes of climate change

There is also an anthropogenic factor in climate change

We're changing the property of the land surface, the reflectance.

We also emit man-made aerosols into the atmosphere. There's also the issue of trace gases, besides carbon dioxide, methane, ozone, sulfur dioxide and nitrogen.

Here's the problem, just a quick question

Is CO2 produced by human activities causing global warming?

To answer this, we have to be clear about what is caused by CO2, and we have to know about everything else.

I know a lot

Numerous scientists have worked to understand all the man-made and natural factors.

So we can finally say, "Yes, CO2 is warming us."

There are many ways to study natural variability.

Let me show you some examples

I spent three months in Antarctica on this ship.

It's a scientific drilling ship.

A single seafloor drilling takes many months to extract the sediments that tell the story of climate change.

To understand the evolution of the greenhouse effect, we've drilled back in time, to a time in the past when there was twice as much CO2 as there is now.

that's what happened on this ship

Closer to the pole than the Antarctic line

looks tropical

There was only one day when both the sea and the sun were calm, so I was able to disembark.

Mostly like this

Waves about 15m

We were hit by winds with an average speed of 20 m/s.

I've just finished my journey, and I can't show you much yet, but I'll be here for another year to participate in another mining expedition.

This is led by Ross Powell and Tim Naish.

ANDRILL project

We drilled the very first borehole into the largest floating ice shelf on Earth.

It was really hard because the drilling equipment was wrapped in blankets to keep it warm, and we drilled at -40 degrees Celsius.

I did it in the Ross Sea.

On the right is the Ross Sea Ice Shelf

This giant floating ice shelf is about the size of Alaska and comes from West Antarctica.

West Antarctica is part of the continent, about 2,000 meters deep, where the ice meets the ocean floor.

Some of them are floating and exposed to the heat of the ocean.

This is what worries me

Because it's partially floating, any rise in sea level will cause the ice to lift off the seafloor, crack, and flow north.

When the ice melts, the sea level rises by 6m

We're drilling to find out how many times that's happened and exactly how quickly the ice melts.

The left is a diagram of excavation

We dug a floating ice shelf 100m, traveled 900m in seawater, and dug 1300m on the seabed.

It's the deepest geological drilling hole ever.

This project took 10 years

this is what i found

We now have 40 scientists on board, doing extremely complex and expensive analyses.

The best explanation is this simple picture.

Look at the rising bowling core

So what I found was this alternating sediment, first of all, gravel, then some larger stones, and then some sand.

This is material in the deep sea

It's there because it was carried on the ice.

I know there's an ice shelf up there

and alternating with this sediment

really beautiful

This sediment is made of 100% phytoplankton shells.

These creatures need sunlight, so we know they're sediments when there's no ice overhead.

We found 35 layers of gravel and plankton, sometimes covered with ice and sometimes without ice.

What that means is that in the Ross Sea, this ice shelf melted and regenerated about 35 times.

in the last four million years

this was a complete surprise

I never knew that the West Antarctic ice sheet was undergoing such dynamic changes.

For years the common wisdom was, "Ice formed millions of years ago and has been there all along."

Now we know that even in recent years it has melted and regenerated, and the sea level has risen and fallen six meters.

Why?

I'm pretty sure it's because of slight changes in the amount of sunlight reaching Antarctica due to natural changes in the Earth's orbit.

But the bottom line is, we also know that when the ice sheet crosses a threshold, which means that the Earth warms, and the temperature rises by one to one and a half degrees, the ice sheet becomes very volatile.

The ice sheet becomes very volatile and very prone to melting.

So?

In fact, humans changed temperatures by just that threshold in the 20th century.

Many believe that the West Antarctic Ice Sheet will begin to melt.

We predict sea level rise will be one to two meters by the end of the century.

possibly larger than that

For countries like Kiribati, the consequences are dire, because the country averages about a meter above sea level.

The second story is Galapagos.

This is bleached coral that died in El Nino in 1982-83.

on champion island

It is a common coral coral group with a size of about 1 m.

covered with algae

As soon as these organisms die, other organisms will breed on top of the dead organisms.

So when a coral colony dies in El Niño, it leaves an indelible record.

So if you look at the coral, you can see how often it happens.

So in the '80s, the idea was to take the core out of coral heads in the Galapagos and look at the number of catastrophic events.

Just like El Niño in 1982-83 killed 95% of the corals in the Galapagos.

Something similar happened in 1997-98

What we found was that when we pulled out 400 years, this kind of phenomenon was extremely rare.

There were no other mass deaths.

Such incidents are very rare these days.

A truly devastating El Niño or just a strong El Niño against the backdrop of global warming?

Either way, bad news for the corals of the Galapagos Islands.

how to get a sample

Look at this giant coral on Easter Island!

It has a height of 8m

It has been growing for about 600 years.

Sylvia Earle pointed me to this coral.

She dived with John Rowlett in 1994 and sent me a little nugget.

And then I started researching, and I found that analyzing corals like this could tell us the temperature of the ancient ocean.

use a diamond drill

We don't kill coral colonies, we take small samples from the surface.

Samples come out as tubular limestone

take it back to the lab and analyze it

Coral samples on the right

Since the East Pacific is all over

I'm working on the Western Pacific

Let's go back to the Galapagos Islands

This very interesting raised land in the Gulf of Urbina

At this location, during the 1954 earthquake, this marine terrace was abruptly lifted from the sea, uplifting about six to seven meters.

So you can walk around the reef without getting wet

This is what the ground looks like This ancient coral

It's 11 meters in diameter, and it started growing in 1584.

please imagine

I was growing up happily in shallow water until the earthquake in 1954.

We know that in 1584, these corals have growth rings.

If you cut the core in half and take an x-ray, you'll see a light area and a dark area.

one year each

These corals grow 1.5cm in a year

So I calculated to the bottom

Another attribute is that they have amazing chemistry.

We can learn a lot by analyzing the carbonates that make up corals.

This time, we measured different isotopes of oxygen.

You can tell the water temperature from the ratio

In this sample, we recorded the temperature of this coral reef in the Galapagos, so we know the water temperature at which the coral grows.

And when I take the corals and measure the ratios, the temperature vs. isotope ratio curve is a perfect match.

Now, on these islands, the corals are very helpful in recording seawater changes.

The thermometer has a history of at most 50 years.

Corals can be thousands of years old

There, 30 groups around the world

Combined different data groups

They've put together a valid, or very close, record of temperature change over hundreds of years.

here is the diagram

there are all lines

But we're looking at changes in the Earth's temperature over the past few thousand years.

There are five or six data sets, all reflecting hundreds of data sets from corals.

from ice samples

Tree rings are similar

That's how I discovered what the natural factors were and how they differed from the last century.

I chose this one because it feels complicated and messy.

this problem is so

you can see some signs

some of the records are at lower temperatures than others

Some have large fluctuations

But it all shows how much natural variation there is.

some from the northern hemisphere, some from the entire planet

What we can say here is that over the last few thousand years, the natural thing is that the earth is cooling.

It's been cooling until about 1900.

And then there are natural variables like the sun and El Niño.

We know the magnitude of the 100-year, 10-year variability, about 0.2 to 0.4 degrees Celsius.

But the edges of the graph are black for valid records.

The temperature is up to 2009

We warmed the planet by about 1 degree Celsius in the 20th century, and the natural part of the record doesn't show similar fluctuations.

This strongly supports our view that the impact we are having is something else.

In closing, a brief discussion of ocean acidification

I like it as a global change narrative, and even the most staunch skeptics of climate change often talk to that group, and they can't deny the simple physics of CO2 melting into the ocean.

We put a lot of CO2 into the atmosphere from fossil fuels and concrete products.

A third of it is now dissolved in the ocean.

This will acidify the ocean

this is certain

That's what's happening. Global warming is another matter.

various influences

Using carbonate organisms or calcium carbonate for the shell

Affecting various animals and plants

The main material that makes up coral reefs is calcium carbonate.

It dissolves easily in acidic liquids.

So what's happening now is that organisms need more energy in their metabolism to maintain their shells.

If CO2 continues to melt into the ocean, at some point, calcium carbonate will begin to melt.At some point, calcium carbonate will begin to melt.

Coral reefs will lose skeletal organisms, and we'll see a massive loss of marine biodiversity.

And not only are organisms that produce carbonate affected,

There are also many physiological processes that are influenced by ocean acidity.

Enzymes and proteins involved in many chemical reactions are sensitive to ocean acidity.

All of these things, a more energy-intensive metabolism, a lower reproductive rate, changes in respiration and metabolism.

There's enough biological evidence that these are expected to be stressed by this acidification.

We've figured out an interesting way to track the amount of CO2 in the atmosphere over millions of years.

We're going to use ice boring cores, but this time we're going back 20 million years.

Sediment samples tell us the amount of CO2 in the ocean, which in turn tells us the amount of CO2 in the atmosphere.

Now, we have to go back about 15 million years to find a time when CO2 levels were similar to today's.

To find twice as many times, you have to go back 30 million years.

So all the organisms that live in the ocean evolved in a fermentor-like ocean with lower levels of CO2 than they do today.

This is why these organisms are unable to cope with the rapid acidification that is going on.

Charlie Veron said last year, "The prospect of ocean acidification may be the most serious of the projected consequences of CO2 release into the atmosphere."

I think it's quite possible too, so to conclude this

We definitely need protected areas, but for the sake of the ocean, we should limit CO2 emissions as soon as possible.

thank you

(applause)

Now I know what it's been like for TED speakers over the years: sweaty palms, sleepless nights, and a maddening fear of clocks.

it's totally awful

By the way, I have other concerns

Earth's population will reach 9 billion in the future

Even the most optimistic dreams are overshadowed by the prospect of human looting the planet.

But recently, I've started to look at groups of people in a different light, and there are environments where groups can do really amazing things.

Can be used by any organization or individual

This is not just changing the way TED thinks about the future, it changes the way we think about the future of the world as a whole.

let's see together

First, it's about a boy who's acting a little weird.

This kid is called Lil' Demon on the web

I'm showing you a dance trick that no kid could have done at the age of 6.

how did you get it?

What motivated him to practice hundreds of hours?

I have a hint

Lil Damon: Let's aim higher, let's aim higher CA: Filmmaker John M. Chu sent this to me, and he said it at TED this February, and the moment I saw it, the internet went up.

I realized that I was developing dance

So the dancers were competing online to improve their skills and create incredible new tricks, including a six-year-old.

it's like a revolution

John had a great idea: he gathered the best dancers on YouTube and formed a dance troupe, the ultimate dancer collective, LXD.

These young people who learned to dance on the web are very good at this year's Academy Awards.

I danced at TED and was blown away by their passion and talent.

I feel like I've heard this story somewhere about the development of dance.

When TED Talks started to gain traction, I noticed that speakers were spending more time preparing.

As a result, such a wonderful talk was born

Months of preparation packed into 18 minutes have raised the bar significantly for future speakers, and the results are what we've seen this week.

It's not like J.J. or Jill said, "Let's aim higher," at the end of the story, but they did.

Either way, it was the people who saw the videos on the web that drove the cycle of improvement.

what is happening here

It's the latest example of what we might call "collective-accelerated innovation."

There are only 3 things you need to do to make this happen

Think of the three dials that move a giant Ferris wheel.

Turn the dial and the Ferris wheel will start moving

The first thing you need is... a group, a group of people with a common interest.

The larger the population, the more potential innovators there are.

But the reality is that most people in the group are doing other things.

We're creating an ecosystem for innovation to thrive.

The next thing we need is light

The talents of the most talented people in the group must be open and exposed, so that they can learn, and they can encourage participation.

The last thing you need is ambition

Innovating is hard

Hundreds of hours of study and practice are essential

It's not going to happen unless you're ambitious

This is what it looked like before the internet

Dancers on the street - a small group, but we know each other's abilities.

I think social status breeds ambition.

The best dancers behave with dignity and are the most popular

There will be some kind of innovation happening here as well.

But on the web, the three dials mesh nicely together.

The dance community is now global

millions of people connected

And what's even more amazing is that you can see the skill of the best performers, because the collective itself illuminates the top. There are direct ratings, such as comments, rankings, emails, Facebook and Twitter, and there are also indirect ratings, such as views and links from Google.

It's easy to find good videos, and when you do find them, you can watch them again and again and read other people's comments.

All kinds of light hits

But the dial of ambition is really swinging out

If you're just a kid with a webcam and you can do something that goes viral, people will see you as if you were in a stadium full of spectators.

Hundreds of strangers excitedly write up

Even a small comment makes me very happy.

I think the possibility of being known to the world in a new way is driving a lot of effort.

Stars aren't the only ones reaping the rewards, everyone can see and learn from the top.

This system produces its own energy

Groups shed light and ignite ambition. Light and ambition play a crucial role in attracting new people to the group.

Any organization can use this model to foster a collective-accelerated cycle of innovation.

Bring in the crowd, shine a light on it, nurture its ambition.

I think the hardest part is shining a light, you have to be open and show the world what you're capable of.

By revealing their deepest secrets, millions of people will seek to help develop it.

Thankfully some people are unable to take advantage of this tool.

The dark forces are allergic to light

For example, a terrorist doesn't publish a plan online and say, "Please help me make this plan work today."

But you can put your talents online

Once you've gone public and run the innovation cycle, let's look around.

At TED, we strive to be open.

My friends call it "radical openness," and it's always worked.

We opened our talks to the world, and all of a sudden, millions of people were spreading the ideas of our speakers, and that made it easier for us to ask and get the next speaker.

By opening up the translation program, thousands of thousands of volunteers -- some of whom are watching online now -- translated TED Talks into more than 70 languages, and tripled the number of non-English speaking audiences.

Opening up the TEDx brand has created over 1,000 live experiences that spread ideas.

TEDx organizers meet face-to-face and learn from each other.

we are learning from them

Great talks from TEDx

The Ferris wheel of innovation is spinning

Let's change our perspective a little

It's nothing new that innovation comes from groups.

I just heard a talk this week about how the romantic notion that a solitary spark of genius can change the world is misleading.

Newton, who said he would stand on the shoulders of giants, seemed to have noticed

humans are social creatures

we inspire each other

And it's nothing new that the Internet is accelerating innovation.

For the last 15 years, strong communities have been connecting online and inspiring each other.

For programmers, the open source movement is a great example of collective-accelerated innovation.

The point here is that these groups are able to connect because their work can be digitized and easily shared, whether it's photography or music software.

That's why I'm excited about the rise of online video.

We can digitize and share the various talents of the world to create new innovations that are accelerated by groups.

There was very little video on the early web, because video files were heavy and didn't make it onto the web.

But in the last 10 years, the bandwidth has expanded 100 times

up to now

80 million hours of YouTube videos are watched every day

Cisco predicts over 90% of data on the web will be video within four years

If it's all about pets and porn and bootlegging, I feel bad.

but it won't

Video uses a lot of bandwidth

Because it contains a lot of data, and our brains can decipher it.

This is Sam Haver

I ride a unicycle

Before YouTube, I had no way of knowing the true potential of this sport, and it's impossible to put into words.

But a video clip posted by a stranger opened up possibilities.

All of a sudden he started competing and innovation happened.

The world's unicycling community finds, motivates and develops their skills online

There's a ton of other things like that happening, from sports to the arts, where videos improve skills.

As someone who used to edit hobbyist magazines, I can assure you that this is really cool.

Passion on screen

If Rube Goldberg's contraptions and poetry videos aren't your thing, then this is it.

Jove is a website for publishing peer-reviewed scientific research as video.

Traditional scientific papers have their problems

It takes scientists in different laboratories months to reproduce an experiment on paper.

And that's what frustrated Jove founder Moshe Pritzker.

Billions of dollars are wasted trying to replicate experiments, he says.

but watch this video

If you can show it instead of just putting it in words, the problem will be solved.

It's no exaggeration to say that one day video will dramatically accelerate the progress of science.

There are other initiatives that have a similar ethos to TED, where video is often more powerful than print when it comes to spreading ideas.

Why do people love watching TED videos?

Ideas spoken in TED talks have already been published in paper

Reading is faster than watching videos

Why bother?

Videos can show as well as speak

But you can say a lot more than just words without staging to show.

The non-verbal part holds an important secret.

The physical gestures, the vocal inflections, the facial expressions, the eye contact, the passion, the awkward British body language, the ability to sense the audience's reaction, there are so many unconscious cues that tell us how much the audience understands, whether they're inspired, whether they've got the light, the ambition.

Incredibly, all of this is delivered on a screen of a few inches.

Reading and writing is actually a relatively recent invention.

Face-to-face communication has evolved over millions of years of evolution.

That's why it's so mysterious and powerful.

When someone speaks, the listener's brain responds, and the whole group works together.

Face-to-face communication has been nurtured in culture for thousands of years

has played a role in connecting people

But 500 years ago it had a strong advantage

A Competitor Has Appeared

printing became popular

The world's innovators and powerhouses were able to spread their ideas farther and farther with print, while the art of the spoken word declined greatly.

But now, in an instant, things are changing again.

Online video can do to face-to-face communication what Gutenberg did to written language.

Online video is an important medium that connects perfectly with the brain.

globally

it's huge

you'll have to reinvent old techniques

We live in an era where one person's story can be seen by millions. Good ideas attract attention and create a strong desire to learn, to react, and in this case, to laugh.

For the first time in human history, a talented student will not have his talents and dreams crushed by a hopeless teacher.

You can feel the front line of the world right next to you

TED's role in that is small.

Universities around the world are starting to publish their curricula

Thousands of individuals and organizations share knowledge and data online

Thousands of people are discovering new cycles of learning and transmission.

As I thought about this, I began to see the direction in which TED should evolve.

TED talks can't be one-way or "one-to-many"

The future of TED lies in 'many-to-many'

The TED community around the world is thinking about ways to make that happen. It might be interesting to respond to speakers, to share your own ideas, to submit home-made TED talks and highlight the best of them.

When you can get the best out of a huge stockpile, the Ferris wheel of innovation kicks in.

Did you know that something similar to this is happening in education around the world?

It doesn't have to be a laborious top-down process

It should be an autonomous cycle in which anyone can participate.

Now is the time to participate

School should not be turned into an octopus pot

We can't stop learning at 21.

When the population reaches 9 billion

What if the group could help each other through learning instead of plundering each other?

everything changes

We need more teachers than ever before

teachers are everywhere

You're in a crowd, and it's only when the crowd shines a light on you that you can see the teacher, not a group of indistinguishable strangers, but a group of people with something to teach.

Who is that teacher?

It's you

You're part of a group of people trying to turn the biggest learning cycle in human history, a cycle that will make you smarter and better.

These are children from a village in Pakistan near where I grew up.

Within five years, they'll have mobile phones that allow them to watch online videos and upload videos to the web.

In 15 years, the girl in the back on the right may be talking about her idea of ​​making the world a more attractive place for your grandchildren.

that's actually happening

Meet our TED friends in Africa's biggest slums.

(Video) CM: I am Christopher Macau

One of the organizers of TEDx Kibera

There are so many wonderful things happening in Kibera right now.

one self-help group

Turned a garbage dump into a vegetable garden

It was a crime area where robberies happened.

By making compost from garbage

Now feeding more than 30 families

we have our own film school

Recorded and edited reports from Flip's cameras are streamed on a community channel called Kibera TV.

Because land is limited, we grow vegetables in sacks and save on living expenses.

Change happens when you change your perspective

Now I see Kibera differently

To the people at TED and to the whole world, Kibera is a treasure trove of innovation and ideas.

(Applause) CA: Christopher always

You must be a lively person

It was my first challenge, but today, for the first time, we're seeing each other's faces through a screen.

Now Chris, Kevin, Denise Dixon and friends are watching us in Nairobi.

I learned from you guys today

thank you

thank you

(applause)

Let's start with the story of day and night

Life evolved in a world of alternating light and dark, brightening and darkening.

So plants and animals have developed their own internal clocks to adapt to changes in light.

These are chemical clocks that all multicellular organisms have, and even some unicellular organisms have.

Let me give you an example. You catch a horseshoe crab on the beach, you fly it to the other side of the continent, and you put it in a sloping cage.

I keep doing this for weeks until I slowly lose control.

It's unbelievable, but it's not paranormal. Crabs just have internal cycles that correspond to what's happening around them.

And we have this ability too.

In humans, it's called the body clock.

To get a clear view of the biological clock, one traps someone for a few months in a deep underground pit without a clock.

It sounds like you're going to have an irregular sleep pattern, but it's actually a set pattern.

They wake up just a little bit later, like 15 minutes each day, and they drift through time like this for weeks on end.

As a result, we somehow know that instead of perceiving the outside world, we're acting according to our internal clock.

We have an internal clock, and this has very important implications for our lifestyle.

I believe that the biological clock has a strong influence on culture, and that its power is grossly underestimated.

We evolved as an equatorial species, so we're very well adapted to 12 hours of daylight and 12 hours of night.

But we are scattered all over the world, and in the Canadian Arctic where I live, it's bright all day long in summer and dark all day in winter.

As a result, Aboriginal cultures have traditionally been very seasonal.

sleep longer in winter and enjoy family life indoors

In summer, they get excited and stay active for a long time and are very active.

in a natural rhythm

What does our ideal sleep pattern look like?

What we've found is that when people live in an environment with no artificial lighting at all, they sleep twice every night.

they went to bed around 8pm

I sleep until midnight, and then again from about 2:00 a.m. until sunrise.

In between are a few hours of meditative silence on the bed.

During this silence, there's a spike in prolactin secretion that doesn't happen at all in modern times.

The people who participated in these studies were so alert during the day that they realized they were experiencing true awakening for the first time in their lives.

in modern times

We live in a world of jet lag, global travel, 24/7 business, and shift work.

There are advantages to this modern way of doing things, but I think we should also understand the downsides.

thank you

(applause)

I've spent the last decade trying to understand how and why people form social networks.

And by social networks, I don't mean the Internet these days, but rather the social connections that humans have built over the hundreds of thousands of years since our emergence on the African savannah.

In other words, if I have friends, colleagues, siblings, and relatives, and they have similar relationships with other people.

This continues to spread endlessly

You can create a network like this

each point is a person

The line between them represents the relationship between the two, the various relationships.

The fabric of this vast human society has been created, of which we are all a part.

My colleague James Fowler and I have been studying for quite some time what mathematical, social, biological and psychological laws govern the construction of these networks, and what laws make them work and how they affect people's lives.

And lately, I've been wondering if I can't just figure it out, but use that insight to actually figure out how to make the world better, to do something more useful, to solve something.

So the first thing I thought I'd try was to anticipate epidemics.

The current state of epidemic forecasting technology in the Centers for Disease Control and other national agencies is to collect data on the prevalence and incidence of specific diseases reported by field doctors and laboratories from agency sites.

Some of the patients have been diagnosed with some kind of disease, others have had symptoms, and this data enters the clearinghouse with some delay.

If everything goes smoothly, we'll know in a week or two where the epidemic was today.

As a matter of fact, about a year ago, a Google tool called "FluTrends" went viral where you could look at people's current search patterns to get an idea of ​​where the flu is, where the flu is, what the current epidemic is, and how prevalent it is.

But what I want to show you today is one way that we might not only be able to provide rapid warning of epidemic outbreaks, but we might actually be able to detect them early.

In fact, this idea can be applied not only to predicting bacterial infections, but also to predicting many types of epidemics.

For example, anything that spreads in the form of a social contagion can be understood in this way, from abstract concepts like patriotism, altruism, and religion on the left side of the diagram, to habits like diet, book-buying, and drinking, to safety habits, like wearing a bicycle helmet, to products that sell, to buying electronic gadgets, everything that spreads through people.

The spread of new ideas, and so on, can be understood and predicted in the way you're going to see.

As you probably know, we've traditionally used an adoption curve called innovation penetration to describe adoption.

The y-axis represents what percentage of people are affected and the x-axis represents time.

At the beginning, not too many people are affected, and the typical s-curve graph.

The reason it looks like this is because if one or two people are affected or infected at the beginning, those two people will infect the next two people, who will infect the next four people, then eight, then 16, and so on, forming the epidemic's growing curve.

Eventually most of the population will be infected

As fewer and fewer people remain uninfected, the curve plateaus and becomes a classic S-shaped curve.

It's the same with things like germs, idea product diffusion, habits.

But things don't spread randomly among people

Dissemination is done through the network

Because we all live in networks, and these networks have a certain structure.

Look at this network here, there are 105 people.

Dots represent people, lines represent friendships.

I think you'll find that different people have different positions in the network.

Human relationships are also diverse.

There are various relationships such as friendship, siblings, husband and wife, colleagues, neighbors, etc.

And relationships make a difference

For example, STDs are spread through sexual contact.

Smoking habits may be influenced by friendships

Altruistic or philanthropic deeds may be influenced by colleagues, or by neighbors.

But not all positions in the network are equal

If you look at this, it's easy to see that the number of connections varies from person to person.

Some people have one, some have two, some have six, some have ten.

It's also called the node frequency, it's the number of connections a node has.

but that's not all

If you look at nodes A and B, they both have six connections.

But if you look at this diagram as a whole, you'll notice that there's a big difference between nodes A and B.

I think it's easier to think of it this way: If a deadly pathogen were circulating in your network, would you rather be A or B?

(Audience: B) Christakis: Of course it's B.

B is located at the edge of the network

So if there's some interesting rumors circulating in your network, who would you rather be?

That's A. At first glance, it's clear that A is more likely to hear rumors circulating sooner, thanks to its position in the network structure.

In fact, A is closer to the center, and this can be expressed mathematically.

So if you want to track something that's spreading through the network, ideally, you'd put sensors on people in the center of the network, including node A, and observe those people, so that you could discover early on what's spreading through the network.

If these people contract the disease or get information about it, they know that sooner or later everyone will have this germ or information.

This method is much more effective than looking at six people randomly selected without regard to population structure.

In fact, if you could look at people in the center, you should see something like this.

The chart on the left has the S-shaped adoption curve we saw earlier.

The red dotted line is the prevalence among randomly selected people, and the line that's off to the left on the left represents the prevalence among people in the center of the network.

Y-axis is the cumulative number of infected people X-axis is time

On the right is the same data, but with the number of incidents per day.

What you can see here is just a few infected people, and then more and more, and the epidemic peaks here.

The graph shifted to the left is the state of people in the center

And the time difference between the two is a telltale sign, an early warning of an epidemic in this population.

But the problem is that it's not always possible to map social networks.

It can be too costly, too difficult to implement, unethical, or simply not possible.

So without actually mapping the network, how can we find out who's at the center?

What we came up with was to take advantage of a phenomenon that has long been known about social networks, a phenomenon like this. Did you know that your friends have more friends than you do?

Your friends have more friends than you. It's called the Friendship Paradox.

Let's say you have a party host who is very popular in your social network and has a lot of friends, and a misanthrope who has only one friend, and a random person from here is more likely to know the party host.

If they list the party host as a friend, it means that the party host has more friends than they do because he has a lot of friends.

This is basically the Friendship Paradox.

Those friends are more connected and more centrally located than the randomly selected people.

I think this makes sense if you look at the people on the edge of the network.

If you look at this person, this is the only person you can list as a friend, and this person has at least two friends, usually more than that, due to the structure of their network.

This phenomenon is observed at any of the end nodes.

In fact, it's seen holistically toward the center of the network, no matter who you pick.

So we wanted to use this idea to see if we could predict phenomena in networks.

Because with this idea, even if you don't have a diagram of the network, you can pick someone at random from the population, ask them to list their friends, and then pick someone closer to the center.

We tested this with the H1N1 outbreak at Harvard University, just a few months ago, in the fall and winter of 2009.

We asked 1,300 randomly selected undergraduates to name their friends, and we followed both the random students and their friends daily to see if they had been infected with the pandemic flu.

Monitoring use of university clinics and

It is a survey by e-mail report several times a week

Then what we expected happened

The red line is the random group

Popularity among friend groups is leaning to the left

The difference between the two groups is 16 days

By tracking a group of friends, we can provide 16-day advance warning of an epidemic in this population.

And not only that, but when analysts use trend studies or new product adoption predictions, they can track both groups of randomized samples from the population and even more named friends.

For example, if there's a spike in innovation adoption in that group of friends, it's a sign of a fad.

It's also a sign that the two lines start to diverge, as you can see on the left.

At what point did the friends group's line start to spike and widen beyond the random sample group?

That was 46 days before the peak of the epidemic at the point indicated by this white line.

In other words, using this method, we can detect influenza epidemics in a given population more than a month and a half in advance.

I think it depends on a number of factors how far in advance you see such signs.

It could also be due to the nature of the pathogen, and I think that if you look at different types of pathogens in this way, you'll get different symptoms, as well as other pervasive phenomena.

In our example, it wasn't necessary, but we were able to actually map the student network.

Here's a chart showing the connections between 714 students and their friends.

I'm going to show you how this diagram changes.

Let's look at 120 days of day-to-day changes in the network.

The red dots represent flu infections, and the yellow dots are the friends of those infected with the flu.

The size of the dot increases with the number of friends who have the flu.

In other words, the big point is people who have a lot of friends who have the flu.

If you look at this picture, as of September 13th, you can see some colored dots.

Influenza is seen here and there

It's now October 19th

In November, the trend curve rises

Infection spreads rapidly in the center one after another, and gradually peaks out, and the number of infections decreases steadily as we approach the end of December.

Visualizations like this make it clear that these epidemics first infect people in the center and then infect others.

And so, as I've said, this method can be used not only for bacteria, but for anything that can be transmitted between people.

Information spreads through people Common sense spreads from person to person Words and actions spread among people

Behavior can be criminal behavior, it can be election voting, it can be health care, it can be smoking, vaccinations, it can be product distribution and other behaviors that affect human interaction.

If what you say and do tends to affect the people around you, this way you'll be able to get an early idea of ​​the outbreak and signs of an epidemic in that group.

The point that makes this method work is that there are human influences.

You can't have a system where it's done all at once and everyone is affected in the same way.

Now, we can apply this same insight in different ways to things related to networks, such as targeting specific populations for intervention purposes.

For example, you probably know about herd immunity.

If you have a group of 1,000 people and you want to protect them from a pathogen, you don't have to vaccinate them all.

If 960 of these people are immunized, it's the same as having vaccinated 1,000 people.

Because even if one or two unimmunized people become infected, they have no one to transmit the disease to.

We are surrounded only by people who are immune.

Thus 96% is as effective as 100%

There were scientists who randomly picked 30 percent of 1,000 people and calculated what would happen if they were vaccinated.

As for whether immunity at the population level can be obtained

can't get

But if you get that same 30%, 300 people to name their friends, and you give them the same number of shots to 300 of their friends, and you give them 300 of their friends, you get the same immunity as herd immunity.

A similar idea could be used to target the distribution of things like mosquito nets in developing countries.

If we knew the structure of the village network, we could assist interventions to target people in the centre, who would promote the spread of things like mosquito nets.

And frankly, you can use this to advertise any product.

If you know how to select your target audience, you can be more efficient at achieving your goals.

In fact, we can take advantage of data that is currently being collected everywhere.

Here's a diagram of the relationship between 8 million phone users in Europe.

Each dot represents a person, and a line represents the number of calls between those people.

This kind of automatically aggregated data allows us to see the big picture in these countries and understand who is where in the network.

You can get these structural insights without any special data processing.

As you may have noticed, this data can come from other sources as well, such as emails, Internet interactions, and social networks.

In fact, in today's world, a lot of data is being accumulated automatically.

There are a number of ways that this mass of data can be used: it can be a sensor to track a population, identify a core group of people, understand what's going on within that population, and intervene to improve it.

Because today's technology not only tells you who's talking to who, but also where people are, what you upload tells you what people are thinking, and what you buy tells you what's selling well.

All of this management data, when processed together, allows us to understand people's behavior in a way that we couldn't before.

Take fuel purchases by truck drivers as an example.

Drivers go about their business as usual and buy fuel.

We know the end of the economic downturn is near as we see fuel purchases skyrocket.

Or you can use your cell phone to measure how fast people are traveling on a highway, and the phone company can sense congestion by watching it slow down.

What's more, we can make that information available to cell phone users, but only to users following the traffic jam on the same highway.

You can also monitor how physicians prescribe medicines.You can understand how new drugs spread among physicians.

We can look at how people buy products and see how these types of phenomena spread among people.

I think there are three ways to use the large amount of automatically accumulated data.

The first is completely passive, like the one I just described, which doesn't really intervene in the crowd at all, like the truck driver example.

And then there's the semi-active, flu-like example, where you ask people to name their friends and watch them to see if they get the flu, and they're warned.

As another example, a phone company could look up a person at the center of their network and say, "Can you take my temperature every day and send it to me by text?"

I asked him, "I don't mind just the body temperature."

It is also conceivable to collect a large amount of body temperature data limited to people in the center.

This way, with minimal input from people, we can monitor a wide area for signs of an epidemic.

Or you can take a more proactive approach, as I'll be talking about in the next speaker, where people from all over the world join wikis, track photos and elections, upload information, and collect it in order to understand social processes and phenomena.

In fact, the availability of these data is ushering in a kind of new era of what experts call "computational social science."

This is similar to how Galileo used his telescope to see the sky in unprecedented ways, or how Leeuwenhoek invented the microscope and brought new perspectives to biology.

Now, with the availability of massive amounts of data, we're able to understand social processes and phenomena in ways that weren't possible before.

And it's this science that allows us to understand specifically how society as a whole is greater than just the sum of its people.

And we can actually use these insights to improve society and people's lives.

thank you

Since this is TEDGlobal, how do you say this in French?

It's a Hurdy-Gurdy history study.

"Samfauna" in Spanish

"Gironda" in Italian

"Hurdy Gurdy" aka "Wheel Fiddle"

This is a hurdy gurdy in many forms.

A hurdy-gurdy is the only instrument that uses a crank to spin a wheel and scrape the strings like a violin bow to produce sound.

There are 3 types of strings

The first is the "drone string," which produces a sustained sound similar to bagpipes.

The second string is the "melody string" and is played on a wooden keyboard tuned like a piano.

The third one is very strange.

This is also a mechanism unique to this instrument.

We use something called a "roaring piece" or a "dog".

When you turn the crank and put pressure on the string, it makes a sound like a dog growling.

It's imaginative everywhere you look, especially considering that it's an instrument that came out a thousand years ago. Originally, it was played by two people, one turning the crank and the other physically pulling up a large wooden peg to play the melody.

Fortunately this changed centuries later

Now I can play it by myself. It's pretty heavy, but I can hold it somehow.

Historically, the hurdy-gurdy was used for centuries primarily in dance music, with an acoustic beat accompanied by a distinctive melody.

Today, it's used in all kinds of music, including traditional folk music, dance, contemporary music, and world music, and it's performed in England, France, Spain, and Italy.

If you ask for a hurdy-gurdy like this, it takes three to five years.

Made by professional luthiers in Europe.

very difficult to tune

So much for the introduction

Do you want to ask? (audience: want to hear) I can't hear you, do you want to hear? (Audience: I want to hear it!!) Let's play

I sing in Basque, the language of the Basque region where I live, between France and Spain.

(music) (Basque) (music) Thank you very much

(Applause) This is a song I wrote using traditional Basque rhythms.

Next is a Celtic song

(music) thank you

(applause)

Hi, I'd like to start with two questions: How many of you eat pork?

Raise your hand, there are many

So who has ever seen a live pig from which pork is made?

Seen within the last year?

In my country, the Netherlands, you don't see pigs very often, which is strange, because in a country of 16 million people, there are 12 million pigs.

Holland alone can't eat it all

We eat a third of it, and the rest is exported to Europe and the rest of the world.

Mostly British and German

What I was curious about was, historically, pigs were all put to use, not wasted at all, and is this still the case today?

So I spent three years researching

I chased one pig, 05049, to the end to find out what it was made of.

And I met all sorts of people, including farmers and butchers, of course.

But not only that, but I also met aluminum mold makers, arms manufacturers, all sorts of people.

What surprised me was that farmers had no idea what they were making from their pigs.

So I did a lot of research and ended up with a catalog of products made from a single pig, decorated with a pig ear tag on the back.

There are seven chapters: skin, bone, flesh, entrails, blood, fat, and whatnot.

(Laughter) All in all, 103.7 kilos.

I'm going to show you some pictures from the book to give you an idea of ​​how many parts of the pig you come across in your daily life.

I take a shower at the beginning of the day

The soap uses fatty acids made from boiled pig bone fat as a hardening agent, which also gives it a pearly sheen.

If you look around the bathroom, you'll find a lot more. Shampoo, conditioner, anti-wrinkle cream, body lotion, and even toothpaste.

That's why I've met so many pigs just before breakfast.

And for breakfast, protein from pig hair is used as a dough improver.

(Laughter) That's what the manufacturer says, so it's "improved."

Many products, such as low-fat butter, lose their flavor and texture when the fat is removed.

Manufacturers add gelatin to restore texture.

When you go to work, under the road, under the building, there is aerated concrete, a very light concrete that contains proteins taken from bones and is reusable.

German train brakes have sections made of bone ash.

Desserts like cheesecake, chocolate mousse, tiramisu, vanilla pudding, and anything chilled at the supermarket all use gelatin to keep them looking nice.

Pottery has a long tradition

The bones in the fine bone china give it a transparency and strength that allows it to take on fibrous shapes like this deer.

Pigs are also used a lot in interior decoration.

Gives texture and luster to the paint

In sandpaper, glue is used to bond paper and sand.

Also, paint brushes are made from pig hair, which is very strong and perfect for making brushes.

I didn't mean to show you the meat, half of the book is about meat, but you know pork, right?

But what you shouldn't miss is something called "packaged meat."

They are actually sold in the frozen section of supermarkets.

As for what it is, it's steak meat.

It's a kind of beef, but when you cut up a cow, especially on factory farms, you're left with small pieces that can't be sold as steak.

The same is done with tuna and scallops

beer with steak

You might drink it. Beer gets cloudy during the brewing process, so beer companies remove cloudiness from beer by running it through gelatin strainers.

This is also done with wine and fruit juices

A tobacco company in Greece is making cigarettes with porcine hemoglobin in filters.

They say that's what makes the filter an artificial lung.

(Laughter) So that's what makes it a healthy cigarette.

(Laughter) Since the '70s, porcine collagen has been used to inject skin wrinkles.

Because pigs are actually very close to humans, and so is collagen.

this was the strangest thing i found

It's a bullet made by a major American weapons company.

When I was writing the book, I was contacting all the manufacturers of their products and asking them to send me physical samples and swatches.

I also wrote an email to the company, saying, "Hi, I'm Christine, and I'm doing research.

Please send me a bullet."

(Laughter) I didn't expect to get an answer.

They replied, "Thank you for your email, very interesting story.

Are you in the Dutch government? ”

I thought it was really weird that the Dutch government would email someone.

(Laughter) The most beautiful thing I found was a heart valve.

This is a product that is both low-tech and high-tech.

It's got this low-tech thing, the pig heart valve itself, attached to a high-tech thing, a memory alloy frame.

And what it does is transplant it into a human heart, without opening the heart.

Once you've got it in the right place, you remove the outer frame, and the heart valve assumes this shape and begins beating instantly.

It's a really magical moment

It was a Dutch company, so I called them up and asked, "Can I borrow a heart valve?"

they are very cooperative

"Then I'll put it in formalin and put it in a container and send it to you," he said.

But it didn't arrive for weeks, so I called again, "What happened to your heart valve?"

And he said, "The executives of the company have decided not to lend it to me because they don't want to associate the product with pigs."

(Laughter) And the last product I'm going to show you is renewable energy, and the answer to the first question, "Are all pigs still in use today?" was yes.

That's because all the unused parts are being used as fuel for renewable energy.

I found a total of 185 products

What it shows is, first, it's weird that we don't treat pigs with respect.

Second, we have no idea what the products around us are made of.

You'd think I'd be a big pig lover... well, just a little bit... I like materials in general.

To be more mindful of what's behind the products we use -- livestock, grains, plants, non-renewable raw materials, and the people who make them -- I think the first step is to know that it's there.

thank you very much

(applause)

Just a few minutes ago, 10 blocks from here, I took this picture.

The Grand Cafe in Oxford

The reason I took this picture is because it was the first coffee shop in England, which opened in 1650.

It's a great store with a long history

I wanted to show you this, not because I wanted to show you something like Starbucks in historic England, but because for the past 500 years, coffee shops in England have played a central role in the development and dissemination of intellectual creation, the Enlightenment movement.

The drinks served were part of the reason why coffee shops played such a big role in the birth of the Enlightenment movement.

Because before coffee and tea became part of British culture, both the upper classes and the general public drank alcohol from morning till night.

I liked to drink alcohol from noon

A little beer at breakfast, a little wine at lunch, especially around 1650, gin, and beer and wine at night.

The water wasn't safe, so it was the right hygienic choice.

So before the coffee shops were built, the whole population was getting drunk all day long.

If you've been drinking all day, some of you may be like that, but you can imagine what it would be like, but if you wake up with caffeine to wake up your slack life.

good ideas come to mind

Be alert and alert

So it's no surprise that when England started drinking tea and coffee, there was a great innovation.

Another reason coffee shops are important is the spatial structure.

People from all walks of life, experts from all walks of life, share this space.

It's a space where ideas have sex, according to Matt Ridley.

It's like a bed where a married couple sleeps, and ideas mix here.

If you look at the vast number of innovations that came out of this era, somewhere in that history is the coffee shop.

For the past five years, I've spent a lot of time thinking about coffee shops because I've been searching for answers to questions like, "Where do good ideas come from?"

What kind of environment produces extraordinary innovations and extraordinary creations?

What kind of environment or space fosters creativity?

So I've been looking at environments like coffee shops, and media environments like the internet, where innovations happen one after another. I've visited places where that history began, and I've visited biological environments like coral reefs and rainforests, where biological innovations follow one after another.

I've been looking for common symptoms in all these environments.

Are there common patterns that can be more creative and innovative when applied to our lives, organizations, environments, etc.? there were a few

To understand this, to truly understand the essence of these things, we need to let go of many of the preconceived notions found in traditional metaphors and expressions that tie the creation of ideas to specific concepts.

There are plenty of words to describe the moment an idea is born.

There are such things as "a flash of light", "hitting the head", "god descends", "inspiration!"

As you can see, every concept is greatly exaggerated, and every concept is an idea that exists alone.

It's based on the premise that it emerges in a moment of great light.

But in reality, I'd like to tell you that it's a network of discrete elements, and you'd better think of it that way.

because that's how it is in my head

The new idea is a new network of neurons communicating in a coordinated manner in the brain.

This is a new combination that has never been constructed before.

So in what kind of environment is the brain more likely to build new networks?

In fact, it turns out that the network structure we see in the outside world is similar to the network structure in the brain.

I have a favorite anecdote about the 1650s, down the years, and about some of the most brilliant ideas of our time.

A wonderful guy named Timothy Prestero runs an organization called Design That Matters.

An organization founded to tackle the dire and inexorable problem of child mortality in the developing world.

I had this problem: wherever you use modern neonatal incubators to keep premature babies warm, you can cut the infant mortality rate in that environment in half.

the technology already exists

common in all developed countries

The problem is, if you buy it for $40,000 and send it to a medium-sized village in Africa, it's going to be very useful for a year or two, but then something goes wrong and it breaks down, and it's left broken because you don't have a distribution system for spare parts and you don't have the local technicians to fix a $40,000 piece of equipment.

You're going to run into a problem where you're throwing money at it and sending aid and the latest gadgets to no avail.

What is sufficiently prevalent in developing countries? Note that there aren't many videos or microwaves, but

I found that the maintenance to keep the car running was well done.

Toyota Hilux is running on the road everywhere

It seems that there is a technician who maintains the car

I thought, "Can we make a newborn incubator out of car parts?"

Here's what we came up with

Improved incubator

It looks like a normal incubator, like you'd find in modern hospitals in Western countries.

All the contents are car parts

It uses a fan, uses headlights as a heat source, uses a doorbell as an alarm, and runs off a car battery.

If you can get spare parts from your Toyota store and fix your headlights, you can fix this incubator.

It's a great idea, but what I want to say is that this story is full of ideas for idea generation.

It's tempting to think of advanced technology, like the latest $40,000 incubator, as a breakthrough idea.

It's often possible to assemble any piece you find lying around, and we get ideas from people.

I get ideas from people I meet by chance at a coffee shop, and I sew them into new forms to create new ideas.

That's how innovation happens.

So we need to change some of our notions of what innovation and reflection are.

Speaking of contemplation, it was like this

This is Newton and Ringo in their Cambridge days.

The statue is in Oxford

I sit and ponder, and I watch an apple fall and realize the law of universal gravitation.

But historically, innovation spaces have actually looked like this.

It's Hogarth's depiction of a political gathering in a saloon, and that's what coffee shops looked like in those days.

Ideas are flying around in chaotic situations, and people from all walks of life are likely to come together to create new, interesting, and unpredictable conflicts.If you want to build a more innovative organization.

Even if it seems strange, you should make a space a little like this. You should do this for your office.

That's my message in this area of ​​research.

There's the problem of self-reporting being unreliable, when you ask where the best ideas come from, or how the best ideas come from.

A few years ago, a great researcher named Kevin Dunbar changed his approach and used a surveillance-based approach to look at where good ideas come from.

I've traveled to many labs around the world, and I've videotaped every single one of the researchers in action, whether they're sitting in front of a microscope or chatting with colleagues by the water cooler.

I recorded all the conversations and tried to figure out where the most important ideas came from.

The image of a scientist in the lab is one of dropping something through a microscope, looking at a sample of cells, and exclaiming, "I have an epiphany!"

When Dunbar actually looked at the tape, he found that most of the big breakthrough ideas didn't come to him alone in front of the microscope in the lab.

It was born at weekly lab meetings, where everyone brought together the latest data and achievements, and often failures, errors, and noise in the observed signals.

I call this kind of environment a "fluid network," where ideas converge, where people with different backgrounds and interests come together and exchange ideas. This is an environment conducive to innovation.

There's still another problem, with everyone innovating in such a short period of time.

I want to tell it as a story of the moment "I had an idea!"

I want to say, "I was standing and suddenly I was floating."

But in fact, when we looked at the historical record, we found that many of the important ideas had a very long maturation period.

It's what you might call a "slow hunch."

We hear a lot about hunches and intuitions and flashes of light these days, but the truth is that great ideas have been simmering in the back of our minds, sometimes for decades.

I'm aware of an intriguing problem, but I have absolutely no way of solving it.

You're working on a problem all the time, but you're curious about something else that interests you, and you never solve it. Darwin is a perfect example.

In his autobiography, he describes the so-called "Hit it!" moment when he came up with the idea of ​​natural selection.

Darwin, during his research in October 1838, while reading Malthus' book on population,

All of a sudden, the basic algorithm of natural selection popped into my head, and I said, "I finally have a theory to work with."

I wrote in my autobiography

About 10 or 20 years ago, a great scholar named Howard Gruber looked back at Darwin's notebooks from that era.

Darwin left behind a huge notebook filled with every little idea and hunch.

According to Gruber's research, the theory of natural selection appeared to have been developed many months before the "Hit it!" moment in October 1838 while reading Malthus' book.

There's a description that tells us that, and we can already read what Darwin wrote before the "I had an epiphany" moment.

So we know that Darwin had an idea or a concept, but he didn't quite think it through.

That's how good ideas are born, little by little, over time.

Now here's a thorny problem: How can we create an environment that can endure a long incubation period for idea generation?

It's hard to say to your boss, "I have a great, useful idea.

It will be available around 2020

Do you have time to work on it? ”

Some companies, like Google, spend 20 percent of their time innovating.

It can be said that it is an organizational system for cultivating premonitions.

this is very important

It's also important and common to combine your own hunches with the hunches of others.

When two people, each with half an idea, meet in the right environment, the result is more than just adding up.

We talk all the time about the value of intellectual property protection, building defenses, keeping research and development secret, patenting anything, to keep ideas valuable, to encourage idea creation, to make our culture more innovative.

I just want to say that we should at least give as much weight to the factors that bring ideas together, not just conservation.

So here's a story that's a nice, thought-provoking story about innovation.

It teaches us how innovation can come from unexpected outcomes.

It was October 1957, shortly after Sputnik had just launched.

It was at the Applied Physics Laboratory at Johns Hopkins University in Laurel, Maryland.

Monday morning, news broke that Sputnik was in orbit.

This is a den of professional idiots

All the physicists were like, "Oh, that's a lie, I can't believe it."

Two researchers in their twenties at the lab were chatting at the cafeteria table among many other researchers.

They are Geier and Wei Hung Buck.

Someone said, "Has anyone heard this thing?

There are artificial satellites flying in space right now, and of course they're sending out some kind of signal, so if you tune in, you might be able to hear them."

If you ask a few people around, they'll all say, "I didn't think of that. That's interesting."

In fact, Wei Hung Buck is a microwave receiving technology

Because I was an expert, I also had a small antenna with an amplifier in my lab.

They went back to Wei Hung Buck's lab and started playing around with the equipment, what we call hacking today.

After about two hours, it was working. Actually, the Soviets designed Sputnik to be easy to track. It's exactly 20 megahertz, so it's easy to tune.

People began to gather in the lab, and they said, "That's nice! Let's hear it! It's amazing."

And immediately, "It's a historic moment.

It's the first time I've heard of it in America.

I thought, let's record it.

I started recording little beeps on my big, bulky analog tape recorder.

And I also marked the date and time with each little beep that I recorded.

And "Huh? The frequency is slightly fluctuating.

I thought that if I could calculate using the Doppler effect, I might be able to determine the speed of the satellite's movement."

After thinking about it for a while, I asked several researchers from different fields.

He replied, "Wow, if you know the rate of change of the Doppler effect, you can tell where the satellite is closest to the antenna and where it's farthest away.

This is amazing."

And then I got permission to reposition it as a non-professional project and get permission to use the newest, freshest, room-sized UNIVAC computer.

It took me three or four weeks of calculations to map out the exact orbit of the satellite around the Earth, starting with an idea I had while I was eating one day, then hearing a faint beep in my spare time, and that's all.

Two weeks later, my boss, Frank McClure, called them up and said, "I just wanted to ask you something about a project you guys were working on.

I was able to calculate the position of the satellites orbiting the earth from the ground where the position is known.

What about vice versa?

Can't we find out where we are on Earth when we know where the satellites are? ”

After thinking about it, I answered, "I think I can do it. Let's do some math."

I thought about it, then I went back to my boss and said, "This is easier."

My boss says, "That's good. We're building a new nuclear submarine.

Without knowing where the submarine is in the middle of the Pacific, it's very difficult to accurately fire a missile over Moscow.

I was thinking that if we could launch a lot of satellites and track submarines, we might be able to locate them in the middle of the Pacific.

Thus GPS was born

Thirty years later, Ronald Reagan opened up GPS and made it an open platform. Anyone can build on this platform, and anyone can participate and build new technologies on top of this platform that will lead to creativity and innovation.

One thing's for sure: At least half of this room is using cell phones in their pockets to communicate with satellites in space.

And I'm pretty sure someone used that phone and satellite to find the location of a nearby coffee shop. (Laughter) At least yesterday or last week.

(Applause) This is a great example of the wonderful, unexpected, emergent, unpredictable power of the system of open innovation.

If you build it right, it can take you in a whole new direction that even the builders didn't anticipate, those two men.

I was just pushing forward with a hunch and a surge of passion, and then I ended up fighting the Cold War, and over time I ended up helping someone who wanted a soy latte.

(Laughter) That's how innovation happens.

Opportunities come when hearts are connected

thank you

(applause)

I would like to go on a trip with you

You're driving down a little road in Africa, and you drive in and you look down a side street and you see something like this: a cemetery.

I park my car, go outside and take a picture.

Then go into town and ask what the heck is going on here.

People are reluctant

They say, 'There's been an AIDS epidemic in this area lately.

Because HIV is a stigma unlike any other disease

People are reluctant to talk and are afraid to get involved.

I'm going to talk to you today about HIV, about death, about stigma.

This is a medical story, but more than that, it's a social story.

This is a map of HIV prevalence around the world.

As you can see, Africa has skewed infection rates.

Today there are 33 million people living with HIV worldwide.

Two-thirds of those, 22 million, live in sub-Saharan Africa.

In poor countries, there are 1.4 million pregnant women with HIV, 90 percent of whom live in sub-Saharan Africa.

In this regard

Let's talk about annual births and HIV-infected mothers.

7,000 HIV-infected mothers give birth in the United States each year.

But in the smaller country of Rwanda, 8,000 HIV-infected mothers give birth.

And in Baranawas Hospital, just outside Johannesburg, South Africa, 8,000 HIV-infected mothers give birth each year -- a hospital as many as a whole country.

To show that this is just the tip of the iceberg, it would be staggering to compare it to South Africa as a whole, because 300,000 people with HIV give birth in South Africa each year.

So let me talk about PMTCT, which stands for Prevention of Mother-to-Child Transmission of HIV.

I think a lot of people have the misconception that if the mother has HIV, the child has it too.

actually it's not

In countries where the environment is right, with all the screening and treatment available today, the proportion of children born with HIV could be reduced to less than 2 percent.

But in poor countries, because of the lack of screening and treatment, a whopping 40 percent of children are born with HIV, and the difference between 40 percent and 2 percent is huge.

So I'm going to talk about PMTCT in more detail. These preventative measures are screenings and medicines for mothers to protect their children from infection, medicines so that they can live and raise their children.

So if the mother participates, they can get tested.

Pregnancy You are given medicine to prevent the baby from getting infected during childbirth.

You get guidelines on parenting and safer sex.

Our all-inclusive service makes a difference

In the United States, the number of children born with HIV has dropped by 80 percent since the introduction of this treatment in the mid-1990s.

Fewer than 100 children are born with HIV each year in the United States, but still, worldwide, more than 400,000 babies are born with HIV every year.

this means

That translates to 1,100 babies born with HIV every day.

Looking at each region

Less than 1 person from America

1 person from Europe on average

100 people from Asia

And that means 1,000 babies from Africa every day.

If you look at this map again, you can see the unusual infection rates in Africa.

Then another map

You see, Africa also has an uneven proportion of doctors.

This arrow points to Africa

The same can be said for nurses.

In fact, sub-Saharan Africa accounts for 24 percent of the world's diseases, but only 3 percent of the world's health workers.

What this means is that doctors and nurses don't have enough time to see each patient fully.

Nurses in busy hospitals are given only a few minutes per patient to care for 50 to 100 patients a day.

Let's take a look at the PMTCT program

In 2001, I was given an HIV test and explained the results. I was given a prescription for the drug nevirapine.

Luckily, since 2001, we've had new treatments and tests that have made it more convenient, but we still don't have enough nurses.

There were still tests that nurses had to do in minutes.

It's completely impossible and completely non-functional.

We need to find better ways to deliver health care.

This is a picture of a maternity hospital in Africa, pregnant women and mothers with children.

I'm here for treatment, but as far as I know, it's just screenings and medications that aren't enough.

Medication is not the only cure

Clearly, doctors and nurses lacked the time and skills to teach people the right way.

I'm a doctor, and I told them what to do, and I asked them to follow my guidelines. I'm a Harvard-educated doctor.

Even if I advise them to practice safe sex, they don't have that right in their relationship.

Even if she asks her to take medicine every day, no one in her family knows about her illness, so the advice is completely useless.

We needed a different way of doing things, we needed a way that was affordable, accessible, scaled, and could be done anywhere.

Let me tell you a story. Let's travel again.

Imagine you're a young woman in Africa and you go to the hospital to be tested.

Suppose you go there, and you find out about your pregnancy and rejoice.

But another test reveals that you have HIV, and you're disappointed.

A nurse will walk you into a room and tell you about tests, about HIV, about treatments available, how to take care of yourself and your baby, but you don't hear anything.

All I hear is that if you wait to die, the baby will die too.

Even if I leave the hospital, I can't find where to go

I don't even know who to talk to, because the truth is, HIV is such a shame that if you were to talk to your partner or someone in your family, you would be left without help.

This is the true story we are facing in Africa today.

But let's talk about possible solutions and good news here.

Let's change the previous story a little.

As before, after the examination, the nurse will take you to a room.

When I open the door, there's a mother and her baby in the room, they sit and talk and listen to music.

I drink tea and eat sandwiches

I walk into the room and a woman comes up and says, "Welcome to Mothers 2 Mothers.

Please sit down. It's safe here.

we are all HIV infected

I'm sure you'll be fine, you won't die

And I'm sure the baby isn't infected."

We see mothers as important assets in our communities.

Men are often unable to participate in the household

because it is frequent

Mothers take care of the children and the household

Mothers 2 Mothers seeks help from HIV-infected women as health care providers

We're going to get the mothers who are living with HIV and who have gone through the PMTCT program to come back and work alongside the doctors and nurses as part of the health care team.

I call them mentor mothers, and they're helping them realize that expectant mothers are living with HIV, just like they were, and they need support and knowledge, and they're helping them get screened.

It's teaching them how to take their medicines correctly, how to take care of themselves, how to take care of their children.

If you need surgery, you want the best doctor, right?

But if you want to know how the surgery will affect your life, you want the assurance of someone who has already had the surgery.

Patients are well aware of their experiences and are able to share their experiences with others.

This is medical care that goes beyond mere medication.

The mothers who work with us are hired in their own communities,

As a member of the medical team, like a doctor or a nurse, you're also paid a salary.

Their bank accounts will also be opened and they will be paid directly. This money is protected and cannot be stolen by men.

They go through a rigorous 2-3 week course to gain knowledge and training.

Doctors and nurses are also trained

But training is one-off and many people don't know about new drugs and guidelines.

Our mentor mothers are retrained every year.

doctors and nurses consider them experts

Imagine these former patients advising their doctors and other patients in their care.

My organization has three goals.

The first is to prevent mother-to-child transmission.

Second, keep the mother healthy, the child alive, and no orphans.

And third, and perhaps most importantly, find ways to empower women so that they can fight stigma and live positively and productively while living with HIV.

How can we achieve this?

The important thing is to see patients one by one, to give them knowledge one by one, to support them one by one, and to teach them how to care for themselves.

More than that, you'll probably want your partner to accompany you to the hospital.

In Africa, it's very difficult to get men involved in raising children.

Men are rarely involved in pregnancy care

But in Rwanda, we have a law that says that a mother cannot go to the hospital alone unless the child's father accompanies her, and that's the law.

The child's father and mother go to the hospital together for consultation and check-ups.

together we will receive the result

It's very important to get rid of shame

Disclosure is central to prevention.

If it wasn't made public, how could you wear a condom and have safe sex?

Patients need the support of family and friends, and it is very important to disclose this information to family and friends in order to be able to receive regular treatment.

we also act in groups

Instead of me lecturing, they gather themselves together and share their personal experiences with each other with the support and guidance of their mentor mothers.

Through this shared experience, we're learning how to take care of ourselves and how to take our medications.

There is social service, women's participation in society.

If you can change the mindset of your family, you can change the mindset of your community.

If we can change the way the community thinks, the way the country thinks about women

We can change our national policy on HIV.

The most difficult thing is how to get rid of shame

We have drugs and tests for HIV, but how do we eliminate the stigma?

The important thing is to publish

A few years ago, my mentor mother came to me and told me this story.

She had a patient who asked her to come with her because she wanted to tell her family that she had HIV because she was afraid to tell her alone.

I want you to come with me

The patient went home and told his mother and brother that he had HIV.

the whole family went silent

But her brother stood up and said, "I have something to say, too.

i'm infected too

I was afraid to confess the whole time," he said.

Then my sister got up and said, "I'm infected too. I was too embarrassed to tell you."

And my brother stood up and said, "I'm an infected person too.

I thought my family would abandon me."

I think you already know the conclusion.

The last sister stood up and said, "I am also an infected person.

I thought everyone hated me."

For the first time, all the families there were united, and for the first time they were able to share their experiences and help each other.

"They come to me crying and afraid

I myself have HIV, but I tell my children that they are not.

And they also say they can raise healthy children.

I myself am a sign of hope

In Africa, as I've shown you, there are extremely few doctors and nurses, and a poor healthcare system.

Remember this is a crisis situation

No matter how many tests and drugs we have, there are not enough providers to provide them to patients.

Let's talk about task shifting

Task shifting originally meant that when you receive health care services from a provider, another provider provides the services on your behalf.

Specifically, doctors giving jobs to nurses.

But in Africa, there are actually fewer nurses than doctors, and a new paradigm of healthcare needed to be built.

How to build a healthcare system?

So we redefine the healthcare system as doctors, nurses, mentor mothers.

I asked the mentor mother to explain how to take the medicine and the side effects that the nurses are doing.

From explaining childcare methods, family planning, and contraceptive methods to patients, we have mentor mothers take care of things that nurses alone do not have time to spare.

Returning to the topic of preventing mother-to-child transmission

A growing number of programs around the world are building bridges to maternal and child health.

And our organization encourages women to participate in such programs.

The care doesn't end when the baby is born, but by continuing to care for the health of the mother and child, they can live a healthy and wonderful life.

Our organization works on three levels

First, at the patient level, to protect children from HIV infection and to enable mothers to raise their children in good health.

The second is to expand women's rights at the community level.

Developing local leaders

It's about changing the mindset of the community, we need to change attitudes about HIV.

We need to change the way we think about African women

These must be done

And we have to rebuild our health care system and build stronger health care services.

it's broken now

The current method will not work at all

And doctors and nurses don't have the skills or the time to change people's behavior, but mentor mothers have the skills and the time.

If you get mentor mothers to help rebuild the health care system, you can rebuild it.

The program started in Cape Town, South Africa, in 2001.

That's when the idea came to me

It was the day after I heard Stephen Johnson's very precious speech, and I was in the shower, alone, of course.

(Laughter) Now, there are 670 programs in nine countries, 230,000 patients a month, 1,600 mentor mothers, and 300,000 pregnant women and mothers with HIV last year.

That's a whopping 20 percent of the world's pregnant women with HIV, 20 percent of the world.

The distinguishing feature of this program is that it's very simple.

An HIV-infected mother caring for an HIV-infected person

Former patient takes care of current patient

We aim to empower them through employment and end their stigma.

"There is hope, there is hope that one day we will defeat HIV and AIDS.

Patients must know their own HIV status

People who aren't infected with HIV must know how to prevent it.

Infected people must know how to treat

Pregnant women with HIV should receive PMTCT services to protect their children from infection.

Everything is possible if each of us contributes to the fight against HIV.

Simple solutions to complex problems

mothers caring for mothers

Change your thinking

Thank you for your attention

(applause)

What I am about to tell you is the process that led me to become an activist. It's an HIV AIDS activist.

This is the project name SING.

November 2003 I was invited to a charity event. It was the launch event of the 46664 Foundation, founded by Nelson Mandela. This is an HIV AIDS support organization.

The number 46664 refers to the number given to Mr. Mandela while he was imprisoned on Robben Island.

This is Youssou N'Dour and me on stage.

The next day, we artists were invited to Robben Island to join Mr. Mandela. There he addressed the media around the world. Standing in front of the cell where they were once held.

You'll see a barred window behind you.

It was a very important day for us.

On that occasion, Mr. Mandela appealed to the world. About the virtual genocide going on in his country. Thousands of people die every day in a country called the Rainbow Nation, where apartheid has been abolished. And that the victims bearing the brunt of it are the most vulnerable women and children.

This made a deep impression on me. I am also a woman and a mother. I didn't notice it at all. The HIV/AIDS epidemic has such a direct impact on women.

So when I left South Africa, when I left Cape Town, I made up my mind. I told myself “I have to do something too.

playing a role. "and.

Since then, I have participated in all events related to the 46664 Foundation as much as possible. I held a press conference and had an interview. I tried to make good use of my position as a musician to serve Mr. Mandela. In tribute to the great and tremendous work that Mr. Mandela has done.

People all over the world will praise Mr. Mandela. And I will respect you.

But are they aware of what is happening in South Africa? Mandela's country is one of the most affected by the virus in the world.

Now, if I go out on the street and tell them what's going on there, they'll be shocked.

A few years later, I had a wonderful meeting. Zakki Akhmat is the founder of The Treatment Action Campaign and a great activist.

I met him at 46664.

At the time, he wore a T-shirt like the one I wear now.

This is a landmark. This shows that I belong to people living with HIV and people living with HIV.

Even if the topic is difficult to talk about, by wearing this T-shirt, you can say, 'I can talk about this issue.

No need to hide it in the closet. I can tell you.

I became a member of the Treatment Action Campaign. I am very proud to be part of such a great team.

This grassroots movement is made up of 80% women, most of whom are HIV-positive.

they go to the scene.

They can reach out very broadly and reach out to those who fight AIDS every day.

There is also an educational program

face the truth.

Their activities are truly amazing.

And my SING project supports this treatment action campaign by spreading the word and raising funds in every possible way.

Much of the money I manage to raise goes directly to the Treatment Action Campaign. Their extraordinary work continues to this day in South Africa.

This is the activity of SING.

This activity basically consists of me and 3 or 4 wonderful members.

I have traveled the world in the last two and a half years. I have visited about 12 countries.

This is in Oslo, Norway, getting a nice big check. Here is my performance for fundraising in Hong Kong.

In Johannesburg, I had the opportunity to perform to mostly middle-class white people. They were in tears at the end too. That's because I've used visuals to convey all the facts that really touch the heart. The truth about how people are trying to avoid the dire situation that is happening right now. It's because they think they're exhausted by the situation and have no idea how to fix it.

Mr. Aaron Mozzareddy, the current Minister of Health and Welfare, came to the concert and was able to meet him in person. So Mr. Mozzareddy unconditionally promised that the situation would improve. This is really important.

This is the Scottish Parliament.

Later I was appointed Ambassador for Scotland and HIV.

Again, I tried to raise awareness by telling the truth about what I actually experienced.

And it's Edinburgh again. A wonderful African children's chorus that I love so much.

Many of these children are orphans who lost their families to AIDS.

Here I am with Michelle Sedibé in New York. He is the leader of the Joint United Nations Program on HIV/AIDS, UNAIDS.

A few months later, Mr. Sedibé has the honor of appointing me as UNAIDS Ambassador.

Assuming this role, I am strengthening the foundations of our activities and further expanding the scope of our activities.

The message UNAIDS is now spreading around the world is to virtually eliminate mother-to-child transmission by 2015.

It's not an easy goal to achieve. But if there is political will

It is possible.

Here I am with a pregnant woman. She's HIV positive, but we're both smiling. Because I'm sure this young woman will be able to get the treatment and live on and take care of her soon-to-be baby.

And her baby can be born without the virus by preventing mother-to-child transmission.

Preventing AIDS can be done at the very beginning of life.

This is one way to reduce AIDS transmission.

Finally, let me tell you something special. About Abril.

she is abril She sticks to me.

I will definitely talk about her. Because she can be said to represent millions of orphans with HIV AIDS.

Abril's mother contracted the HIV virus and died. It was a complication of AIDS.

Avelile was infected in fetus.

Seven-year-old Avelile in this photo weighs as much as a one-year-old.

At this point she had terminal AIDS and pneumonia.

I spent half a day at a hospital in Eastern Cape Town meeting my lovely girlfriend.

The doctors and nurses at the hospital were all wonderful people.

He put her on a special diet and took very good care of her.

By the time we filmed her and left the hospital, we didn't know if she would survive.

That's why meeting her was so emotional. The experience of meeting this one child in person struck a chord.

Five months later, we returned to South Africa and met Abril again.

You may not be able to see it from the excitement, but the hair on your arms stands on end.

I'll show you why.

This is the change that happened to her.

Sounds great, doesn't it?

(Applause) The applause from everyone is for the doctors and nurses at the hospital who supported her.

I'm sure you are all thrilled by this change.

So, I would like to ask each and every one of you here. Mothers and children around the world have the right to nutrition and good medical care. And if you believe that the Millennium Development Goals, especially Goal 5 to improve maternal health and Goal 6 to stop the spread of HIV and AIDS, should be absolutely supported by countries around the world, especially in sub-Saharan Africa, would you please stand up?

Most people agree with you.

Thank you for your time.

(applause)

My name is Mwende Katwiwa, and I'm a poet, a Pan-Africanist, and a freedom fighter.

I first learned about reproductive justice when I was 23.

When I was working at Women with a Vision, I learned that an organization called Sister Song defined a woman's right to decide when and under what conditions to have children.

2 A woman's right to choose not to have children and to choose methods of contraception and abortion

3. The right of women to raise their children in a safe and healthy environment free from fear of personal or governmental violence.

always wanted to be a mother

As I grew older, I heard all the joys of motherhood

I dreamed of seeing my womb create miracles in the world.

i knew i was too young

But I thought it would be better to start early with such a big plan.

But now that I'm 26

I don't know if I have what it takes to be a mother in this country.

Over the years, America has taught me more about parenting than any parenting book.

Some women give birth to children, some women give birth to criminals.

Families from this body are more likely to end up in prison than earn a degree.

being black in america makes being a mother hard

What should I do to raise my children properly and not take their lives?

How can I teach my son, "Don't steal because it's wrong"? Or "because it gives the opponent an excuse to kill"?

How can I tell you, "Some people buy candy and iced tea with their own money, but they look after them and see them as criminals, not children."

Is it a good idea for the police to come in the first place?

When I think about calling the police, the ringtone and Sean Bell get me thinking.

When I think of Oscar Grant, I can't say the cops never killed my son.

Black people may not be hanged anymore, but killing a black boy and leaving his body for four hours is a lynching.

It's something history should remember, being black in America, it makes motherhood feel sad.

I woke up one morning thinking my son was the victim of some kind of rerun of last week's incident.

I thought I might wake up and find that my daughter died and it wasn't even news.

So we can't say that Sandra Bland is the only black woman to have been violent enough to warrant breaking our silence.

What about other women with dark skin who suffer and their deaths are not yet remembered?

What about the children who can't adjust well to normal gender-segregated lives?

If you're born with a body that looks like this, nothing seems to protect you for sure.

Being black in America makes me hesitate to be a mother

After writing so many poems about dead black children, I was forced to admit that one day my child might be written.

But I don't want to be a mother who gives birth to poetry

No line of poetry to talk about a son No line about a little girl No footnote about a misfit

I do not need

Even if I live forever in poetry, I don't want a child who leaves me and dies.

(Applause) I was invited to perform a poem on this TED Woman.

But for me, poetry is not art or performance.

It's a way of protesting

During a rehearsal yesterday, I was told this because there were several recent TED talks on "Black Lives Matter."

I thought maybe it would be better to leave some parts out and just talk about reproductive justice.

But that poem and the subject of this talk are fundamentally inseparable for me.

When I was 21 (Applause) When I was 21, Trayvon Martin was killed.

Trayvon Martin, a 17-year-old black young man, a black child, reminded me, reminded us of how little this country actually takes black lives.

#BlackLivesMatter has become one of the most well-known calls for black people and their children to live in safe environments and healthy communities without fear of violence from individuals and state governments.

A few months later, when George Zimmerman was acquitted of Trayvon's murder, I heard Trayvon's mother Sibrina Fulton speak.

I was so struck by her testimony that I found myself asking myself, What does it mean to be a mother with this skin color in America?

what does it mean to be a mother For many people my skin color, being a mother is synonymous with sadness.

Before I knew it, I was beginning to make connections between the reproductive justice paradigm and the Black Lives Matter movement.

As I learned more about reproductive justice on Women with A Vision, and as I continued to be actively involved in the Black Lives Matter movement, I wanted others to see and feel the parallels between the two.

I was asking myself, Whose job is it to connect thought, reality, and people in times like these?

I would like to dedicate this talk and the poem I mentioned earlier to Constance Malcolm.

She was killed young - the mother of one of the black children, LaMurley Graham.

As I was struggling to write that poem, she reminded me at dinner one evening that it's the artist's job to unearth the events that people try to fill up with complacency and time scoops.

Toni Morrison recently wrote, "When the world is in turmoil, an artist should never choose silence.

There's no time to pity yourself, it's not the time to be afraid."

During rehearsals yesterday, I realized that I was terrified when they said, "Maybe we should get rid of the Black Lives Matter part."

We feared that our story, which should be told, was being denied yet again.

But then I remembered the words

"When the world is uneasy, an artist should never choose silence.

no time to pity yourself

(Applause) There's no time to feel sorry for yourself

This is not the time to be afraid."

and made a choice

and always choose

thank you

(applause)

i am a doctoral student

The theme I'm chasing is "How can we make digital content accessible?"

So, on one side, there's the digital world, and there's a lot going on there.

But it has no substance, it's virtual, and we, on the other hand,

live in the physical world

It's rich and full of flavor and texture and aroma.

The question is, how do we bring the digital into the physical world?

that's my problem

If you look at the touch iPhone or the physical Wii, there's a trend toward physical things.

So what comes next?

I have three ideas to show you.

The first is weight

We are sensitive to where the weight is on the things we hold in our hands.

Can't we apply it to mobile phones?

Let's take a look at the cell phone that moves the center of gravity

It's a cell phone-shaped box with a movable iron weight inside that you can feel where the weight is.

you can change the center of gravity

It allows us to give weight to digital content.

When you move content on the screen, the weight of the device tells you where it is.

Another application is navigation

when using directions in the city

Weights can tell you, "Turn right, keep going straight, turn left here."

The nice thing about this is that you don't have to look at the device all the time, you can just look at the scenery. Weight was the first.

the second is the shape

We are also sensitive to the shape of objects in our hands.

If the downloaded e-book is 20 pages, it feels thin

If it's 500 pages, I want it to feel as thick as Harry Potter.

Let's take a look at mobile phones that change shape

It's a portable box again, this time it's a different shape.

You can play with the shape itself

I wish it was thinner when in my pocket

When you hold it in your hand, the top sticks out

It will become thinner towards the bottom

If you turn it sideways, it will automatically adjust its shape.

It's also convenient to stand on your nightstand to watch movies or use as an alarm clock.

it's very simple

Another use is when what you're looking at on your phone is bigger than your phone's screen.

So with apps that are larger than the screen, the shape of the phone can say, "There's more content off the screen, but you can't see it."

You can feel it by the thickness of your phone

the second was the shape

the third is on a different level

Humans are social, they're empathetic, and that's a wonderful thing.

Couldn't we use it to make our phones more intuitive?

If you have a hamster in your pocket

You can feel it and you know it's fine without taking it out.

Let's take a look at the living cell phone

It's a portable box again

But it has breathing and heartbeat, and it feels very organic.

(Laughter) I can tell you're really relaxed right now.

Maybe it's from my new girlfriend.

How can I calm myself down?

If you rub the back of the ear, it will calm down.

It's very intuitive, and that's a good thing.

You've seen 3 ways to make digital information "graspable"

I think making it physical is a good way to go.

The idea behind this is that in the future, instead of humans becoming more technical, technology will become more human.

(applause)

"Nada Brahma" in Hindi means "The world is made of sound"

In a way, this is true, because everything vibrates.

In fact, everyone here is vibrating.

Every part of the body vibrates at different frequencies

You could say it's a chord, so to speak. Each chord is unique.

Health, I would say, is a state in which these chords resonate perfectly.

You can't hear this chord, but you can hear it for 10 octaves.

By the way, the eye can only see one octave.

Overworked ears, no eyelids

moving while you sleep

The quietest sound is heard when the eardrum moves by four atoms.

The loudest sound is a trillion times louder.

Ears are not for hearing, they are for listening

Listening is an active skill. Listening is passive, but when you listen, you have to take action.

On the other hand, this skill cannot be learned from someone else.

For example, have you ever thought about the "listening posture"? how to listen about it

Let's look at two examples

Extractive listening has a purpose of listening

It is a way of listening in which irrelevant information is steadily removed and only what is truly necessary is extracted.

Men generally listen like this

If you say, "I have something to discuss with you,"

"You can do this" "Thank you" "Next"

Aren't men like this?

On the other hand, advanced listening is the attitude of listening "together".

It's not about having an end point, it's about having fun interacting.

Women's Listening is Developmental

They're facing each other, eye-to-eye, though they may be talking at the same time.

(Laughter) Ladies and gentlemen, apart from everything else, listen to it in a constructive way, it will change your relationships.

The problem with listening is that much of our surroundings are noise.

Such noise affects the health and quality of life of 25 percent of the European population, according to the EU.

Two percent of Europe's population, 16 million people, suffer from sleep disturbances caused by these noises.

Noise kills 200,000 people a year in Europe.

it's really a serious problem

If you're a child, stick your fingers in your ears and hum when you hear an annoying noise.

These days, you can do the same thing a little cooler.

if you use this

There are three serious problems with headphone adoption.

The first is "acoustic ataxia," a term Schaefer coined.

This disorder arises from the discrepancy between what you see and what you hear

So we created sounds in our lives that weren't actually around us.

Living with acoustic dysphonia all the time is really unhealthy.

The second problem arises from the compression of music data.

Music has been compressed into pocket size, and this compression comes at a cost.

Let's listen to uncompressed music first

(uncompressed music) then the same music but with 98% of the data removed

(music with 98% data removed) I hope at least some of you noticed the difference

Compressed music is exhausting

There is a price to pay for being annoyed

Please look be considered

This is not good in the long run

The third problem is hearing loss Noise-induced hearing loss

Ten million Americans have this disorder for one reason or another. Of particular concern is 16%, about 1 in 6 American teens who have this disorder because they use headphones incorrectly.

An American university study found that as many as 61 percent of freshmen have hearing impairment from headphone misuse.

An entire generation may be deaf

it's really a serious problem

Here are 3 little tips to protect your ears that you should share with your kids.

First of all, special earplugs are very effective. I use them all the time.

Second, if you're going to buy headphones, buy the best quality ones.

If you can't hear someone talking to you loudly, it's too loud.

Finally, if you're surrounded by noise, stick your fingers in your ears and walk away.

This is how you protect your ears

Get away from the noise and find a friend who is kind to your ears

WWB Wind, Water, Birds Sounds in nature are a combination of many random sounds. These sounds are very healthy.

Try to hear these sounds. and this

silence is great

The Elizabethan era described language as embellished silence.

When you step away from silence, consciously design an artistic soundscape.

The foreground and background are all beautifully proportioned art

Designing with sound is fun

If you can't do it yourself, you may want to ask a professional to do it for you.

Soundscape design has a future, and soundscapes will have the power to change the sound of the world.

I will introduce 8 application examples in a hurry 8 items that are useful for health

Ultrasound first. It's better known as physical therapy, and it's now used to treat cancer.

Lithotripsy uses powerful sound waves to shatter stones, and thousands of people use it instead of surgery each year.

Sound Healing is a Wonderful Way

has existed for thousands of years

I recommend trying this healing method

It is now used as a very effective method to treat autism, dementia, etc.

and music. If the music is generally composed with love and good intentions, then just listening to it will do you good.

Both hymns and Mozart are wonderful

There are many different types of healthy music.

Here are four items that you should actually take action on.

First of all, listen carefully

I hope everyone will practice after my speech

A whole new world of life opens up and it's so good

Now try to create sounds. Create sounds.

The voice is an instrument we all use, but have you ever learned how to pronounce it? Please learn, let's learn songs and musical instruments

A musician's brain is larger than normal. It's true

You can play alone or in a group

It's great to play either style alone or in groups as a defense against acoustic dysphonia.

Take control of the sounds around you

protect your ears of course

Design the soundscape around you, at home or at work

If someone attacks you with the kind of noise I just made, just say no.

Here are 7 things you can do right now to improve your health with sound

I want a world filled with beautiful sounds, and what I've shown you is a big step towards that.

Please take a step

I really like the chirping of birds like this

I wish you all good hearing

(applause)

I got up at 6:10 this morning

I went to bed around 12:45 the night before.

i woke up once in the night

My heart rate is 61 per minute, my blood pressure is 127 high, 74 low.

I didn't exercise at all yesterday, so I couldn't measure my maximum heart rate during exercise.

About 600 milligrams of caffeine and zero alcohol.

The Narcissistic Personality Index, or NPI-16, was a reassuring 0.31.

We know numbers can help us when we're advertising, managing, conducting research.

I will talk about how numbers are useful when you want to face yourself, learn, remember, and improve.

A few years ago, my partner, Kevin Kelly, and I noticed that people were beginning to experiment with quantitative measurements and self-tracking beyond the traditional recording habits of stepping on the scale every day.

People were posting their food on Twitter and managing their kids' diapers on their iPhones.

People started keeping detailed diaries of their daily expenses, their daily moods, their symptoms, their treatments.

There are several technological factors that are driving this change in our daily lives: the understanding and pervasiveness of mobile devices, dramatic improvements in data storage and data processing, and amazing improvements in biosensors.

This little black dot is the three-dimensional accelerometer.

tracks movement through space

As you can see, it's very small, and it's cheap.

Now it's under a dollar a piece and it's starting to be built into a wide variety of devices.

And what's interesting is that this one sensor alone can give you amazingly detailed information.

Sensors like this are now built into the biometric device Fitbit, which is very popular among early adopters.

Human behavior is recorded, including when you sleep.

The identity is this sensor

You probably know the Nike+ system

This blue dot is the sensor

It's just a pressure sensor, like the one in your doorbell.

Nike uses that sensor to measure your running pace and distance.

This is the strap that people use to transfer their heart rate data to the Nike+ system.

This is a neat new device that captures detailed sleep data, not just whether you're asleep or awake, but also your sleep cycle, deep sleep, light sleep, REM sleep, and so on.

The sensor is the small piece of metal inside that headband.

Below that is the console that sits next to the bed. For reference, this is a sleep tracking system from a few years ago.

And this is our current sleep tracking system.

This was just recently announced at a medical conference in Washington, D.C.

It looks almost like an asthma inhaler, but at the top is a tiny GPS transceiver that tells you when and where your asthma attack occurs, giving you a new understanding of your vulnerability and how it relates to time and environmental factors.

All over the world, new tools are changing the way we perceive ourselves: small sensors that capture real data, ubiquitous computing that allows us to understand and use that data, and social networks that allow us to connect and post with people.

It's easy to think of these tools as outward looking windows, but I want people to know that these tools can also be mirrors to the inside.

And when we want to use them for systematic improvement, we also think about how they can be used for self-improvement, self-discovery, self-formation, self-knowledge.

Here's a biometric device, Apple earbuds.

Last year, Apple filed a patent to capture blood oxygen levels, heart rate, and body temperature via earbuds.

What is it for?

what should it be?

Is it for biometric security?

For public health research?

Is it for experimental market research?

I want to tell you that this is also for self-awareness.

And it's not just the self

The self is our control center, our consciousness, our ethical standards.

So if we want to act more effectively in the real world, we need to know ourselves better.

thank you

We live in an amazing age, the age of genomics.

Genome is the entire base sequence of human DNA

your array is a little different than mine

That's why they look different

I have brown eyes, but some people have blue or gray eyes.

It's not just about looks

As we've seen in the press, genes can cause horrific illnesses, they can shape your personality, they can cause mental illness.

Genes seem to have the power to control fate.

But I like to think, "I am more than my genes."

What do you think?

Are you a being beyond your genes?

(Audience: Yes) Is that so?

It seems that some people had the same opinion

Let's be clear here

Let's all say it in unison

"I am more than my genes" - Together

"I am more than my genes"

(Applause)

who am i? (Laughter) I'm the connectome.

Everyone is really nice people, so could you say this for me too?

(Laughter) Okay, come with me.

"I am the Connectome"

it was great

Even if I didn't know what the connectome was, everyone was kind enough to match me

Shall we finish today's talk?

So far, there's only one connectome that we've seen, and it's that of this little earthworm.

A tiny nervous system is made up of just 300 neurons.

In the '70s and '80s, a group of scientists mapped a total of 7,000 "connections" between neurons.

In this diagram, every node is a neuron and every line is a connection.

This is the connectome of C. elegans

Your connectome is much more complex than this, because your brain contains 100 billion neurons, and you have 10,000 times more connections.

You have these structures in your brain, but you can't fit them on a single screen.

The number of connections in the connectome is a million times the number of letters in the genome

that's a huge amount of information

what kind of information is that?

We don't know for sure, but there are theories

Since the 19th century, neuroscientists have assumed that your memories -- the information that makes you who you are -- are stored as connections between neurons.

In addition, personality and intelligence, which are other aspects of a person, are probably encoded in the form of neuronal connections.

I see what you mean by the hypothesis you proposed. I am my connectome.

I asked you to voice it not because it's the truth, but because I want you to remember it.

In fact, I don't know if this hypothesis is correct, because we didn't have enough technology to test it.

It was a daunting task that took more than a decade just to figure out the nematode connectome.

Unlocking the connectome, like our brain, requires automating sophisticated techniques to speed up the task of identifying the connectome.

So in the next few hours, I'm going to introduce you to a technology that's being developed in my lab and with collaborators.

Have you ever seen a picture of a neuron?

You can immediately recognize it as a neuron by this wonderfully distinctive shape.

It grows long and has fine branches.In simple terms, it looks like a tree.

And this is just a single neuron.

To find the connectome, you have to look at all the neurons at once.

I'd like to introduce you to Bobby Kasturi, a researcher in the Jeff Lichtman lab at Harvard University.

Bobby has an amazingly sliced ​​mouse brain sample.

If you zoom in to 100,000 times and zoom in, you can see all the neuron branches.

The reason we can't see it yet is because we're dealing with three-dimensional structures.

So you can take a lot of photos of the slices and stack them up to create a three-dimensional image.

But I still don't understand the division.

So, starting from the top, in the cross section, paint one neuron red, then paint the next one red, and so on.

piece by piece continue this work

And when you're done end-to-end, you can reconstruct the shape in three dimensions, the shape of a segment of a neuron's branching.

Do the same for the green neurons.

You can see that the green neuron touches the red in two places, and these junctions are called synapses.

Let's focus on one synapse, if we look inside the green neuron.

There's this little round thing called a synaptic vesicle.

contains neurotransmitters

When the green neurons want to send information, when they have something to tell the red neurons, they release neurotransmitters.

Two neurons are communicating at synapses, like friends talking on the phone.

Now you know how to find synapses

How do we find out the complete picture of the connectome?

This three-dimensional block of images is a giant coloring book.

Once you've colored each neuron differently, you can scan the entire image, find synapses, and note the colors of the two neurons involved in each synapse.

If you do this work across the image, you can reveal the connectome.

So far, we know the basics of neurons and synapses.

So now we're ready to ask an important question in neuroscience: how do men's brains differ from women's brains?

(Laughter) This primer says that the male brain is like a waffle, organized into little compartments.

A woman's brain is like spaghetti, everything is interconnected.

(Laughter) People are laughing, but this book changed my life.

(laughs) Seriously, what's wrong?

From what I've said, you should know what's wrong.

Regardless of gender, the human brain is like spaghetti.

In other words, it's super thin capellini noodles with branches.

One neuron touches many neurons, and the branches are tangled, just like one spaghetti is entwined with many spaghetti in a plate.

One neuron can communicate with so many neurons because it can form a synapse at each junction.

At this point, you may have forgotten how small this block of brain cells is.

Let's compare and understand

This block is very small, six microns on a side.

Let's compare it to a whole neuron

Inside this block is only part of the smallest branching structure.

Neurons are of course smaller than the brain

And this is a mouse brain, which is much smaller than a human brain.

When I show this to my friends, they say things like, shouldn't you give up?

Neuroscience is out of control

Looking at the brain with the naked eye doesn't reveal how complex it is, but with the microscope, the hidden complexity is finally revealed.

In the 17th century, the mathematician and philosopher Blaise Pascal wrote that the idea of ​​infinity terrifies him, and that he feels powerless when he thinks about the infinite expanse of the universe.

And as a scientist, I'm not supposed to talk about my feelings, so I won't go into that.

(Laughter) But can I?

(Laughter) (Applause) It's intriguing, it makes me wonder, and sometimes I feel hopeless.

Why did we choose to study this tremendously complex, almost infinite organ?

it's ridiculous

You can't even think that you can understand the brain

But I'm sticking to it like Don Quixote

Lately I've come to have new hopes

One day, we'll line up microscopes, microscopes, and create a giant image database of every neuron and every synapse.

Image analysis without human intervention, artificial intelligence supercomputers analyzing the connectome.

I hope I can do that in my lifetime. Unraveling the human connectome is the biggest challenge we've ever faced.

generations of research will have to continue.

Now, my team's more modest goal is to try to unravel parts of the connectome from small parts of mouse and human brains.

But this alone is the first step in hypothesis testing, the hypothesis that I am the connectome.

Let me justify this hypothesis, that it's worth taking seriously.

As you grow from childhood to adulthood, your personality slowly changes.

Similarly, the connectome also changes over time.

what kinds of changes will occur

Neurons, like trees, can grow new branches and shed old ones.

You can form a synapse and you can erase it.

Synapses can grow or shrink.

The next question is, what caused this change?

genetic to some extent

it is programmed

But that's not all there is to it. There are signals -- electrical signals that flow along the branches of neurons, and chemical signals that carry information from branch to branch.

These signals are called neural activity.

There's a lot of evidence that neural activity encodes our thoughts, our emotions, our cognitions, our mental experiences.

And there's a lot of evidence for changes in neural connections caused by neural activity.

Together, these two facts tell us that your experiences change the connectome.

That's why every connectome is unique, even genetically identical twins are unique.

The connectome is the interface between genetics and environment.

It's true that the act of thinking alone can change the connectome. Isn't that encouraging?

what picture is this

It's a refreshing stream of fresh water

What else do you see?

There are riverbeds that are grooves carved into the earth.

If there is no river bed, the flow of water cannot be determined.

And with this flow, we can make a good analogy, an analogy that describes the relationship between neural activity and neural communication.

Constantly fluctuating neural activity

Like a stream of water that never stops

Because the connections in the brain's neural networks determine the pathways along which neural activity travels.

The connectome is like this riverbed, and there's more to this metaphor: not only are the grooves in the riverbed defining the flow of water, but over long timescales, flowing water reshapes the riverbed.

As I said earlier, neural activity alters the connectome.

And if I may speak on a metaphorical level, neuroscientists believe that neural activity is the physical essence of thought, emotion, and cognition.

You can also call this the stream of consciousness.

Neural activity is like flowing water, and the connectome is the bed of that stream.

Enough with the metaphors, let's get back to science.

Assuming the technology to analyze the connectome works

So how do we test the hypothesis: "I am the connectome."

We propose a direct verification method

Think about reading memories from the connectome.

Think of the memory of a long sequence of actions, say a pianist playing Beethoven's sonata.

A theory dating back to the 19th century suggests that such memories are stored as chains of synaptic connections in the brain.

Because when the first neuron in the chain activates, it stimulates the next neuron through the synapse, activates it, and so on, and so on, like a domino toppling.

One hypothesis is that a chain of neuronal activations is the neural basis for this continuous movement.

One way to test this theory is to look for this kind of chain in the connectome.

It's not easy, it's not like this

Maybe it's a tangled shape like this

you'd have to use a computer to untie the chains

If we can do this, we can predict a pattern of neural activity from the sequence of neurons that we decoded, and that pattern should be replayed when the memory is recalled.

If all goes well, this will be the first case of memory retrieval from the connectome.

(Laughter) It's a mess. Have you ever wired up a complex system like this?

I don't want to

As anyone with experience knows, it's easy to get it wrong.

Neuron branches are like the wiring of the brain.

The question is, what is the total length of wiring in the brain?

Hint it's pretty long

(Laughter) My guess is a few million miles, stuffed inside the skull.

When you look at those numbers, it's easy to see that it's very possible that your brain is wired incorrectly.

Popular magazines like headlines like "Wrong Wiring Leads to Anorexia" or "Wrong Wiring Leads to Autism."

It sounds plausible, but the truth is that we still can't really see the wiring in our brains, so we can't be sure if it's true or not.

If we had the technology to uncover the connectome, we might be able to read the miswiring of the brain, or detect mental illness from the connectome.

The best way to test a hypothesis is to consider the most extreme consequences that follow.

This method is often used by philosophers

Those who believe, "I am the connectome," must accept the idea that death is the disintegration of their connectome.

I say this because some of today's prophecies predict that technology will change humans at a fundamental level, transforming humanity itself.

Their dream is to try to avoid death with a technology known as human body freezing.

For $100,000, the corpses would be frozen after death and stored in liquid nitrogen tanks in warehouses in Arizona, and then revived when future civilizations were advanced enough.

Should we call people who seek immortality in modern ways fools?

Or maybe they'll one day laugh on our graves

I don't know. I'd like to try to scientifically test their beliefs.

I suggest trying to find the connectome of the frozen brain.

We know that brain damage can occur during post-mortem freezing.

The question is whether this damage will make the Connectome disappear.

If it disappears, even future civilizations will not be able to recover memories from their frozen brains.

Even if the body is resurrected, the mind cannot be resurrected.

On the other hand, if the connectome is maintained, freezing the human body is no joke.

I've described a quest that starts with a quest for a very small world and leads to a world far beyond.

The Connectome will be a turning point in human history.

When we evolved from our monkey-like ancestors in the African savannah, the feature was a large brain.

With that brain, we've created one amazing technology after another.

Eventually, the technology will become so powerful that we will be able to take our brains apart and reassemble them to learn about ourselves.

I believe that this journey of self-discovery is not just for scientists, but for all of humanity.

I am grateful to have been able to talk to you about that trip.

thank you

(applause)

I want to share with you today a very hopeful story, a story about overcoming despair, disappointment and desperation in Afghanistan, and what we've learned from it, about how we can help people overcome traumatic experiences, and about their future, how we can help them regain their confidence in the future, and how they can get back to their normal lives.

I'm a Jungian psychoanalyst who happened to be in Afghanistan in January 2004 for work at Medica Mondial.

Jung and Afghanistan Here's a picture

Afghanistan is one of the poorest countries in the world, with 70% of the population illiterate.

War and malnutrition are killing people along with hope.

You already know this from the media, but what you don't know is that the average age in Afghanistan is 17, which means that they grow up in this environment and - I repeat - 30 years of war.

So this translates to ongoing violence, outside interests, corruption, drugs, ethnic conflicts, unsanitary conditions, shame, fear and ongoing traumatic experiences.

Local and foreign militaries were supposed to make peace with their donors, governmental organizations and NGOs.

People had hope, until they realized that things were getting worse day by day, with murders going on, and somehow they were poorer than they were eight years ago.

There's one figure that shows this: 54% of children under the age of five are malnourished.

but there is still hope

One day a man said to me, "I don't think I have a bright future, but I want my children to have a bright future."

This is a picture I took in 2005, on a Friday walk in the hills of Kabul, and for me, this picture is symbolic of the future of a new generation.

the doctor prescribes medicine

Helpers try to bring peace by building schools and roads.

Troops recover weapons, but depression remains abandoned

Why?

It's because the local people don't know how to deal with and overcome such problems.

As soon as I got there, I reaffirmed that my method is the latest European one.

What hurts us and how we react to it is universal.

The challenge was how to recognize the signs of disease in a unique Afghan cultural context.

After counseling, a woman said, "You made me feel for me, and now I can feel myself again. I want to go back to my family life."

This is very important, because the Afghan social system is centered around the family.

no one can live alone

If something terrible happens and they feel used, useless and embarrassed, people become withdrawn and socially isolated, and they are reluctant to share their experience with others and loved ones.

And violence is often the way to deal with problems.

Traumatized people can easily lose control. They are constantly afraid that, suddenly, out of the blue, hyperarousal and flashbacks may rekindle the fear of traumatic events. They are out of control.

Because they can't control themselves, they instead try to control other than themselves, in a very understandable way, often families, and unfortunately this fits very well with traditional, regressive, repressive, restrictive cultural backgrounds.

Husbands beat their wives, parents abuse their children, and then they become terrified.

You're out of control.

Desperate people try to restore order and tranquility, and if we fail to break this chain of violence, it will undoubtedly pass on to future generations.

and some are already happening

So we all need a sense of the future, and Afghanistan's sense of the future is being shattered.

But let me repeat what the woman said earlier.

"Because you felt me, I could feel myself again"

The key is empathy

Someone has to be a witness to what happened to that person.

empathize with what the person feels

And I need to look you in the eye and listen to you

We all need to know that what happened to that person is true, and we can't do this alone.

So we all need to say, "This has happened to me before, and it was like this in my time, but I was able to face it, deal with it, and learn from it.

And I want to contribute to a bright future for my children and grandchildren, and I will not marry my 13-year-old daughter."

Something can be done in a harsh environment like Afghanistan.

I started thinking about a counseling program

But of course we need help and money

One day, I was sitting next to a gentleman in Kabul who asked me what I could do for Afghanistan.

I replied that I wanted to train psychosocial counselors and open a counseling center, and I explained why.

After that, he gave me his contact information and said, "If you want to do what I just said, contact me."

He was the representative of Caritas Germany and

Caritas Germany started a 3 year project We trained 30 local men and women and opened 15 counseling centers in Kabul

Here are our signs, hand made, in 45 locations all over Kabul.

More than 11,000 people have visited so far

70% of them regained their normal lives

It was a really fulfilling time to develop the project with an amazing Afghan team.

I still work with them

We created a psychosocial counseling approach with cultural sensibility.

Between 2008 and today, we've made big changes and made progress.

One day, the EU delegation in Kabul came and hired me to work for the Ministry of Public Health and spread this approach, and it worked.

We revised the mental health part of primary health care services and added psychosocial care and psychosocial counselors to the system.

This means retraining all staff.

We had created an educational manual, and this manual was approved by the Ministry of Health, and this initiative is now part of Afghanistan's mental health policy.

We've already done this in select clinics in three states, and you're the first to see the results.

We were interested in which treatments were effective

And here are the results: all patients had moderate and severe depression.

The red line in the picture shows the usual treatment, the medication given by the doctor.

In all symptoms, symptoms remained the same or worsened in some cases.

The green line is treatment with psychosocial counseling only, no drugs.

You can see that the symptoms are almost gone, and the psychosocial stress is greatly reduced. The reason the stress doesn't go away is because you can't get rid of the psychosocial stress, but you can learn how to deal with it.

We were very pleased with the results that this system is working.

This is a picture of a health facility in northern Afghanistan, and every morning you see something like this everywhere.

Today, doctors typically see each patient for three to six minutes, but this will change in the future.

They come to the clinic because they want to treat the early symptoms, and there they find someone to talk to to discuss their problems, to talk about their burdens, to find solutions, to hone their skills, to learn techniques for resolving family conflicts, and to gain confidence in the future.

I would like to share an episode with you here.

A Hazara told a Pashtun counselor, "If we had met a few years ago, we would probably have killed each other.

But now you're helping me regain confidence in my future."

Another counselor told me after a training session, "I don't know why I survived the massacre that was in my village until now. But now I know why. Because I'm part of Afghanistan's new circle of peace."

I think these words move me

This is a liberating, political contribution to real peace and reconciliation.

And also, without psychosocial therapy, and without thinking about this in all humanitarian work, we cannot build civil society.

I think this is an idea worth sharing with everyone, and I think it should be repeated in many places.

Thank you for your attention

(applause)

A few years ago on a beautiful sunny day, my wife and I went to a hospital near our home in Oakland, California, for the birth of our oldest daughter, Maya.

As a family responsibility, we had already toured the delivery facility, but for some reason, both of us felt a little bit surprised that we were in the middle of one of the most important events of our lives.

I was trapped in a windowless waiting room with no sense of the bright sunshine outside.

Overhead, fluorescent lights hummed faintly, walls were beige, and a wall clock was ticking the time when day turned to night, while machines were beeping incomprehensible alarms.

The clock above the door was right in front of my wife, who was in labor pains every hour.

I've never given birth, but -- (Laughter) -- my wife says that the worst thing a woman can do while she's giving birth is to watch the clock ticking by seconds.

(Laughter) I'm an architect by training, but I've always been fascinated by watching people experience design in their living environment.

The role of design is like a movie soundtrack that you don't even know is playing.

It's the subconscious message of how we feel and what to expect.

That waiting room was totally out of place for the moment we were going through, the moment we welcomed a new life, our daughter, into the world.

And then one of the nurses turned to us and said, "I always think, I wish I could have been an architect, because I could have designed a room like this better."

(Laughter) The birth of our daughter was a great joy, but what that waiting room told us still haunts us.

It was a message that said, "This is not a safe place. It's a strange place."

"There is nothing I can do of my own will

even the lighting

"Simply put, your comfort is secondary."

On the bright side, a waiting room like this might just be dismissed as boring.

At worst, it violates human dignity.

I use this example to show that no one in the world is immune to the effects of bad design.

I entered the world of architecture because of my belief that architecture is about creating spaces for people to live their best lives.

But I realized there's a big disconnect between this profession and the people who are directly affected by what I create.

The reason is that the profession of architecture is still an elite group of white men who seem not to care about the most wanted needs in the world, even the relatively simple needs of a pregnant woman.

Architecture students receive training that deals with very theoretical research questions, with very little contact with real people and real communities.

Graduates walk a long, narrow, and tough road to qualify as architects.

Meanwhile, the building industry encourages a select few with a constant awards program that focuses solely on the aesthetics of a building, not on its impact or contribution to society.

As a result, it only reinforces a distorted view of the responsibility and success of this profession, but that's not why so many hopeful young people choose architecture as a career.

Nor is it the reason I chose architecture.

What I believed at the time, though I couldn't articulate it, and what I now know is that design has the power to give people dignity.

Through design, people feel valued, respected, valued and noticed.

Think for a moment about the space you live in here.

Think about how the space makes you feel.

It can be a miserable place, an unhealthy place, a boring place.

That place could be your workplace, your comfort zone, or your living space.

So the question is, how can we improve the design of a place like this with your wishes in mind?

It's a really simple question, but for some reason it can be difficult to answer.

We are conditioned to feel that we have no agency over the spaces and places in which we live, work, and play.

often not really subjective

but everyone should have it

This may sound daunting to the ladies in the audience, but have you ever waited in a particularly long line for the bathroom?

(Laughter) Have you asked yourself, "What's wrong with this situation?"

But the real question to ask is, "What were the men thinking when they designed this bathroom?"

(Applause) It doesn't seem like much, but it actually represents a much bigger problem.

Modern society was literally made by men, and men rarely took the time to understand how people who were different from them might experience their designs.

Even if the long line for the bathroom doesn't seem like much of an insult

In fact, it can sometimes produce the opposite effect.

A well-thought-out design makes me feel respected, and I feel my position is understood.

I've come to believe that design is to dignity what justice is to law and health to medicine.

Quite simply, it means that your living environment reflects your importance.

Over the past two years, I've had the opportunity to interview more than 100 people from all walks of life about their experiences with design.

I wanted to validate my intuition that dignity and design have a unique relationship.

So I spoke with Gregory, and he lives in a small residential community designed for the 50 longest-lived homeless people in the city of Dallas.

Gregory lived on the streets from town to town for over 30 years.

A broad partnership of social services, funders and designers has created this place.

Each building is about 37 square meters in size, and is a beautifully designed home where you can live comfortably.

Gregory now has the key to his house door.

He told me about the comfort of having his own keys.

It's a sense of security that I haven't felt in 30 years.

He had just enough clothes to fit in his backpack, and when he moved in, he had all the necessities he needed. Everything from toasters, electric pots and stoves to toothbrushes and toothpaste were waiting for him.

He summed up the situation in one word: "Heaven."

Then, on the other side of the world, I heard Antoinette, director of a women's training and community center in rural Rwanda.

Hundreds of women come here every day to learn new skills and join others in reclaiming the livelihoods lost in civil war in this country.

The women here made exactly 500,000 bricks and used them to build 17 classroom pavilions like this one.

Antoinette said, "We're all very proud."

And then, back in the States, I heard about Monica, the director of a free clinic in Arkansas that mostly treats the uninsured.

The thing that Monica wanted to tell me most was something that the doctors who volunteered at the clinic always said, "I've never worked in such a beautiful space, surrounded by light."

Monica believes that even the poorest people deserve the best medical care.

And that they deserve that care in an environment that also respects human dignity.

People like this are supposed to be valuable ambassadors for good design, but they're completely invisible in the architecture debate.

Likewise, the people who should benefit most from good design are often the least.

Your cousin who is a veteran and homeless Your grandmother or grandfather who lives in a house with an unusable kitchen Your sister in a wheelchair who lives in a suburb where there was never even a sidewalk plan...

If good design is reserved for a select few, what is good?

It's time for designers to change this situation, using companies as models to give back through their work, like Orkidstudio, Studio Gang and MASS Design Group.

The customers of these companies are orphans in Kenya, foster children in Chicago, pregnant women in Malawi.

The mantra of these companies is that everyone deserves good design.

Working in a socially responsible way not only creates designs that give dignity to people, but it also gives dignity to the work of design.

Not only can we expand our design customer base, but we can also offer new and more diversified designs to the world.

To do that, my architecture and design peers, especially my white male peers, need to collectively and significantly promote diversity.

It's necessary to get people to recognize that design is for society, it's for everyone.

Today, only 15 percent of chartered architects in the United States are women.

The proportion of people of color is much lower

Other professions, such as law and medicine, have been more successful in these important areas.

How different would the built environment we all share—housing, hospitals, schools, public facilities—been, if women and people of color were involved in even half the so-called blueprinting?

It's not a question of whether it was different, but to what extent existing buildings, landscapes, streets, rural areas are less beautiful, less functional, less equal and less dignified, because women and people of color are unlikely to have built them.

In 1943, Winston Churchill famously pointed out that when he called for the restoration of the war-torn chambers of Parliament, he said, "First we give form to the building, and the building gives form to us."

The good news is that we can change how we build and who we build for.

Whether it's people working in rural Rwanda's health facilities, or American pregnant women and nervous new dads.

We do this by refocusing architecture on people's health, safety and well-being.

Dividends are also generated as a result

Once you see what design can do, there's no turning back.

And once you experience human dignity, nothing less is acceptable.

both are your possibilities

One of my favorite people to talk to is my 90-year-old grandmother, Audrey Gowitz, from Oshkosh, Wisconsin.

After a conversation with my grandmother about design, I received a letter.

Inside, it read, "Dearest grandson, Johnny, I thought the other day in the family doctor's waiting room, what a depressing environment, from the color of the walls to the carpet on the floor.

(Laughter) I need to call and find out who is responsible for creating this boring environment."

(Laughter) And the letter continued, "Actually, I called about this, and I tracked down the person in charge, and they called me and said, 'Thank you very much.

My doctor's office is currently on the renovation list."

(Laughter) The letter ended with, "It's always important to express your feelings. Just be polite."

(Laughter) (Applause) My favorite grandma.

(Laughter) Like my grandmother Audrey, you deserve good design.

Because a well-designed space isn't just about taste and appearance.

Spaces like that shape the way we see who we are and what we deserve in the world.

that is the essence of human dignity

It's about design possibilities and responsibility for good and for everyone.

thank you

(applause)

Two million years feels like a very long time compared to a 21-minute talk.

But from an evolutionary point of view, 2 million years is the same as 0 years.

Yet the human brain has roughly tripled in size in two million years, from our 700-gram brain ancestor Homo habilis to the 1,400-gram brain that sits between our ears today.

What was the evolutionary need for each of us to have such a large brain?

It turns out that when the brain tripled in size, it didn't just triple in volume, it acquired a new structure.

One of the reasons our brain has gotten so big is because we've got a new part of it, the frontal lobe, and especially the frontal cortex, which is called the frontal cortex.

If we know how the frontal cortex works, we should also know why the evolutionary split-second has changed all the structures of the brain.

Now, it appears that the frontal cortex has many functions, the most important of which is simulating experiences.

Pilots use flight simulators to practice flying, so they don't make mistakes when they actually fly the plane.

Humans have this amazing simulated experience device that allows them to have experiences in their minds before they experience them in real life.

This is something none of our ancestors or any other animal can do the same.

It's an amazing skill

Together with opposite thumbs, bipedal locomotion and language, it's one of the factors that changed the center of human life from forests to shopping malls.

(Laughter) You're doing the same thing.

Ben & Jerry's Ice Cream doesn't have liver & onion flavored ice cream, not because I made a few and tasted it and was like, 'Wow.

It's because you can imagine what it tastes like without leaving your desk and be able to say, "Wow," before you actually make it.

Now let's see how we actually simulate the experience.

Before we proceed, let's do a quick test here.

There are two different futures here.

Try these two out and tell me which one you prefer

One is the future of winning the lottery, which is about 300 million yen.

And the other is the future of being paralyzed from the lower half of the body.

(Laughter) Now think about it.

I'm sure some of you may think that you don't need to think about it.

Interestingly, we have real data from two cases, how happy are they actually?

As expected, right?

But this is fake data that I made up.

here is the real data

Ladies and gentlemen, five minutes into the lecture, you've already failed.

In fact, a year after losing a leg and a year after winning the lottery, lottery winners and paraplegic patients are equally happy in their lives.

Don't be discouraged if you get it wrong the first time because everyone gets it the same way every time on every test.

In my lab and in the work that economists and psychologists around the country are doing, we're discovering something quite astonishing: what's called "impact bias," the tendency to make simulated experiences work worse.

Through our fieldwork and laboratory studies, we've learned that whether you win or lose an election, whether you gain or lose a lifelong partner, whether you get a promotion at work or not, whether you pass or fail a college entrance exam, whatever happens, you're not as shocked or as emotional as we think you are.

In fact, a recent study -- and I'm sorry to bother you -- found that the biggest trauma in life, if it happened more than three months ago, had no effect on a person's well-being, with a few exceptions.

I wonder why

Happiness can be created

In 1642, Thomas Brown said in his book,

"I am the happiest man in the world, for I have the power to turn poverty into wealth and adversity into prosperity.

I am more immortal than that Achilles.

Just how strange was the structure of his head?

It was just like us

Humans have something like a psychological immune system.

Like Thomas Brown, it's a system that everyone has.

Unlike him, no one seems to be aware of its existence.

We think that happiness is something we make, but something we find.

We don't need many examples of people actually creating happiness, but I'm going to show you some experimental evidence.

the evidence is close at hand

As a challenge to myself, I used a copy of a New York Times article I'd seen in an outside lecture before, looking for examples of how people create happiness.

Here are the three people who created happiness

“Physically, financially, emotionally, and spiritually, I have improved in almost every way.”

"I have no regrets. I think it was a glorious experience."

"I believe it turned out to be the best."

Who is it that makes you feel so happy?

The first word is from Jim Wright

Some of you may remember that he was once the Speaker of the House, and he was exposed by a young Republican congressman named Newt Gingrich, and he was exposed by a young Republican congressman.

I resigned because of the scandal

This Democratic congressman, who was called the strongest in the country, lost everything, he lost money, he lost power.

What will you say about this experience later?

“Physically, financially, emotionally, and spiritually, I have improved in almost every way.”

What more could be improved

Vegetarian side? mineral side? Carnivorous side?

he has conquered it all

You've probably never heard the name Morris Bickham.

he said these words when he was released

At 78, he spent 37 of those years

I spent time in a Louisiana state jail for a crime I didn't commit.

A DNA test eventually acquitted him at the age of 78, and what he couldn't help but say about the experience was:

“I think I have had a glorious experience with no regrets.”

Glory! what he has to say

Instead of saying, "The prison wasn't full of bad people, we had a gym."

It was "a glorious experience." He used a term that we normally reserve for religious experiences.

Some of you may or may not know about Harry Langerman.

In 1949, he saw a newspaper article about a hamburger stand run by two brothers named McDonald's.

I thought, "This is a great idea!"

he went to find his brother

He said, "For $3,000, I'll give you the franchise rights."

Harry returned to New York and asked his brother, an investment banker, for a loan of $3,000.

he didn't loan money to harry

Not surprisingly, six months later, Ray Kroc had the same idea.

People eat hamburgers, and Ray Kroc became America's richest man for a while.

And finally -- the most positive, you know, was a young Pete Best, who was the Beatles' original drummer. He was fired, as you know, for mysterious reasons, and was replaced by Ringo, who had developed a friendship with the Beatles while they were on tour.

When I was interviewed in 1994, Pete Best, who is still a drummer and a musician, said, "I'm happier than when I was with the Beatles."

It looks like we can learn something important from them, and that's the secret to happiness.

Here we are finally here

Number one, get more and more wealth and power and fame and lose them all. (Laughter)

Number two, spend as much time as you can in your life in prison.

(Laughter) Number three, make someone else a millionaire.

And lastly, no matter what, don't join the Beatles.

(laughs) Well

Like the three of them, when people create happiness, even though we smile on our faces, we're a little taken aback and say, "Well, I bet you didn't really want to do that kind of work."

"Well, you didn't have much in common with her, so you're glad you figured it out before she threw your engagement ring back."

The reason we have a wry smile is that we think artificial happiness is less valuable than so-called spontaneous happiness.

what are these happiness

Spontaneous happiness is getting what you want, and artificial happiness is happiness you create when you don't get what you want.

There is a strong belief in our society that artificial happiness is second-class happiness.

why do you think so

the reason is very simple

If we were equally happy whether we got what we wanted or not, the economic engine would run out of steam.

My apologies to my friend Matthew Ricardo, but a mall full of Zen monks wouldn't be very profitable, because monks don't want much.

(Laughter) Artificial happiness, down to the smallest detail, is as real and lasting as the happiness of having exactly what you want.

I'm a scientist, so I'm going to talk through data, not rhetorically.

I'm going to start by showing you an experiment to prove artificial happiness in adults in general.

This is not mine. This is a 50-year-old paradigm about free choice.

the experiment is easy

You take something, say six things, and have the subject rank them in order of their preference.

It's just an example, so I'll tell you what to use in advance. This time it's a Monet painting.

Subjects ordered these Monet paintings from their favorite to least favorite.

Now I'm going to give you one option: "I still happen to have a spare painting in my closet.

I'll give you one as a thank you for today's experiment.

It seems that paintings 3 and 4 remain."

It's a bit of a tough choice, because I didn't like either picture as much as the other, but people naturally tend to choose number three, because they liked it more than picture four.

After some time, maybe 15 minutes or 15 days, put the same picture in front of the subject and ask them to rank it again.

Say "How are you now?"

well what will happen

See how they create happiness

Here is the result reproduced many times

happiness is created

Would you like to see it again?

yes happy!

"The picture I chose is much better than I thought!

The picture you didn't choose doesn't matter! ”

this is artificial happiness

(Laughter) So what's everyone's reaction?

"Well, maybe so."

Next, we ran an experiment, and I hope that this data will convince you that your reaction is wrong.

We did this experiment with hospitalized patients with anterograde amnesia.

I did it with patients with anterograde amnesia

Many of the patients suffer from a polyneuritic mental disorder called Korsakoff's syndrome.

Binge drinking results in the inability to create new memories.

In short, they have childhood memories, but when we walk into a room, introduce ourselves, leave the room, and come back, they don't recognize us.

We took Monet's paintings to the hospital

We asked the patients to rank the pictures in order of their favorite.

And then, just like in the previous experiment, we asked them to choose between number 3 and number 4.

Like everyone else, they said, "Thank you, sir. I'm getting a new wall hanging.

May I have number 3?"

He said that he would send the third picture by courier service at a later date.

We left the room with all our luggage, then waited 30 minutes

(Laughter) I went back to my room and said, "Hello, I'm back."

The conversation I had with the patients was, "Oh, sorry doctor, I'm here with memory problems.

Even if I met you before, I can't remember."

"Don't you remember? I brought you a Monet painting earlier."

"Sorry, I don't remember at all."

"Okay, just take these pictures in order of preference

Can you line them up?"

what will they do

First of all, let's make sure they really have amnesia.

I asked the patients which picture was theirs, the one they chose earlier.

Amnesiac patients seem to be guessing

Here [in green in the graph] is the normal person.

But if you ask the same thing to an amnesiac patient,

They don't have a clue to pick out their own picture.

Normal people create happiness

The ranking table of pictures changes like this between the first order and the second order.

Normal people -- and I'm showing you a graph of the magic I just showed you -- said, "The picture I chose was better than I expected.

Those who didn't choose say, "It wasn't as good as I thought."

Surprisingly, an amnesiac patient had exactly the same results.

They also liked their own paintings better, without knowing it was their own.

"Maybe so" is not the right answer!

When these patients created happiness, they really changed their pleasurable, aesthetic response to painting.

I don't do it because it's my painting, because they don't know it's theirs.

Now, when you look at a graph like this, you know that it's the average of many people.

We all have this psychological immune system, the ability to create happiness.

There are also situations where this ability can be used more effectively.

Freedom is the ability to make decisions and change them.It's the companion of spontaneous happiness,because it allows us to choose from among a multitude of fascinating futures the one we enjoy the most.

But freedom of choice in decision-making and change is the enemy of artificial happiness. Let me explain why, of course Dilbert knows.

"This is Tech Support for Dogbird."

"My printer just keeps giving me blank pages."

"Why are you complaining about the paper you get for free?"

"Free? But this is originally my paper."

"Exactly! Look closely at your rough paper and your free paper.

I won't say that only fools and liars are the same."

"Oh! Now that you mention it, it's definitely like silk!"

"What are you doing?"

"I'm helping you accept the things you can't change" Exactly

Our psychological immune system works best when we're at a dead end.

Isn't this the same difference between dating and marriage?

I went out on a date with a guy and he picked his nose, and I'm not going on dates with him anymore.

What if the guy you married picks his nose?

"Well, he's kind, so don't touch the cake with that hand," right?

You can find the happiness that corresponds to the event.

(Laughter) Now, what I want to show you is that this kind of work is generally unknown, and ignorance can be a big disadvantage.

This is an experiment I did at Harvard.

I started a photography course, a black-and-white photography course, and I took the students in and taught them how to use the darkroom.

First, they walk around campus with their cameras, and they're asked to take 12 photos of their favorite professor, their dorm room, their pet dog, and other things that remind them of Harvard.

Then I collect the camera, prepare the paper, and choose two good photos.

Then I spent six hours teaching them how to use the darkroom and developing two sheets.

Faced with two stunning 8-by-10 glossy glossy photographs of memories, we say to them, "I'm going to have to let go of one or the other."

The student asked, "Are you going to let go of one?"

"Yeah, as evidence for a class project.

I gotta get one, decide which one

One for you, one for me."

Now here are the two conditions for this experiment.

In one case, I say to a student, "But hey, if you change your mind, I still have the pictures. Until I actually send them to headquarters for the next four days -- yes, headquarters."

I'll deliver it to your dormitory

Send me an email and we'll check it out together

If you change your mind, I'll definitely change it."

To the other half of the students, I say the exact opposite: "Choose now, I'll ship it to England in two minutes.

'Cause your picture crosses the Atlantic

This is the last goodbye

Next, half of the students in each condition were asked to predict how much they would like the photos they kept and the photos they gave up.

The rest of the students will be sent back to their dormitories for the time being, and then they will measure their favorability and satisfaction with the photos for three to six days.

see the results

First of all, here are the expectations of the students.

They probably like the photos they keep a little better than the ones they give away.

I didn't think it would make a statistically significant difference.

The difference is only slight, and it doesn't matter if it can be exchanged or not

Big mistake, because this is what really happened.

Before the exchange and five days after that, those who only had the photos in their hands, those who had no choice, and those who could never change their minds were very satisfied with the photos.

And those who kept scratching their heads thinking, "Should I replace it?

Did you like this photo? Maybe this isn't good for you?

Did you let go of the good ones? I was overwhelmed by the thought that

they didn't like the photo they chose

In fact, even after the deadline had passed, I still didn't like the picture.

why?

Because exchangeable conditions are incompatible with artificial happiness.

Now here is the final experiment

I gathered a different group of innocent Harvard students and said, "I'm doing a photography course, but there are two patterns, and I'd like you to participate in one of them.

A course where you have time to think for 4 days after taking 2 photos, or a course where you decide immediately after taking 2 photos and you can never change it.

which one do you want to join? " ah!

66%, two-thirds of students preferred a course that allowed them to change their choices.

That's right, 66 percent of students chose a course that ended up being highly dissatisfied with photography, because they were ignorant of the environment in which artificial happiness was born.

Shakespeare, as you know, is the best at describing things. And in my own story, he said, albeit with exaggeration, that things are not really good or bad, only our thoughts make them seem that way.

It's a nice poem, but it can't be 100% correct.

Is there really no such thing as good or bad?

Are Gallbladder Surgery and a Trip to Paris Really the Same Thing?

(Laughter) This sounds like an IQ test question.

they are not 100% the same

In more exaggerated prose, but closer to the truth, Adam Smith, the father of modern capitalism, said:

It's worth thinking about: "Much of the anguish and disorder in human life seems to be due to overestimating the difference between permanent and non-permanent situations.

Some circumstances are undoubtedly preferable to others, but none of them are worth pursuing with a passion that violates the disciplines of prudence and fairness, nor should future peace of mind be disturbed by the shame of the memory of one's folly, nor by the fear and regret of one's unfair deeds."

So some things are better than others

You should have the power to choose one future.

But the risk arises when that choice becomes forced and hasty by overestimating the difference between different futures.

If your desires are limited, you can enjoy them.

But hope is unlimited. We lie, we cheat, we steal, we hurt others, and we sacrifice what we really value.

At the same time, if fear is limited, we can act cautiously, cautiously, and sensibly.

But when fear is infinitely powerful, we become reckless and cowardly.

What I wanted to tell you with these data is that our desires and our worries are both exaggerated because they're created within us, and as a result, even after we've made a choice, we're always looking for something else.

thank you

(applause)

welcome to thailand

When I was young, 40 years ago, Thailand was a poor, poor country with many people living in poverty.

We were asked to do something, but we didn't start a welfare program or an anti-poverty program.

Instead, I started a family planning program, which had been preceded by successful activities such as the Maternal and Child Health Program.

Family planning programs are unacceptable if the child cannot live to adulthood.

So the kids and mothers should be addressed first, followed by family planning.

Child mortality isn't the only problem, we need family planning.

So let me tell you why we started doing this work.

This was the situation in Thailand in 1974

The average number of children is seven and the population growth rate is a whopping 3.3 percent.

It's a hopeless situation

We had to reduce this rate of increase

I said, "Let's just get started."

The women said, "Yes, let's take the pill, but we don't have any doctors to prescribe it." There weren't enough doctors.

But I didn't give up and looked for a solution.

We enlisted the help of nurses and midwives who were women, and they were very good at explaining the pill to us.

This was great, but it only covered 20 percent of Thailand.

So what do we do with the other 80 percent? We can't just do nothing and say, "I'm not a healthcare worker."

no we decided to go further

I asked the general public

You can see the yellow sign, which I hope hasn't been turned off yet, but it was a Coca-Cola store.

Now we're bigger than Coca-Cola

There is no difference between the people Coca-Cola chose and the people we chose.

They're well-known people in the area, they know their clients are always right, and it's great that they're involved in family planning themselves.

Through these people, pills and condoms could be delivered to villages all over the country.

I visited people who seemed to be getting in the way of solving problems.

Wherever there are people, there are women on boats selling things. Floating markets sell bananas, crabs, and contraceptives. Wherever there are people, you can buy contraceptives.

After that, I decided to expand into religion, because in the Philippines, the Catholic influence is strong, but in Thailand, the people are Buddhist.

I asked, "Can I ask for your cooperation?"

I'm in blue, not yellow, and I'm holding a bowl of holy water that priests sprinkle on pills and condoms to protect family integrity.

This photo made the news all over the country

Some local monks did the same thing themselves.

“We are blessed to have no side effects.”

and women could be relieved

this was their impression

Next are the school teachers

We need to involve everyone who has a stake in making people's lives better.

So I asked the teachers

250,000 people studied family planning with the new alphabet A, B for Birth, C for Condom, I for IUD and V for Vasectomy.

If I had dice, I played a Sugoroku game of "Snake and Ladders"

If you stop on a square that is good for family planning, you can proceed

"Mom says she takes a pill every night.

Mother, well done, move forward one square

Uncle buys a condom Well done Go one square

My uncle doesn't use a condom when he's drunk Back to the start"

(Laughter) Education and class activities.

children are learning at school

condom relay condom inflation competition

Condoms quickly became a girl's best friend.

Diamonds are not popular among the poor in Thailand. Condoms have become a girl's best friend.

In 1975, we introduced microcredit, and the women who managed and ran this project said, "We just wanted to lend money to women who practiced family planning.

If you are pregnant, please focus on it.

If you're not pregnant, you can get a loan from us."

was talking to

35, 36 years later, this program is still going on.

Now it's part of the Village Development bank. It's not a real bank, it's a fund, or microcredit.

It didn't need a big organization to run it, it was run by the villagers themselves.

We rarely see male participation everywhere women women women...

Then I thought America could help, too.

(Laughter) And on the 4th of July

We decided to offer vasectomies to all men, especially those who were at the front of the line to the embassy.

The hotel gave me a ballroom, just the right room.

(Laughter) It was almost lunch time, so I said, "Okay, let's have lunch.

Of course American cola

I have both coke and pepsi

For food, hamburgers or hot dogs," he called out.

Well, a hot dog would have been better

(Laughter) This young man at the Agency for International Development, called Willie Bohm.

It's pretty clear that he had a vasectomy, and he's half-eaten a hot dog, and he looks happy.

It made the news in the United States, and some people were outraged.

I said, "Don't worry, if you come, I'll do the surgery for you too."

(Laughter) What happened after that?

So the number of children per household went from 7 to 1.5 and the population growth rate went from 3.3% to 0.5%.

You can call it the Coca-Cola strategy, because it's exactly the same thing.

I don't know if Coca-Cola copied us or we copied Coke, but we're best friends.

That's how everyone got involved.

We didn't have a strong government and we didn't have many doctors.

Together, we can change behaviors and habits.

And then AIDS came along in Thailand, forcing us to abandon what had been a good endeavor and focus on fighting AIDS.

Unfortunately, the government simply refused.

So our efforts were of no avail.

"If the government is no good, let's ask the military"

So I visited the military and asked if I could rent 300 radio stations.

The military has more power than the government and more guns than the government.

We asked the military to help us fight HIV.

I explained the stats, and they said, "Okay, you can use all the radio and TV stations."

And then the use of broadcasting began.

Shortly thereafter, the prime minister was replaced.

The new Prime Minister invited me, "Mr. Mechai, would you like to work with us?"

because the prime minister liked my wife

I replied, "I understand."

I became chairman of the National AIDS Commission and increased the budget by 50 times.

Every minister, even a judge, got to work on AIDS education. Everyone else - bureaucrats, government agencies, religious organizations, schools - everyone did it.

It became mandatory for media personnel to be educated about HIV.

Stations can now earn money by running ads for 30 seconds longer

I was able to please

AIDS education started in colleges and then in all schools.

high school students become high school teachers

Girls became better teachers than boys.It was really excellent.

These kids were teaching everywhere about safe sex and HIV, and they were known as Mother Teresa.

And then it was time to move on to the next step

Children in grades 3 and 4 are going from house to house in the village to house to house in Thailand, distributing AIDS information and condoms to each household.

No parent would disagree, because we're saving lives, and these kids are lifesavers.

``Everyone should participate,'' he said.

Businesses are also trying to renew their mindset that sick employees can't work and deceased customers can't shop.

we all learned

Next up is Captain Condom, who has an MBA from Harvard and shows up in schools and downtown.

People love it, we need a symbol

Any country, any activity, needs a symbol, and it's probably the most meaningful thing the MBA has done.

(Laughter) We handed out condoms all over town, everywhere, everywhere.

You can get a condom even in a taxi

Even on the streets, the police will give you condoms, the "Cops and Rubbers" program.

(Laughter) Can you imagine a New York cop giving you a condom?

I can do it, and I'm sure they'll have fun handing it out in New York, and I see it everywhere now.

Imagine you have a condom and you're handing it out to different people.

There are many variations Hairbands Clothes Cell phone condoms Perfect for the rainy season

(Laughter) Condoms that we made.

Some call it a "weapon of mass defense"

This is it. I know some of you were looking for a weapon of mass destruction, but we found a weapon of mass defense: the condom.

There's also one with the Stars and Stripes. "Don't forget when you go out."

I'll try to post it later

Please note it is Thai size Please be careful

(Laughter) As you can see, condoms have many uses.

Take a look, I gave it to Al Gore and Bill Sr.

Condoms to combat global warming

This design is the mass defense weapon I mentioned earlier.

May the next Olympics save lives

not just run around

(Laughter) Finally, Thai people are Buddhists, they don't believe in God, and instead they say, "I believe in God."

(Laughter) I've done everything I can to improve people's lives.

I put condoms in refrigerators in hotels and schools, because alcohol impairs your judgment.

what happened after that

everyone is now participating

According to the United Nations, the number of new HIV cases is down by 90%, according to the World Bank, 7.7 million lives have been saved.

There may have been fewer people in the streets of Thailand

hard work pays off

90% of the funds come from within Thailand

Political commitment Financial commitment Everyone joined the fight

Never leave everything to specialists, doctors, and nurses.

all people must participate

Now that we've got AIDS under control, we decided that the next step would be to start helping people in poverty, not just with the power of politics, but also with the support of industry.

Because the poor are business people who lack business skills and have no access to money.

Because he's a businessman with no means of getting money

They're trying to turn the poor into "barefoot entrepreneurs," or "small business owners."

Business is the only way out of poverty

ran it

Money flows from companies to villages through tree planting

this is not alms

We plant trees and we put them into microcredits, which we call the Village Development Bank.

Everyone participates, everyone thinks they own the bank, because they have savings.

Before you borrow money, you need to learn

If you want to help the poor, if you want to help the poor, getting money should be a human right.

Getting money should be a human right.

otherwise people will not be able to escape from poverty

Before you borrow money, you need to learn

I call it the "barefoot MBA," but by teaching you how to do business, you can borrow money to build a successful business.

These are just a few examples: mushrooms, crabs, vegetables, forestry, fruits, and interesting ones are Nike creams and biscuits, Nike sponsored villages.

"We should stop making shoes and clothes here.

We are ready for it," said Nike.

Next is Silk Thai Silk

There's a Scottish tartan silk on the left to sell to people from Scotland.

TV viewers please contact me

The answer to Starbucks in Thailand: coffee and condoms

Starbucks wakes you up, but we also save lives.

that's the difference

Can you imagine getting condoms at Starbucks?

You can order a condom with your cappuccino

And finally, when it comes to education, we want to change the underutilization of schools and make them lifelong learning opportunities for everyone.

It is called "regional development using schools"

Be the central focus of economic and social development

Regenerate schools and make them responsive to community needs

There's a building made of bamboo. It's made entirely of bamboo.

Geodesic dome made of bamboo

Buckminster Fuller would be delighted to see a bamboo geodesic dome.

We plant vegetables around the school and try to grow them ourselves.

Finally, I firmly believe that we need to add family planning to reach the MDGs, the Millennium Development Goals.

Of course, we have to solve the problem of child mortality first. We all need family planning services because they are underutilized.

we found a mass defense weapon

I would like the next Olympics to include the goal of saving lives.

this is our network

A picture of tulips in Thailand

(laughs) Thank you for your attention.

(applause)

Today, together with you, I would like to think about what the earth will be like 1,000 years from now.

But before I do that, I want to talk about plastics and other synthetic materials, which require enormous amounts of energy to produce, and also have disposal issues, and are gradually polluting the planet.

Another thing I want to share with you is how my team and I have been using mushrooms for the last three years.

No, not that. (Laughter) We're making a whole new type of material out of mushrooms, one that works like plastic when you use it, but it's made from agricultural waste, and it's completely compostable after you've used it.

(Cheers) But first, we need to talk about one of the worst single-use plastics.

It's the styrofoam you all know. I personally think it's a white toxic substance.

This roughly 30-centimeter-square piece of matter, about the size of a computer or a large television, has the same amount of energy content as about 1.5 liters of gasoline.

But it's only been used for a week or two and then thrown in the trash.

In addition, this substance is used for more than just packaging.

$20 billion worth of Styrofoam is produced each year and used in everything from building materials to surfboards to coffee cups to tables.

that's not all

According to the U.S. Environmental Protection Agency, styrofoam makes up 25 percent of landfills in the United States.

And even worse, when they're found in nature, along roads or along rivers.

Unless it's collected by you and me, it's going to sit there for thousands of years.

What's even worse is that it's washed out to sea like a giant plastic wreck, and the Styrofoam naturally shatters into smaller and smaller pieces, but it doesn't go away completely.

because they are not biologically compatible

Styrofoam is basically destroying the planet's respiratory and circulatory systems.

And since styrofoam is being produced more and more, and it's everywhere, there's another place where you can find styrene made from ethylbenzene, a known carcinogen.

inside your body

For all these reasons, I think we need better materials, and there are three important principles that guide good materials.

The first is raw materials

We currently use only crude oil as a raw material to heat our homes, fuel our cars, and produce most of the things around us.

We know that crude oil is a finite resource, so throwing out 1.5 liters of gasoline every time you open a package is ridiculous.

Second, we should save a lot of energy to produce materials.

It's a "significant savings" Savings of about 10% are not enough

We should aim to get the energy content to 50% to 25% to 10%.

The third, and perhaps most important, is to create materials that can be part of nature's recycling system.

Nature's recycling system has existed for a billion years

You and I are a part of it, so my body will be able to return to the soil in 100 years without any pretreatment.

And yet the packaging of yesterday's parcel will remain intact for thousands of years.

not decent

But nature provides a very good example.

When a tree is done season and doesn't need its leaves, which are wonderful photon collectors that absorb sunlight, it doesn't just take the leaves in bulk to a recycling center and melt them down to make new leaves.

It just falls to the nearest forest floor possible, where the fallen leaves become topsoil for the next year.

Now let's talk about mushrooms

Because in nature, mushrooms are the recycling system.

What we discovered was that, in a part of the mushroom that you probably haven't seen before, you can use a rhizome-like structure called the mycelium to grow a material that actually has many of the same properties as traditional synthetics.

Mycelium is an amazing substance because it is self-assembling.

It can transform things that we might consider waste, like seed husks and woody biomass, into chitinous polymers that can be shaped into pretty much any shape.

The way we do it, the mycelium is basically used like glue.

By using the mycelium as a glue, we can put materials into molds, like in the plastics industry. We can also create materials with a variety of properties, such as heat retention, fire resistance, moisture resistance, vapor resistance, shock absorption and sound absorption.

These are materials grown from agricultural waste, no crude oil.

And because it's made from natural materials, it's completely compostable in your garden.

So I'd like to show you the four basic processes that produce these things.

The first thing is to choose the ingredients, preferably local or locally produced.

Next, the ingredients are actually put into the mold, and the container that becomes the mold can be of any shape.

And in the interstices of these particles, the mycelium grows, and here comes the magic, because organisms, not machines, do the work of this process.

The final step, of course, is the product, whether it's packaging material, tables, building blocks, etc.

Our vision is local production and local production for local consumption of product manufacturing.

So we created a technique that uses local by-products around the world.

For example, in China, you can use rice husks and cottonseed husks.

In northern Europe and North America, buckwheat husks and oat husks are available.

process these with some basic equipment

I'm going to show you a short video of our factory, so you can see what it's like in mass production.

What you see now is an example of Texas cottonseed.

It's waste

They're run through this machine and run through a continuous system where they're washed, heated, cooled, and sterilized while being inoculated with successive mycelium.

And so we're getting more and more material that can be put into almost any shape, and in this example, we're making a corner pad.

And when this part is covered, the magic begins.

because the organism is the production process

We're going to start digesting these waste products, and over the next five days, they'll be transformed into biocomposites.

We have thousands and thousands of molds like this in our factory, silently self-assembling in the darkroom into everything from building materials to packing corner pads, like this example.

I've said many times that I'm growing materials,

It's hard to imagine how it grows

So my team filmed five days of growth, which is the normal growth cycle, and condensed it into 15 seconds.

Look closely at the little white specks on the screen. Over the course of five days, the mycelium uses the energy contained in this seed shell to expand into the interstices of the material and build beautiful macromolecules.

This matrix self-assembles and grows into the interstices of the waste particles, building millions of tiny fibers.

The undigested portion of the seed husk becomes part of the final composite.

In front of my eyes, these parts have now self-assembled

It actually takes a little longer than 5 days.

Much faster than traditional farming

The final step, of course, is to use

In this case cultivated corner putt

A leading Fortune 500 furniture manufacturer uses these corner pads to protect their tables in shipping.

It used to be a plastic packaging cushion, but we were able to provide exactly the same cushioning performance with our cultivated material.

And above all, when it reaches the customer, it does not become garbage.

It can be returned to the natural ecosystem without treatment and improves the soil.

So why use mycelium?

The first reason is that free raw materials can be used.

Because you have multiple options, you can do it anywhere in the world, and you don't have to worry about the supply of rice husks and cottonseeds.

Second, the mycelium self-assembles and actually does most of this process on its own.

No need to install many machines in the manufacturing plant

So we can build a lot of small factories all over the world.

Biological yield is also very important.

In our case, 100 percent of the material that we put into the mold becomes the final product, and even the undigested portion becomes part of the structure, ensuring excellent yields.

It's a natural polymer -- I think that's the most important thing, because natural polymers have been tried and tested in the last billion years with everything from mushrooms to crustaceans in our ecosystems.

Doesn't stifle the planet's ecosystem Works perfectly

At this point, I can assure you that conventional packaging won't return to the soil in 10,000 years, but I want to assure you that 10,000 years from now, our descendants will be living happily and harmoniously on a planet without anomalies.

I think it will be very good news.

thank you

(applause)

Let's talk about prosperity. We want to prosper together forever.

It's not only our wish, but it's also the wish of the two billion people around the world who are still chronically malnourished.

Hope lies at the heart of prosperity

In Latin, "hope" is in "prosperity."

'speras' in 'Pro-speras' is hope Prosperity meets our hopes and expectations

Ironically, our prosperity has literally been redeemed in the form of money and economic growth.

And the economy has grown so much that we now face a crisis that could undermine our hopes, devastating our resources, cutting down our rainforests, spilling oil into the Gulf of Mexico, disrupting the climate, and carbon emissions have been steadily rising over the last couple of decades, only indirectly slowed by the recession.

Of course, I'm realizing that a recession is no prescription for hope.

we are in a trap

It's a trap called a growth dilemma

Economic growth is necessary but troublesome

Abandon the system or destroy the planet. It's a tough choice. There aren't many options.

The best way out of this dilemma is to believe in your cleverness, your skill, your efficiency, and improve your efficiency.

No objection to efficiency

sometimes we think we're smart

But I think we should check the numbers to see the reality.

Imagine the world in 2050, where about nine billion people aspire to Western incomes and lifestyles.

It makes me wonder - 2% salary or income growth every year is a growth assumption.

I wonder: how fast and how far should I go

How smart should we be?

How much technology does the world need to achieve CO2 targets?

Look at this picture, we're on the left side right now.

Expressing economic growth in terms of carbon emissions, the current economy is

equivalent to 770 grams

In the future world, we have to aim for 6 grams on the far right.

This is a 130-fold improvement, requiring 10 times the performance and speed of previous industrial developments.

I might manage

We could go even further and have an economy that reduces the carbon in the air, which we should be able to do by the end of the century.

But first, let's see if there's even the slightest chance that the current economic system will produce this kind of improvement.

So let me explain a bit how the system works.

Sorry if it's a little complicated

Rephrase in plain language as much as possible

It's like this

Businesses produce goods for households (us) and also generate income, and with these incomes we buy more goods and services.

It's called the economic cycle.

It seems that there is no problem

The key function I want to highlight here is the role of investment.

In most modern economies, investment makes up just one-fifth of national income, but it plays a very vital role.

In short, it stimulates consumption to grow.

It's done in several ways: it increases productivity, it lowers prices, it drives purchase intent.

Now, I would like to focus on the pursuit of novelty in the role of investment: producing and consuming innovative things.

Schumpeter called it the process of creative destruction.

It's the process of producing and proliferating something new and continually seeking to expand the market for consumption by new products.

This is where it gets interesting, humans seem to like novelty.

We love new things, not just new things, we love new ideas, new ventures, and new experiences.

Objects are also important. In all societies that anthropologists have observed, physical existence acts as a language of sorts. The language of objects is a symbolic language that tells stories to each other.

The quest for the message of newness leads to consumption that flaunts status.

By the way, the real system is the link between the logic of society and the economic structure. It is the link between the economic system and the people that drives growth.

It is our insatiable desires and insecurities that keep us running a system that not only seeks economic value, but also extracts material resources.

200 years ago, Adam Smith spoke about wanting a decent life.

In those days, normal life meant linen shirts. Today, we still need shirts, but we need hybrids, HDTVs, twice-yearly vacations, netbooks, iPads, and the list goes on and on, driven by anxiety and an inexhaustible supply of goods.

You don't want it, but you have to buy it, otherwise the system will collapse.

To protect the system, over the last two to 30 years, we've expanded the money supply, expanded credit and debt, and kept people shopping.

Of course, that expansion was deeply involved in the crisis.

Now let me show you the data.

I'll show you what Britain's claims and debts look like.

Here's 15 years before the crisis, where consumer debt is skyrocketing.

Outperformed GDP for the three years immediately preceding the financial crisis

In the meantime, savings plummeted.

The savings rate and net savings fell below zero in mid-2008, just before the financial crisis.

I was borrowing more and saving less just to stay out of the game.

In simple words, it sounds like a pervert

So we buy things we don't need with money we don't have to make a lasting impression on people we don't care about.

(Laughter) (Applause) But it's too early to give up.

"Is this what humans are like?

Is this really what economists do? ”

and soon notice some anomalies

First, the financial crisis itself

What do people do when there's a financial crisis or recession?

Bow down and look forward to the future

I try to save money by spending less

But from a systemic point of view, saving money is wrong.

Keynes's 'paradox of thrift': Saving slows economic recovery

Politicians keep telling us to borrow more and spend more and more of our savings, so we can get the economy back on track and continue to grow.

This is an anomaly, a situation where the system and we, the people, are at odds.

And here's another story of an entirely different madness. It's so obvious that we have to fight climate change, so why not? It's as simple as buying energy-efficient appliances, switching to energy efficient lamps, turning off the lights more often, better insulating your home.

These things reduce carbon and save energy, and they save money.

It makes a lot of sense economically, but it's hard to implement.

In my personal opinion, a few years ago

I just moved into my new house on Sunday afternoon -- well, I'll be honest, I've been there a long time.

I finally got around to dealing with drafts, putting insulation around windows and doors to keep them out.

My daughter, who was 5 years old at the time, helped me in the way that a 5-year-old would do.

After working on it for a while, she turned to me with a serious look and said, "Does this really keep the giraffes out?"

(Laughter) This is a giraffe.

I thought hard as a 5-year-old child

This is a suburb of Barrow-in-Furness, Cumbria, 400 miles north of here.

I don't know how it's going to hold up in the Lake District weather.

A childish misunderstanding caught my eye, and suddenly I realized why we don't do the obvious.

We're too busy keeping the giraffes out -- every morning when we put our kids on the bus, we rush to work, work our way through the flood of emails and the hustle and bustle of the field, whip up a quick meal with the ingredients we've gathered, and spend those precious evenings escaping to prime time TV or TED Online, and that's how we end the day.

(Laughter) What is the purpose?

What is the consumer's purpose?

Mary Douglas asks in an essay on poverty written 35 years ago.

Her answer is, "Creating a social world and finding a sure place in it."

This is a very human side of our lives, and it's a completely different vision than what's at the heart of our economic model.

Well who are we?

Who are these people?

Are we hedonistic selfish individuals seeking these novelties?

Are we sometimes selfless and altruistic, as depicted in this lovely Rembrandt sketch?

Psychology says that there is a conflict, a conflict between behavior that benefits oneself and behavior that benefits others.

This conflict is deeply rooted in evolution, and selfish behavior is appropriate in certain situations: the fight-or-flight response.

But altruistic behavior is essential to our evolution as social beings.

Perhaps, from our point of view, the conflict between the quest for novelty and the quest for tradition and conservation is interesting.

The pursuit of novelty is well suited to times of change, and we need to adapt.

Tradition helps maintain family and social ties in stable times.

Suddenly I realized that I was looking at a map of people's minds

Suddenly the crux of the problem becomes clear

So far we've built an economy

They created a system that systematically privileged and encouraged only a narrow segment of the human soul while ignoring the rest.

In the same way, the solution was also revealed, because this is not about changing human nature.

I'm not trying to limit the possibilities.

This indicates opening

To set ourselves free, to become fully human, to recognize the depth and breadth of the human spirit, and to create mechanisms that protect Rembrandt's altruism.

What does that mean economically?

If we were to put our view of human nature at the center of our economy, and extend it into the new dimension of the human spirit, what kind of economy would it be?

Maybe it's something like this: Over the last five years, the 4,000 social enterprises that have sprung up in the UK, increasingly called B corps in the United States, are companies that have ecological and social goals at the heart of their philosophies, like this Ecosia.

Let me briefly introduce

Ecosia is an internet search engine

Internet search engines make money from the sponsored links that appear when you search.

Ecosia works in much the same way.

Let's do it here Type a short search term

Our Location Oxford Displayed

What's different about Ecosia is that Ecosia makes money in the same way, but 80 percent of that income goes to projects to protect the Amazon rainforest.

Then

Click on Naturejobs.uk

The perfect site to find a job in the midst of a recession

So what's going to happen is that Ecosia will get revenue from sponsorships, and Ecosia will donate 80 percent of this revenue to rainforest conservation projects.

Take profit from one place and allocate it to the conservation of ecological resources

This is a completely different kind of company aiming for a new economy.

It's a form of ecological altruism, perhaps in this direction.

Whatever it is, whatever this new economy is, the big thing we want the economy to do is get back to the core of the economy so that investment reproduces the next investment.

So investment is no longer a constant, mindless pursuit of growth in consumption.

Investing should look different

In the new economy, we should invest in protecting and nurturing the ecological assets that hold our future.

Investing should drive change

We should invest in low-carbon technologies and equipment.

In fact, we should invest in the ideas that create meaningful wealth and the foundations that underpin human well-being.

Of course, this issue also includes the material side.

It is nonsense for people to talk about prosperity without food, clothing and shelter.

Abundance is not limited to food, clothing and shelter

This has a social and psychological purpose: family, friendship, commitment, social, participation in social life.

These goals also require investment, and investment in places, too. Places where we can interact. Places where we can participate. Spaces where we can share. Concert halls, gardens. Civic parks. Libraries, museums, centers of tranquility.

Investing, after all, is just a basic economic concept that connects the present with the future: the relationship between a shared present and a common future.

To restore hope, we must reflect that relationship.

Back to hope, two billion people are trying to live each day on less than a skim latte from their neighborhood cafe.

What can we offer these people?

It's clear that we have a responsibility to lift these people out of poverty.

We clearly have a responsibility to create room for growth, and growth is important in the poorest countries.

It's clear that we can't meet this responsibility without redefining what prosperity means in rich countries: a definition of prosperity that's less material and more meaningful than growth-based models.

It's not just a Western-style post-materialist fantasy.

When I published "Prosperity Without Growth," I received a letter from an African philosopher who pointed out the parallels between this view of prosperity and the traditional African concept of Ubuntu.

As Ubuntu puts it, "I'm here because you're here."

Prosperity is an attempt to share

Its roots are long and deep, its base, as I have tried to show, is already within us.

This view is not an obstacle to development.

It's not about overthrowing capitalism.

It doesn't try to change human nature.

We're just taking a few steps here towards a fit-for-purpose economy.

And at the heart of that economy is a more credible, more robust, more realistic view of what it means to be human.

thank you very much

(Applause) Chris Anderson: I have a few questions.

I thought that economists would talk less emotionally and more calmly.

(Laughter) Has any politician ever expressed an interest in this?

Can you imagine a British politician standing up and saying, 'GDP down 2% this year, good news!

We are happier, our country is more beautiful, and our lives are better."

Tim: Obviously not.

Don't make new things out of obsolete things

Making new things out of what speaks to our prosperity

Can you imagine a politician doing that?

I think that kind of situation has opened up a little.

When I first started doing this kind of work, politicians and Treasury Department spokesmen slammed me for going back to cave life.

We've actually been working on this for 18 years now, and the financial crisis has created a bit of humility even among economists, and in fact, in many countries around the world, people are grappling with this problem.

Chris: But it has to be run mainly by politicians, right?

Tim: Businesses and civil society should do it.

But we need political leadership

It's a political challenge. In fact, politicians themselves are caught up in this dilemma, because they only have growth models in mind.

It is absolutely imperative that unprecedented government and unprecedented politics create space for civic groups and businesses to operate like never before.

Chris: If we can convince ourselves that we can somehow improve efficiency by a factor of 130 and reduce CO2 emissions, do you think that such knowledge-based products will drive economic growth?

Tim: If it's possible, I'd love to know if it's possible to take carbon out of the atmosphere, to reduce emissions to zero, to solve biodiversity problems, to reduce land use impacts, to stop topsoil erosion, to improve water quality.

If there's a solution that does all of this, there's probably 2 percent growth.

Chris: Thank you for speaking with us on a very important matter.

(applause)

All my life, I've been fascinated by the beauty of giant bluefin tuna and how they work.

Bluefin tuna are warm-blooded animals like humans

It's the largest tuna and the second largest bony fish.

In fact, they are endothermic, with mammal-like warm muscles that enable them to swim powerfully through the ocean.

This is the bluefin tuna that we keep at the Monterey Bay Aquarium.

You can see that their body shape and streamlined design are well suited for swimming underwater.

They use their pectoral fins to fly through the water and their crescent-shaped tails to propel them forward.

Most of the body has no scales to reduce resistance to water.

It's one of nature's greatest machines.

Bluefin tuna has been revered throughout human history.

For 4,000 years, we've been sustainably catching this animal, and you can see it in art thousands of years old.

Bluefin tuna is found in French cave paintings and

It can also be found on coins that date back 3,000 years.

This fish has been worshiped by mankind

It's been sustainably harvested for generations.

Bluefin tuna are being hunted everywhere, and the world is experiencing a bluefin tuna gold rush.

Until recently, fishing was done on a sustainable scale.

But current fishing uses pens and giant nets to push bluefin tuna to the brink of extinction.

Bluefin tuna is generally shipped to one place, which is Japan.

Some of you may be playing a role in the decline of bluefin tuna.

The meat of bluefin tuna is delicious and the fat is irresistible.

That's also the problem. We eat too much.

Just look at the Atlantic Ocean and you'll see

There are two populations of bluefin tuna here, large and small.

North American populations are caught about 2,000 tons each year.

The European and North African stocks, the East Atlantic stocks, have been unloaded at staggering levels, about 50,000 tons, almost every year for the last decade.

As a result, populations in both the East and West plummeted, down 90 percent from the 1950 baseline.

This puts the bluefin tuna on a par with tigers, lions, some African elephants and pandas.

This fish has been under consideration for the last two months as to whether it should be listed as endangered.

Exactly two weeks ago, the proposal was rejected, despite the fact that two institutions submitted clear scientific evidence that two institutions were in CITES Annex I.

But if tuna doesn't bother you, why not try this? Longline fisheries around the world not only catch tuna, but also leatherback turtles, sharks, swordfish, and albatross. Leatherback turtles, sharks, swordfish, and even albatross.

These animal deaths are caused by the tuna fishery.

The problem, in fact, is that we know very little about tuna, even though everyone here can imagine an African lion killing its prey.

You've never seen a giant bluefin tuna eat a bait.

This tuna symbolizes a problem for all of us in this room.

In the 21st century, we're only just beginning to understand the ocean as a whole.

Advances in technology have made it possible to look down on the Earth from space and peer into the deep ocean remotely.

And we urgently need to use these technologies to better understand how our oceans work.

From a ship's perspective - even to me - the ocean looks homogeneous.

What is the structure of

Like the plains of Africa, we don't know where the watering holes are for the animals.

No corridors, no relationship between tuna, leatherback albatross, no relationship between tuna and leatherback albatross.

Our understanding is just beginning, and it's how ocean physics and marine biology can come together to create seasonal forces that can make hotspots rise up to become hopespots.

These challenges are difficult because it's technically difficult to do research at sea.

Bluefin tuna is difficult to study across the Pacific.

It's even harder to get up close and tag a mako shark.

Imagine being part of the Bruce Mate team at Oregon State University (OSU) and getting up close to a blue whale and attaching a sticky tag to it.

The story of our passionate team is fish and chips.

What we're doing is using the same chips that satellite phones have or that's in your computer.

Unusual combinations have revealed oceans that have never been understood before.

In addition, for the first time, we were able to see tuna migration under the sea, and this was achieved by using light and photoquanta to measure the sunrise and sunset.

I've been studying tuna for over 15 years.

I had the opportunity to work with the Monterey Bay Aquarium.

We recreated part of the ocean in an aquarium, and set up bluefin tuna and yellowfin tuna for display.

Every morning, when the veil of bubbles rises, it's a pelagic fish community, the only place you'll see giant bluefin tuna swimming.

You can see its beautiful form and function and its constant movement.

I'm flying in a universe called the ocean

We attract two million people a year to see these fish up close and appreciate their beauty.

Behind the scenes, there's a research facility at Stanford University, a partner of the Monterey Bay Aquarium.

We've been catching bluefin and yellowfin tuna here for 14, 15 years.

I've studied them before, but first I had to learn how to care for them.

what do you eat?

What is a comfortable environment for them?

We go into the tank and touch the raw skin of the tuna, and it feels amazing.

And what's even more amazing is that Chuck Farwell and Alex Norton, who understand tuna, can hold big tuna in the sea in one breath. We can study tuna and learn how not to harm them. Tuna knows no boundaries in the ocean.

Jeff and Jason here are scientists, they take the tuna out and put it in an artificial channel that looks like a treadmill.

You might think that tuna will be taken to Japan.

We're actually measuring the tuna's oxygen consumption and heat consumption.

We use this data to build better models.

When I look at this tuna -- this is my favorite view -- I wonder, how did they figure out longitude before humans did? and

see them

you can't get any closer

Research in the lab has taught us how to go out into the ocean.

In a program called "Tag-A-Giant," we traveled from Ireland to Canada to Corsica to Spain.

I've fished all over the world to put electronic computers inside giant tuna.

In fact, we were able to tag 1,100 tuna.

I'm going to show you three videos, because I tagged 1,100 of them.

It's very difficult, but team play is essential.

Pick up the tuna and measure it

A team of fishermen, captains, scientists and engineers work together to get this animal out to sea for about four to five minutes.

Sprinkle seawater over gills to give them oxygen.

And then we go to great lengths to tag them, put computers in them, make sure they have antennas sticking out so that they can sense their surroundings, and release them back into the ocean.

I'm always happy when I see them off

I'm going to shake my tail fin

The data can be collected when Doug comes back, the fisherman gives it back for a thousand dollars, and for vertebrates, we now have up to five years of information in the ocean.

Sometimes there are giant tuna, like the one I caught in Nantucket.

But it's still only half of the largest individuals we've tagged.

It takes a team of humans to salvage a tuna.

What we're doing here is attaching a pop-up satellite archival tag to the tuna.

Once attached to the tuna, the tag senses the environment around it, and later, when detached from the tuna, it floats to the surface of the ocean and sends the position data, pressure data, temperature data, etc. calculated from the tag to the Earth orbiting satellite.

Pop-up satellite tags save the human effort of retrieving the tags.

Both electronic tags are expensive

These have been developed by various teams in North America.

It's one of the best new instruments currently available at sea.

We have a community that has supported us more than anyone else.

I'm a coastal North Carolina fisherman.

For decades, the two towns of Harris and Mollyhead would host "Tag-A-Giant" parties every winter, where they would tag 800 to 900 fish with fishermen.

This task also measures the size of the fish.

What we've started doing in the last few years is collecting mucus.

I have very shiny skin and you can see my reflection.

We can get genetic information from this mucus, we can find out the gender, we'll double-check the pop-up tag, and we'll return it to the ocean.

here is my favorite

Thanks to Gareth Lawson, who I worked with before, this is a great image of a single tuna.

This tuna is moving through the quantified ocean.

The warm side is the Gulf Stream, and the cold side above is the Gulf of Maine.

The tuna would like to go there, they would probably look for herring shoals, but they can't go there, it's too cold.

When it warms up, the tuna pop up, eat the fish, return to where they came from, go back to catch, and in the winter come back down to North Carolina and then down to the Bahamas.

Here's my favorite scene, three tuna heading to the Gulf of Mexico.

is tagged

I'm calculating the position from an astronomical point of view.

We came together. Maybe mating. It's here.

This is where tuna spawn

From this data, we were able to create a map, which contains thousands of locations from 15 years of tagging.

Now we know that the tuna from the west move to the east.

The two tuna populations, one of which can be tagged as the Gulf Stream population, which, as I said, also goes to the Gulf of Mexico, and the other.

Mixed with our North American tuna is European bluefin tuna coming from the Mediterranean.

Regardless of hotspots or hopespots, they coexist.

Armed with this scientific information, we're building a new model for an international commission to challenge the model that was used to this day to reject CITES, that the two populations exist independently of each other.

This overlapping model is the way forward.

Because we can predict which areas to manage.

Things like the Gulf of Mexico and the Mediterranean Sea are places where a single species or population can be caught.

These are the first places that need to be protected.

I think the United States and Canada, which have strong fishing systems in the middle of the Atlantic Ocean, where there is a lot of mixing, should adopt a policy of granting fishing rights.

However, in international waters where overfishing has taken place, some hope spots must be created.

We need this much water to protect bluefin tuna.

Our next project was "Tagging of Pacific Pelagics" (TOPP), where we at the Census of Marine Life came together to take on the planet.

Initially funded by the Sloan Foundation and others, we were able to carry out our program, one of 17 field programs, and we were able to start tagging many predators, not just tuna.

What we've done is tag a mouse shark in Alaska. While following them on their home turf as they catch salmon, we've learned that if you put a line in the bait of salmon, you can catch a mouse shark, a member of the great white shark family.

Then communication satellites will let us know what's going on with the sharks.

If you look closely at a jumping shark, you can see the antennae.

A wild shark with a satellite tag sends data back to us as it jumps and follows the salmon.

Mouse sharks aren't the only ones to attach tags,

Here we have a mouse shark, and we color the water temperature with a level meter. Warm waters are bright colors.

Sharks go south to spawn in the tropics, then come to Monterey.

The team of great white sharks in the Farallon Islands next to Monterey is led by Scott Anderson and Sal Jorgensen.

They throw mats that look like sea lions and use them as decoys, waiting for their curiosity to come to our five-meter boat.

It's a creature weighing several tons.

I'm going to draw a decoy there.

The acoustic tag is called something like "OMSHARK 10165" and it's attached with a pin.

And if you put a satellite tag on it, you can see how it goes on long trips, thanks to a luminous geospatial algorithm calculated from a computer attached to the fish.

In this case, the monkey sees two tags: a great white shark in California that went to his mate and came back.

Together with our colleagues at the National Oceanic and Atmospheric Administration (NOAA), we also tag mako sharks and blue sharks.

This allowed us to observe Mako sharks and mouse sharks for 10 days in a temperature-coloured sea.

You can see great white sharks and blue sharks moving.

We now have an unprecedented ecological map of shark migration routes across the ocean.

TOPP's tuna teams have successfully tagged 1,700 fish in three teams. Bluefin, yellowfin, and albacore, all at the same time -- a carefully practiced tagging process. They select young tuna, implant tags with various sensors, and release them.

The released tuna will return, but you can see that bluefin tuna is blue, crossing the ocean and returning to the western Pacific on the sea that NASA has calculated.

Our team at UCSC (University of California, Santa Cruz) also put tags on the heads of elephant seals that come off when they molt.

Elephant seals have a range that spans half the Pacific Ocean, and they're 500 meters deep and they're giving us great data.

Scott Shaffer has tagged petrels with luminous tags, which are tuna tags, so that they can see a 3,500 nautical mile journey from New Zealand to Monterey and back, something that has never been seen before.

Now we can follow their journeys with small, light-emitting geolocation tags.

Laysan albatrosses also travel across the ocean, sometimes through the same waters as tuna.

That's why you can catch me

George Schillinger and the Playa Grande leatherback team also tag the leatherback turtles, and they migrate as well.

Scott Benson's team proved that green turtles migrate from Indonesia all the way to Monterey.

This map of changing oceans is finally locating predators.

You can see their ecosystems all over the ocean.

Based on this information, we can map out the Hope Spot.

This is just three years of data, but here's 10 years of data.

We can observe their pulse, seasonal behavioral changes, and more.

With all of this data, we were able to identify the hotspots and fire off 4,000 tags, which was a very difficult task, and the first thing we learned was that there were 2,000 tags that were kind of gathering places on the California coast.

What they do to answer the encore

It uses tags to send us data from 2,000 meters deep.

The information they send us includes the Antarctic and the North Pole, which are inaccessible to humans.

Released seals from different countries burrow beneath the ice sheets to provide us with oceanographic temperature data in both the north and south poles.

But what's really interesting is when the data is visualized.

Looking for the best way to visualize data

The data that aquatic animals send us is very useful for climate change issues, and we also think it's important to share this information with society and get everyone involved.

In the Great Turtle Race, tagged turtles garnered 40,000 hits.

And now a great white shark released into the ocean by Google Ocean

It reflects the magnificent seafloor topography from California to Hawaii, as if you know the beautiful roads.

The role of "Mission Blue" is to tell us about the ocean that we cannot see.

We have the know-how, and NASA knows the whole ocean.

We should join forces

So to sum it up, North America's Yellowstone is also off our coast.

Technology can also tell us where it is

What we can do for "Mission Blue" might be to increase the amount of biologging.

How can this kind of activity be expanded to other regions?

And finally, I want you to think about broadcasting live footage from blue whales and great white sharks.

Please make a great app

Many will be delighted to see sharks swimming under the Golden Gate Bridge.

Please connect to this activity with your iPhone

That way, strange urban legends will die out.

we can save bluefin tuna

Great White Sharks Can Be Saved

we have science

I see hope, we can do it

Let's throw this possibility into the sea

thank you

(applause)

I have gathered here today to explain that the United Nations has set development goals for the development of the nations of the world.

called the Millennium Development Goals

The nice thing about this goal is that it has eight definitions.

There are eight goals, and the United Nations has shown what is necessary and what needs to be changed in order for people all over the world to live a good life.

Look, we need country-to-country cooperation in many areas, from poverty eradication, education, gender, child mortality, maternal health, infectious disease prevention, environmental protection, aid to trade.

The second good thing about these development goals is that they are all quantified.

Let's look at the infant mortality rate, the objective is to reduce the infant mortality rate by two-thirds between 1990 and 2015.

That's a 4 percent reduction per year.

We can distinguish between lip service discussions of policy and the important work of actually improving the lives of our citizens.

The good news is that many countries, in Asia, in the Middle East, in Latin America, in Eastern Europe, are already declining in child mortality, as already reported in the report.

Even in the big country Brazil, it's down 5%. In Turkey, it's down 7%.

it's very good

On the other hand, "no progress in Africa,

Some people say that we don't even have the statistics to know what's going on in Africa."

Let me show you that they're both wrong

Let's take a peek into the wonderful world of statistics

I created a page called ChildMortality.org, which lists the deaths of children under the age of five in countries around the world, according to experts from the United Nations.

Take Kenya for example

Here is Kenya's data

Don't panic, stay calm and I'll explain properly

If you hated statistics in college, this might be offensive.

However, when you first look at the dots in a graph like this, you may wonder, where does this data come from?

What is the source of this data?

Is it working in Kenya to have a doctor or specialist attend the death of a child, issue a death certificate and register it with the Statistics Office?

No, in low-income countries like Kenya, we don't have such an organization yet.

And even if they do, they're not fully functioning, because many deaths occur in the home, where family members are present and not recorded.

Without relying on such an imperfect system,

we conducted an interview