Last time you saw a baby — this is my granddaughter Mithra.

Isn't it great?

(Laughter) When she was born, her brain had already begun to develop based on her experiences in the womb for several months, but like all fetuses, at normal term, her capabilities were very limited.

Even if you measured her cognitive ability, it would be immature.

There is nothing to indicate that you are thinking

In fact, there's little evidence that newborn infants have cognitive abilities.

infants are less responsive

In fact, there's very little indication that there's a human inside.

(Laughter) It's a very primitive and limited way to control its behavior.

It takes a few months before you can consciously reach out and grab things and grab things, which you usually do in your mouth.

After a few months, you'll see long, steady progress, reaching a miraculous point where you can wriggle, roll, sit, crawl, stand up, walk, and move around in the world.

In the brain, on the other hand, we're seeing amazing progress.

At that point, the brain is ready to remember.

Thousands of things, actions, and their relationships in this world are already memorized, memorized, and quickly recalled.

And those relationships can be built in hundreds of thousands, potentially millions of ways.

And by that point, the brain will have sophisticated cognitive abilities.

The brain's cognitive repertoire grows

This brain is really a thinking machine.

By then, there will be no doubt that this brain will have a human in it.

In fact, the brain at that time is clearly in control of its own development.

And by that age, they've made tremendous progress in their ability to control their movements.

Its ability is to control the simultaneous movements, the complex sequences and methods of movement necessary to play complex games such as soccer.

This boy can lift his head

I'm from São Paulo, Brazil, and 40 percent of boys this age can do the same thing.

You'd be hard-pressed to find a boy in the town of Monterey who could do this.

If so, the kid must be from São Paulo.

(Laughter) What this means is that our individual skills and abilities are shaped by our environment.

That environment influences our current culture and is what our brains are exposed to.

Our individual progress consists of a vast repertoire of skills and abilities specific to our individual provenance.

And as a result, we see a wonderful human individualization, and as a result, we're all different from everyone else.

We all acquire different skills and abilities through the amazing adaptability of mechanical plasticity.

Of course, the adult brain has a repertoire of acquired skills and abilities that allow it to do things more or less automatically from memory, which makes us active, mobile, thinking creatures.

That's what we geeky university researchers study, the brains of animals like rats and monkeys, or this interesting creature, the most bizarre creatures on the planet, where the brain learns skills and abilities.

We look for changes as new skills and abilities are acquired.

We look at it in individuals of all ages, in all species, from infants to adults to the elderly.

For example, we train rats to acquire new skills and abilities, such as using their hands to grasp objects, in the same way that we study human children's acquisition of subskills, acquisition of general abilities, such as learning to read.

Or we look at older humans who have acquired complex abilities related to the ability to read music or mechanical movements adapted to playing musical instruments.

From these studies, we found two important periods of brain plasticity.

The first critical period is commonly referred to as the "critical period."

During this time, the brain is in its nascent state, building its basic processing machinery.

This period does not require learning per se, but there are dramatic changes that strongly encourage early differentiation of the brain as a machine.

For example, in the realm of sound, what you need is exposure to sound.

In fact, the brain is greatly influenced by the sound environment in which it lives.

For example, let's say you raise an animal in a nonsensical sound environment, with nonsensical sounds that I create, and you can artificially make sounds important to animals and their brains just by exposing them.

And when you look into that brain, it prepares its processing processes in the most ideal way possible to render the sounds it's exposed to in an organized and orderly way.

The sounds you use don't have to be of value to the animal, and you can raise animals by exposing them to sounds that might be of value, such as sounds that simulate the native language of a child.

The brain then develops specialized processing capabilities for it, specialized for complex arrays or collections of sounds.

Enhancing the differences in sounds in the sense that they represent multidimensional neuronal function.

Or exposed to completely meaningless and harmful sounds

You can also raise animals, raising them in conditions equivalent to placing babies in an environment with the constant noise of a somewhat loud ceiling fan.

The brain then specializes in processing that nonsensical sound.

It consequently disrupts the brain's ability to process meaningful sounds.

This kind of thing actually happens in young children.

It's these abilities that, for example, in normally developing infants, shape the ability to process language beautifully.

It's also responsible for many young children's language problems as they grow up.

Early in plasticity, the brain changes independently of the learning context.

You don't have to pay attention to what you hear

It doesn't even have to be a meaningful sound.

can be irrelevant to the context of the action

This developmental process is for the brain to build up its processing capacity, so that it can operate separately and selectively, so that those with it can act selectively.

The second critical period, almost all of life, is during which the brain refines its machinery as it acquires a wide range of skills and abilities.

And during this period, just before the age of one, until death, it's under behavioral control.

So the brain has a strategy for judging the importance of incoming signals.

focus on skills, abilities under specific attentional control

It's a function of whether the behavior achieved the goal or whether the behavior rewarded the individual.

this is very powerful

It's a powerful demonstration of lifelong plasticity to changes in the brain.

This is the basis for our true individual differences.

Looking at the brains of animals working on specific skills, we can describe this change on many levels.

For example, here is an experiment

It's an experiment I did five years ago with scientists from the University of Provence in Marseille.

It's a very simple experiment where you have a monkey learn to handle a tool with the same difficulty as a child learns to handle a spoon.

The monkeys were able to do the task in about 700 trials.

I couldn't do it at first

Success rate is about 1 out of 8 times

Every successful trial was elaborate.

Each trial was different from the other trials.

The monkey gradually established a way of doing things,

Around 700 trials, I was able to do it smoothly and never fail.

This monkey now uses tools to get food every time.

At this point, the work is done in a beautifully uniform way, controlled and repetitive in each trial.

If you look into this monkey's brain,

you can see that it's deformed

You can see that process of transformation in different behavioral changes.

The deformation of the brain was reflected in maps corresponding to the surface of the hand.

Here's a map of the surface of the brain, where they've done some very elaborate experiments, looking at body parts and the neuronal responses that correspond to those parts.

If you look at this map, you can see how the hand is represented in the brain.

We transformed this map through training.

That part is shown in pink. The area corresponding to the fingertip is enlarged.

This area is used by monkeys to handle tools.

If you look at the selectivity of responses in the monkey cortex, you can see changes in the filter characteristics of sensory input through the skin that involve the fingertips you're using.

So in the area that corresponds to this most organized body surface, the fingertips are represented by one simple correspondence.

This is the same for both monkeys and humans.

Now, through training, we are able to respond precisely.

From those areas the monkeys get more detailed information.

This is the point of acquisition of skills and abilities that you probably don't know and don't even think about.

We looked at different brain regions in monkeys learning to do this task.

They're all changing with skill and ability.

For example, let's look at the cortical region representing postural control in monkeys.

Let's look at the areas of the cortex that control specific movements and sequences of movements associated with that behavior.

It's been completely rebuilt and dedicated to the work we're doing.

15 or 20 cortical regions change when you learn a simple skill like this.

that means big changes for your brain

It manifests as a definite change in the response of ten million, perhaps one hundred million neurons in the brain.

A hundred million, maybe a billion, manifests as changes in synaptic connections.

This change is physical

The degree is huge

For children who are learning motor skills in general or for children who are learning their native language

think about the changes that occur in the brain

it's a huge change

It's essentially a selective representation of what's important to the brain.

Because for most of the brain's activity, learning is subject to behavioral context.

what does it all focus on

what is rewarded

And your brain decides what's important and good for you.

It's all about cortical processing and forebrain specialization.

It forms the basis of your specialization.

That's why, with your many skills and abilities, you're a unique expert, an expert who's physically very different in detail than the human brain a hundred years ago, an expert who's very different in every detail of your brain than the average human a thousand years ago.

Now, one of the hallmarks of this process of change is that information is always related in context to other inputs and information in the immediate vicinity.

This is because the brain takes in and constructs related information that happens at roughly the same time, and because it's related to each other in a short time stream.

The brain records all information and makes all changes in a temporal context.

The overwhelmingly powerful context in your brain is yourself.

You yourself have been a recipient, a doer, a thinker and a doer of your experiences with time all your life.

A myriad of tiny sensations have arrived from the surface of the body that have always been associated with you, the receiver, and they have manifested as you.

You and your self were constructed by these myriad events.

It was constructed, it was created in the brain.

And it was created as a physical change in the brain.

Beautifully constructed, it creates the individual, because we all have vastly different histories, and vastly different experiences create a beautiful differentiation of ourselves and of who we are as humans.

We want to use this research to understand not only normal human development and the acquisition of skills and abilities, but also the causes of disability and the differences and variations that limit ability in children and adults.

I'm going to talk about a brain plasticity-based approach that uses this research to modify how a child's brain works to improve verbal and reading comprehension.

I'd like to introduce you to an experiment that puts this brain science to work, first of all, how it affects aging-related functional decline.

Then we try to target that mechanism to differentiate brain function for functional recovery in the elderly.

The first story is about a child with a learning disability.

To date, there is a wealth of research data showing that the underlying problem with the majority of children who have early childhood language problems and who struggle to learn to read is the creation of flawed language processors.

And language processors are defective because the early childhood brain had a lot of noise in its language processing machinery.

for a simple reason

It's a signal and noise problem

there are many causes

There are also a number of genetic problems that cause

This noise problem can also be caused by information coming in through your ears.

As some of you older people know, when I was a kid, I knew that children born with cleft palates were mentally retarded.

I knew that cognitive development would be delayed, I knew that developing normal language skills would be difficult, and I knew that learning to read would also be difficult.

most of them became intellectually and learning disabled

it's gone it's gone

That genetic vulnerability, that genetic disease, is gone.

I don't hear about it anymore. What happened?

This was figured out 35 years ago by a Dutch surgeon. It's a critical start-up period for brain development, and if we solve the problem early enough, while the brain is still plastic, the brain will build its machinery properly and the problem will go away.

What is Surgical Repair of Cleft Palate?

Basically, it opens the eustachian tube and allows the fluid that's accumulated there to drain out.

When there is fluid in the middle ear, the sound you hear becomes quieter.

Sound quality also deteriorates.

In this case, the child's native language is not English.

not even japanese

It's muted English and degraded Japanese

it's like trash

and the brain specializes in it

Create a brain that reflects garbage language

kids get stuck with it

Then trash isn't just an ear problem

can cause brain problems

The brain itself is constantly flooded with noise.

And there are also genetic factors that make it worse.

A child's native language with such a brain deteriorates.

that's not english it's noise english

Defects in the sound representation of words. Language is processed in an abnormal way by the brain, which has different time and space constants.

We can examine the brains of such children and record their time constants.

It's about an order of magnitude longer, 11 times longer than the average, longer than normal children.

Spatial constant is about 3 times

Such children develop memory and cognitive problems in the verbal domain.

Of course, as recipients of language, they experience and express it, and as information, it expresses garbage.

their reading comprehension is inadequate

Because reading relies on translating the sounds of words into spelled or visually represented forms.

Without a representation in the brain of the sound of words, conversion would be meaningless.

Corresponding abnormal neurological symptoms appear

Afterwards, they are said to have abnormal neurological symptoms with respect to their language skills and their reading skills.

The important thing is that you can train your brain to get out of it.

A good way to think of it is to change the brain to make it more precise again.

It takes an average of 30 hours to change a detail.

We've done it with 430,000 children

As we speak, about 15,000 children are participating in the training.

It is a considerable effect

Here is the normal distribution

The focus here is on the children on the left side of the distribution.

Data based on about 3,000 people

Most of these children move from the left side of the distribution to the middle or right side.

This distribution is for a wide range of language assessments.

It's like a language IQ test

The effect is that if we trained all the children in America, the whole distribution would shift to the right and narrow.

this is a very big effect

Think about the kids in English class

Think about the kids who are late in that class

We have the power to move most of those children to the middle or right side of the distribution.

In addition to precise language training, memory and cognitive skills, fluency and composition are also trained.

And it can also train an important language-dependent skill: reading comprehension.

modify the brain extensively

We can examine a child's brain in a task devised by scientists at Stanford, MIT, UCSF, UCLA, and many others.

In children performing a variety of verbal and reading tasks, most children's neurological responses that were abnormal before training returned to near normal after training.

Now, this method can be applied directly to the problem of aging.

As we age, our brains go from being capable machines to deteriorating.

Increased noise in the brain

Poor learning coordination and control

When we examine the brains of such people, we find that the brain functions that express language have varying time and spatial constants.

After escaping the postnatal chaos, the brain finds itself back in chaos again.

The result is diminished abilities for memory, cognition, postural control and alertness.

But the brains of these people are trainable, and in a small number of experiments, it's possible with about 30 hours of intense training.

This is the story of someone who is 80 to 90 years old.

Here's a graph showing a significant improvement in short-term memory, improved recall over time, attentional control, verbal ability, and visual-spatial ability.

The improvement in global neuropsychological measures in this trained population is statistically significant.

So when we looked at the neuropsychological abilities of people on the left side of the distribution, the average person moved either to the middle or to the right side of the distribution.

This means that most people at risk of aging became protected from that condition within a short period of time.

My challenge is to help more seniors, because I think it's possible, on a large scale, just like with children.

My main interest is to apply this research to other diseases.

I'm particularly interested in big problems in children, such as autism and cerebral palsy.

In the elderly, I'm interested in Parkinson's disease, and in others, acquired disorders such as schizophrenia.

The challenge for you, related to this research, is how do you maintain your own sophisticated learning machine?

And, of course, learning plays a permanent role, and a decent life is key.

Brain exercises are also important.

Get ready, because soon it will become a part of your life, and much like physical exercise, it's a necessity for a decent life in this day and age.

This research and science that's important to you is ultimately about how you nurture yourself.

Now you understand that you are responsible for each of you and that you are in control of your own happiness.

Of course, many will ignore this advice.

It's going to take a long time for those people to really understand that.

(Laughter) That's another matter, not my responsibility.

Thank you very much

(applause)

(Chris Anderson) Nick Bostrom

You've shown us all sorts of great ideas so far.

About 20 years ago, he showed that we might be living in simulations.

More recently, it's vividly illustrated how artificial general intelligence can have devastating consequences.

This year, I'm about to publish a paper on what I call the Fragile World Hypothesis.

The purpose of this evening is to ask you to explain it in an easy-to-understand manner.

let's get started

What kind of hypothesis is that?

(Nick Bostrom) It's about looking at the structural features of our current human condition.

You seem to like the pot metaphor, so let's use that to explain.

Visualize a large jar filled with beads that represent ideas, methods, and possible technologies.

Think of the history of human creativity as putting your hands in this jar and taking out the balls, and the results so far have been very beneficial overall.

A lot of white balls were pulled out, and there were gray balls that had good sides and bad sides.

The black ball hasn't been taken out yet. It's a technology that will inevitably destroy the civilization that takes it out.

The paper explores what we can think of as a black ball.

CA: So you're defining the black ball as something that will inevitably lead to the collapse of civilization.

(Bostrom) As long as we don't get out of what we call the "semi-chaotic default condition"

it will be

CA: So you've shown with an example that in the past we might have just been lucky and unknowingly pulled out that "death ball."

I have a quote. What is this?

Bostrom: I'm saying that it's hard to predict what the fundamental discoveries will bring.

we don't have that ability

Even if you are good at taking out the ball, you can't put the ball back in the urn.

You can invent, but you can't vice versa

Our strategy for that is to just hope there's no black ball in the urn.

CA: You said that once you take the ball out, you can't put it back in, and we've just been lucky so far --

Let's discuss with examples

You list all kinds of dangers.

SB: The most obvious one is technology that can easily cause massive destruction.

Synthetic biology would be a rich source of these black balls, but there are other possibilities, like geoengineering.

It's a way to combat global warming, but it wouldn't be easy if it were too easy.

Or autonomous assassin drones -- mass-produced swarms of mosquito-sized killer robots.

So is nanotechnology and artificial general intelligence.

CA: So you're arguing that when you discovered that nuclear energy could be used to make bombs, you were just lucky that it wasn't readily available to everyone.

CA: In the 1930s, when there were developments in nuclear physics, smart people realized that it was possible to set off a chain reaction that could be a bomb.

Then, as research progressed, we found that to make a nuclear bomb, we needed highly enriched uranium and plutonium, but that's hard to come by.

It requires ultracentrifuges, nuclear reactors, and enormous amounts of energy.

But what if there was an easy way to unleash the atomic power?

What if you could create a nuclear explosion by doing something like baking sand in a microwave?

I know now that it's physically impossible.

Before you do that physics study, how do you know what the results will be?

(Anderson) In order for life to evolve, the Earth needs to be a stable environment, and if a large-scale nuclear reaction could easily occur, the Earth would not be stable, and we would not have existed in the first place.

Bostrom: It's easy to do it on purpose, but it's also conceivable that it doesn't happen by chance.

It's easy to stack 10 blocks together, but you won't find 10 naturally stacked blocks.

CA: This is something that many of us are very concerned about, and the one that seems most likely to happen in the near future is synthetic biology.

Bostrom: Let's see what that means. If anyone could destroy a city by doing a little work in the kitchen in the afternoon.

It's hard to imagine how modern civilization as we know it can survive on top of that.

Because in any group of millions of people, there will be someone willing to use that destructive power for whatever reason.

If such an apocalyptic person decides to destroy a city, it will be destroyed.

CA: This is a different kind of danger.

let's talk about this

Bostrom: In addition to the obvious danger of a black ball that allows you to blow up a lot of things, there's also the danger of creating bad incentives for people to do harmful things.

Let's call this Type 2a. Think of a technology that motivates us to use greater force to destroy.

I think nuclear weapons were actually close to this.

Humanity spent 10 trillion dollars to build 70,000 nuclear warheads ready to fire.

There were several times during the Cold War when we almost blew each other away.

It's not like we all thought it was a good idea to spend $10 trillion to blow ourselves up.

Let's say it was possible to strike safely first.

It may have been difficult to contain the launch of nuclear missiles in a critical situation.

Because there is a risk that the other party will

CA: Anderson: Because it was certain that both sides would be destroyed, the Cold War was relatively stable, otherwise we might not be here.

Bostrom: It could have been more unstable.

Technology also has another quality

If weapons weren't as destructive as nuclear weapons, it might have been harder to reach disarmament agreements.

CA: Just as much as there is a concern that the mighty powers have bad motives, it's also a concern that everyone has bad motives. That's type 2b.

Bostrom: Let's think about the case of global warming.

There are many small conveniences that we do that have a small individual impact.

But when billions of people do it, it does a lot of harm overall.

Global warming could have been worse

There is a climate sensitivity parameter.

It's a parameter that tells you how much the temperature rises when you release this much greenhouse gas.

What if the temperature rise in 2100 caused by the greenhouse gases we emit is 15 to 20 degrees Celsius instead of 3 to 4.5 degrees Celsius?

it would be a very bad situation

Or if renewable energy has been much harder to come by,

Or if fossil fuels were much more abundant,

(Anderson) If things go on like this, and the temperature rises by 10 degrees in the near future, why don't humans get up and do something?

we're stupid but we're not that stupid

no i'm stupid

(Bostrom) I wouldn't bet on that.

(Laughter) I can think of many things.

Switching to renewable energy is a bit of a challenge right now, but it's possible.

But something physics could have been different, and those things could have been a lot more expensive.

(Anderson) What do you think?

Given all these possibilities, does it mean that the world is dangerous?

Is there a death ball in the future of mankind?

(Bostrom) It's difficult.

It seems that there are various black balls in the jar.

There may also be a golden ball that protects you from black balls.

I don't know which one will come out first.

CA: I think the philosophical critique of this idea is that the future seems to be predetermined.

I don't know if the ball exists or not

I don't want to think that the future is like that.

I like to believe that the future is not set, and that the decisions we make now determine what kind of ball we get out of it.

Bostrom: If you keep inventing, eventually you'll get all the balls out.

There's a weak form of technological determinism that seems plausible, and it's hard to imagine a civilization using, say, stone axes and jet planes.

Technology can be thought of as a set of affordances

Technology allows us to do many things and has many effects on the world.

It's up to humans to choose how they use it.

When we think about these three hazards, we can make pretty good assumptions about how we might use them.

The danger of type 1 is its destructive power, and it's very likely that with millions of people, some will use it in destructive ways.

CA: The most disturbing argument to me is that if you look inside the jar, doom is likely to happen.

If you think that power is going to accelerate -- technology is inherently accelerating, but if we keep building tools that make us more powerful, at some point, one human being will be able to cause annihilation, and disaster is inevitable.

It's a disturbing story, isn't it?

(Bostrom) Well sure

(Laughter) We will have more power, and it will be easier to use that power, but we will also be able to create technology that will control how people use that power.

CA: Let's talk about it.

Synthetic biology, cyber warfare, artificial intelligence, everything is possible now, and the future seems doomed.

What should we do about it?

You are discussing four types of responses.

(Bostrom) I don't think any kind of restriction that would stop technological development in general is very promising.

Impossible or even possible would be undesirable

If we're going to slow down technological progress in a very limited area, I think it's possible.

You wouldn't want us to see too much progress in things like isotope separation technology that would make it easier to make biological weapons and nuclear weapons.

CA: I used to think that too.

Let's take a slightly opposite position.

If you look at the history of the last 20 years or so, you've always been full speed ahead, and that was the only option.

If you look at the rapid evolution of globalization, if you look at the "break fast and go fast" strategy and what happened with it, if you look at the possibilities of synthetic biology, I wonder if we should go so fast into a world where DNA printers are everywhere in our homes and schools, without any limits.

there should be a limit

(Bostrom) What is not possible in the first place

Even if you think it's desirable to stop development, there's the question of whether it's even possible.

If one country did -- (Anderson), one country can't do it, we need a treaty.

That's how we got through the nuclear crisis through painful negotiations.

Shouldn't we start negotiating hard rules for synthetic biology research as a global priority?

Bostrom: I think so. For example, DNA synthesizers should be provided as a service rather than being owned by individual laboratories.

There are 4 or 5 facilities in the world, and if you send the blueprints, you will get DNA back.

When you think you need a limit, you can just hold down a certain route.

you have the means to control

CA: You're thinking that simply trying to hold back wouldn't work.

If someone somewhere like North Korea went there and got that knowledge,

Bostrom: At the moment, it's possible.

Not just synthetic biology

Anything that radically changes the world can become a black ball.

CA: Let's look at an alternative solution.

(Bostrom) This is also limited, but

For Type 1 dangers, it would be desirable to reduce the number of people who could use those technologies to want to destroy the world. (Anderson)

A picture of a drone with facial recognition flying around the world.

If you find someone with antisocial tendencies, pour love down on them and cure them

(Bostrom) It's a strange combination

We can get rid of these people not only by imprisoning them or killing them, but also by persuading them to change the way they see the world.

If it works, we might be able to cut that number in half.

If you use persuasion, you're competing with all kinds of powerful forces trying to persuade people, whether it's political parties, religion, or the educational system.

Even if we could halve the number of people, the risk would not be halved.

maybe 5% or 10% less

(Anderson) I don't recommend betting the future of mankind on the second response.

Bostrom: I think it's fine to persuade and dissuade, but you shouldn't rely on that as your only safety net.

(Anderson) What's the third?

Bostrom: I think there are two general methods that can be used to achieve global stability against a variety of possible dangers.

and you'll need both

One is a very effective preventative policing function.

like a hindrance

If someone starts doing something dangerous, you can obstruct and stop them in real time.

To do that, we'll need ubiquitous surveillance, where everyone is constantly being watched.

(Anderson) It's the world of Minority Report.

(Bostrom) We might use artificial intelligence algorithms or something like a liberty center that does all sorts of inspections.

CA: You know the surveillance society isn't very popular, right?

(Laughter) (Bostrom) Imagine wearing a necklace with an omnidirectional camera all the time.

It might be a good idea to name it something like "proof of freedom" so that it's easier to accept.

(Laughter) (Anderson) That's why I say it's a shocking story, folks.

Bostrom: Of course there's some debate about this.

there are big problems and risks

let's talk about that

A fourth response is to fill another governance hole.

At a micro level, surveillance is a way of filling the gaps in governance that keep people from doing highly illegal things.

In contrast, there are holes in macro-level and global-level governance.

We need to ensure this capacity to prevent the worst failures of global cooperation: wars between great powers, arms races, shared resource failures, type 2a dangers.

CA: Global governance sounds like an outdated term. Can you argue that throughout human history, as the power of technology has increased, it has reorganized and concentrated societies?

For example, a group of nomadic criminals taking control of society, while building a nation, with power, with police, with the military, saying, "I won't let you do that."

When one person or one group can wipe out humanity, is that the way it should be forced to go?

CA: It's true that throughout human history, the scale of political organization has increased.

What was once a group of hunter-gatherers has emerged as tribes, city-states, states, and now international organizations.

Surveillance society and global governance certainly have significant downsides and risks.

What I'm trying to say is that it might be the only way the world can survive the black ball.

CA: Sounds like you need to realize that you can't have it all.

Many of us think that technology is always a good force, that it's going to keep going as fast as it can without stopping, but it's naive to think that we shouldn't pay attention to the consequences.

if you try to get it

You have to accept other things you don't like It's like an arms race with yourself If you want power you better limit it You have to think about how you limit it

SB: It's an attractive option. It's the easiest option that might work, but there's a risk that you're essentially taking out the black ball.

If you can make a few small tweaks and solve your macro- and micro-governance problems, you can take all the balls out of the jar and reap the rewards.

CA: If we live in a simulation, why not?

you just have to reboot

(laughs) (Bostrom) No, no.

(Laughter) I didn't think it would come.

(Anderson) How do you see it?

All things considered, what are the odds that we're done?

(Laughter) It's nice to see people laugh at this question.

Bostrom: On a personal level, where are we going?

(Laughter) It's a little difficult

The first thing you have to ask is who is it in order to get the odds.

If you're old, you'll die naturally, but if you're young, you might still have about 100 years left, and the odds change depending on who you ask.

What are the criteria for considering the collapse of civilization?

The paper didn't call for catastrophes.

It's a matter of definition, and depending on what the threshold is, whether it's 1 billion people dying or global GDP dropping by 50%, the probabilistic odds change.

You can see me as a frightened optimist

(Laughter) (Anderson) You, the frightened optimist, have just created a lot of frightened people.

(Laughter) (Bostrom) In the simulation

(Anderson) In the simulation

Nick Bostrom, I admire your brains. Thank you for terrorizing us.

(applause)

I have to tell you about the time I was invited here.

The TED stars here are as innocent as the name TED - the world's leading philanthropists, artists and scientists.

And how am I supposed to say something so awesome that it justifies my participation in a gathering like this?

And then I had an idea. Maybe speaking with a nice British accent might work

No, I should be on stage and be myself And just talk like always 'Cause after all, this is a great start

So I thought I'd give you my real voice here.

But I speak Queens English 'cause I'm from Queens, New York City

(Laughter) But the theme, of course, is invention.

I know I don't have a patent, but please take a look at my invention today.

And I think it's safe to say that I'm interested in a personality, or multiple personalities.

We are all born with a particular physique in a certain situation, with our individual upbringing, regional and historical background.

So what is it?

how much you can shape yourself

How do we identify ourselves and how much does that identity change?

For example, what if I could be anyone at any time?

The characters in my show let me play with the space between these questions.

I brought some of these

they are very excited

All I can tell you is that these characters have been prepared for TED Talks.

Please feel free to think of this as Sara College.

(Laughter) Okay, okay

oh that's great

Everyone, good evening

thank you for inviting me here

thank you. my name is lorraine levine

fault! there are so many people

Hello cutie.

(Laughter) Anyway, I'm here because of a young girl, Sarah Jones.

she's a sweet young black girl

And she says she's black, but if you look closely, she's the color of caramel

anyway

(Laughter) I'm here because she invited me to her show, it's called One Woman Show.

you'll know what's going on

I'll do all the things and take credit for her

I don't care

I'll be honest, I'm so happy to be here with all these famous people.

it is really amazing

Of course, there are not only scientists and all the heavyweights in the industry, but also celebrities.

There are so many celebrities here

I just saw Glenn Close, I love her

I just bought yogurt at Google Cafe

how nice

(Laughter) There's a lot of people, but they're all great.

It's really good that they are involved too

Oh yeah, I saw Goldie Hawn

Oh Goldie Hawn, I love you too. yes

I know? she's half jewish

Did you know?

Well, even if it's only half, she's got a lot of talent.I felt so good when I saw her.

yes she is very nice

Well, anyway, I should start by saying I feel really lucky

A truly eye-opening experience

You take over the world we live in

Yeah, I never thought about this when I was little

You've made so much progress in such a short time, you're all young

I'm sure your parents would be proud

And yes, I appreciate diversity.

I realized that there are people of all races

Yes, if you stand here, you can see many people

kinda like a rainbow

You can say rainbow

You don't really understand what you can say and what you shouldn't, you can't keep up

what can i say or what's wrong

I just don't want to offend anyone

Anyway, being able to be with educated young people like this is building a bright future, isn't it?

It really encourages me

To tell you the truth, some of the presentations were terrifying, really terrifying.

True, true!

Environmental destruction and the collapse of the so-called world market.

Of course, this is all-. . . All. . .

Well, how should I explain it? Take my way of saying Ganeyvish tetikeyt is the government's fault, you know Bankers and Wall Street, you know

anyway

(Laughter) What I'm saying is, I'm glad someone has some practical ideas to help us get out of this mess.

Salute to each and every one of you for your great achievements

thank you for all you do

And congratulations on becoming a TED Meister with such great passion.

continue to be successful

congratulation. Good luck (Yiddish)

(Applause) Hi! Hi!

Thank you, everyone

I'm sorry, but being able to stand on this stage is a really great opportunity.

I'm Noraida I'm just- I'm so happy to be at the TED conference, all you guys are doing

i am dominican american

In fact, I'd say I grew up in the capital of the Dominican Republic, or Washington Heights in New York City.

Is there anyone else here from the Dominican Republic? Juan Enriquez was here yesterday

Oh, but he's Mexican, so Mexico is close enough, so (laughter) I'm just- I'm sorry.

I try not to be nervous. Because this really is an amazing experience.

I'm just not used to public speaking.

When I get nervous, I tend to speak very quickly.

I'm really frustrated because no one understands what I'm saying, as you can imagine.

I need to calm down and take a deep breath

And Sarah Jones says we only have 18 minutes

And I, uh, should I be nervous, maybe that's better

I try not to panic. take a deep breath

Okay. I'm sorry. And anyway, what I'm trying to say is I really love TED

I mean, I love everything about TED. it is really amazing

I mean, I can't get it out of my head

Seriously, other people might not believe that there is such an event in my country.

I mean, I even love the name TED.

I know TED is a real person. But I just, or should I say, the acronym is also cool, isn't it a sublime concept?

I think it's good

So, in fact, I can understand all of these initials very well

Because, actually, I'm a sophomore in college now.

In school, I was actually the co-founder of an organization that was kind of like a leadership program.

That organization's name is DA BOMB, but that DA BOMB isn't something you make.

That's why this name is a bit too long, but the president who runs the club activities, including the fear of war and all that, told me to stop calling it DA BOMB.

So, basically, DA BOMB - the Dominican American Benerovent Organization Former Mothers and Babies is basically trying to help students who are high achievers and mothers like me.

I am a working mother and a regular student

And it is very important to have a student who can serve as a role model.

I know our lifestyles are totally different

But at my job—yes, I got a promotion recently.

I'm so happy, because I'm a junior assistant to the Vice President of Business Development, reporting to the Vice President of Business Development.Yeah, that's my new title.

However, regardless of whether they are running a company or not, I think this is really important for people like me who want to start working again and broaden their minds and what they learn.

And if everyone had access to this, you know, it would be a completely different world, wouldn't you say?

So, all of you, we should look especially at people like me, you know, Latinos are going to be the majority soon, in about two weeks.

we should be able to exchange opinions

I'm so happy to be able to do this and share this talk online

really good, i love it

And I love you, TED, I love you

And if you don't mind, I'll personally shorten TED from now on to Technology (T), Entertainment (E), and Dominican (D).

I'm really thankful to you

(Laughter) (Applause) It was Noraida. Lorraine and the other characters are real people that I've actually met: friends, neighbors, relatives.

I grew up in a multicultural family

In fact, the elderly lady I met earlier took a little reference from my great-aunt on my mother's side.

It's a long story, really.

In addition to this my kin background, my parents put me in a United Nations (UN) school, and I met a number of new characters, my French teacher, Alexandre.

Yes, it was an elementary French class and she was the teacher.

Madame Bousson was very French

That was, yes, in class, yes, she was very typical French

It was chic, but it was kind of boring

We talked like this in class, I mean, we talked about the silly things in life.

However, since the other party is an 11-year-old child, so (German)

Yes, I also took a German class, and I was the only black person in the (German) class, so it was a good experience, even at the United Nations school.

the class was very good

Mr. Shutoff, he never discriminated

Absolutely. You always treated every single person in my class with unbearable equality.

Teachers, friends, and classmates came from all over, and many of them are still my friends.

And my character is also influenced by them

For example one of my friends

Um, I wanted to say good evening

I am Praveen Manvi. thanks for this opportunity

Of course, TED's reputation is known all over the world.

I'm from India, and I'd like to start here. When Sarah Jones told me that she had an opportunity to perform at TED in California, I was very happy and, to be honest, relieved because I'm a human rights activist.

And my job is usually in Washington, D.C.

I have to attend meetings, I have to interact with disgusting politicians, and they try to reassure me by telling me how often they eat curry in Georgetown.

I am very happy to be with you this time.

I wish I had a little more time, but on another occasion. Then

(Applause) Sadly, I don't have time to introduce all the characters.

But I would like to introduce you to two more. If you've seen Bridge and Tunnel, you'll know

um, thank you

good evening

My name is Pauline Ning, and I want to say this first, of course, I'm part of the Chinese community in New York.

When Sarah Jones asked me to come to TED, at first I said I didn't know. Uh, uh, two years ago, I probably wouldn't have spoken in front of an audience, especially in a venue like this, because I hate giving speeches.

But I decided, like Governor Arnold Schwarzenegger, let's try it anyway.

(Laughter) My daughter told me, "Start your speech with humor."

Where I was born and raised ••• I will tell you briefly

My husband and I brought our son and daughter here in 1980 to gain freedoms that China didn't have at the time.

I wanted them to be proud of their tradition, but it was difficult.

As an immigrant I spoke to my children in Chinese and they answered me in English.

He likes rock, pop culture, and American culture.

But when they grow up, it's time to start thinking about marriage. At that time, I want people to become aware of our culture, even if just a little.

but there were some problems

my son said he wasn't ready to get married

And my son had a girlfriend. American, not Chinese

It's not bad, but I asked, "What's wrong with Chinese women?"

I hope my son will change his mind soon.

So I decided. I'll focus on my daughter from now on.

A daughter's marriage is very special for a mother.

but she said she wasn't interested

she just wants to hang out with her friends

Ever since I entered college, I feel like I never came home.

I didn't even want to come see you.

And I said, "What's wrong?"

So, I blamed my daughter for having a secret boyfriend.

But she said, "Mom, don't worry about boys because I hate boys."

(Laughter) And I said, 'Well, men can be grumpy sometimes, but women have to get used to it.'

My daughter said, "No, I don't like boys, I like girls.

I'm a lesbian,' said

I've always told my kids to respect the American way of thinking, but I told my daughter that this was the only exception.

But she said, "Mom, this is not America's problem."

I said I'm in love with a very pretty Chinese girl

(Laughter) I wanted to hear those words, but it was from my son, not my daughter.

(Laughter) I didn't know what to do at first.

But I finally understand that this is her

So, even now it's a little difficult sometimes I want to tell everyone. I've found that society is more tolerant because there are places like this, ideas like this, and open-minded people like you.

Maybe, TED, you're making an impact in someone's life without even knowing it.

So for my daughter, I appreciate your ideas worth spreading.

thank you. Thank you.

(laughter) Good evening, I'm Habbi Barahal.

First of all, I want to thank Sarah Jones for being the only Arab out of all the people she brought in to let me perform at the end.

i am from jordan

Teaches Comparative Literature at Queen's College

It's not Harvard University

But I feel a little like a fish out of water

But I am very proud of my students.

Some students came to this conference

As promised, I will add points to those who came.

I know I don't look like a typical resident.

If you don't mind, I'd like to share with you part of this poem, which I learned when I was sixteen.

it's a long time ago

(Arabic) Translated simply, please let me hold your hand

i want to hold your hand

i want to hold your hand

i feel so happy when i touch you

My love can't be hidden, can't be hidden, can't be hidden

ok please please please

If this sounds familiar, it's because I was listening to The Beatles a lot at the same time.

radio, they were very popular

And what I've told you so far is that in every word that's directed at us who won't listen to each other, there's always a poem that connects ears and hearts across continents.

I believe that one day it will be our way of inventing

That's all. Thank you (Arabic) I really appreciate this opportunity

Okay? wonderful

(Applause) Thank you so much, it's been really fun.

thank you for inviting me here

(Applause) Thank you very much. I love you

(Applause) Let me just say this.

I just- thank you

Thank you Chris and Jacqueline as well as everyone who invited me.

It's been a long road to get here. And here it feels like home

Some of you may have seen me perform Or have you seen me somewhere else?

everything was really great. So don't reinvent yourself any time soon

(applause)

Ethic and Hedge decide to help resistance leader Adira prevent the furnace robots from incinerating works of art.

In exchange, Adira promised to guide him to the first item that Ethik was looking for - the Stone of Power.

Many years ago, there was only one furnace robot.

The inside of the furnace had a "0" and the outside had an unknown serial number chosen at random.

Over time, the furnace robot made copies of itself.

Inside the child robot's furnace was an unknown serial number inherited from its parent, and the outside was engraved with a randomly chosen unique serial number.

Second-generation furnace robots do the same thing, making copies of themselves and carrying the serial number into the child robot's furnace.

The same thing went on for generations

Furnace robots now take orders from their parents.

If Ethic finds the original "0" robot and rewrites its instructions, he can win over an entire army of furnace robots.

Adira had a trick up her sleeve.

This crystal contains a program that can take control of one of the robots and give them new instructions.

However, if you use it on a furnace robot other than the "0" robot, the "0" robot will overwrite the instructions and the data crystal will be destroyed.

Distribution is just minutes away, and you only have one chance to pull it off.

Luckily, Hedge's ability to store data comes in handy.

In programming, information is stored in what we call variables.

A variable is like a container that stores a value, such as a number or a word.

How would you program the hedge to find the "0" robot as quickly as possible?

Pause the video and think for yourself

give you a hint

You can have as many variables in your program as you want, but you can solve this problem with just one variable.

A hedge can store a single serial number in that variable and swap the values ​​around as needed.

[Pause the video and think for yourself]

The key here is that you don't need to know all the robot relationships to find the root 0 robot.

For example, if you're lucky that your first pick is the "0" robot, you're done.

But when you run into another robot, you can follow a simple procedure to find your way back to the "0" robot.

In order to think about the procedure, first let's simplify the problem

Suppose we have only three furnace robots, one parent and two children, but we don't know which one is the parent.

Have Hedge pick one randomly and look inside the furnace.

The parent-child relationship is like this

If the number in the furnace is 0, you know it's the parent.

Otherwise, whichever child you choose, the parent's serial number should be written inside the furnace.

So in this case, it takes one or two moves to find the parent.

In fact, there are a lot of furnace robots, and we don't know how many generations there are, and we don't know what the family tree looks like.

But you don't have to know, the hedge just needs to repeat the same movements until it reaches the "0" robot.

What should I do? i use a loop

Hedge picks any robot, looks inside the furnace, and saves that number as a variable.

Then you can loop like this until the saved variable is 0, which is the number in the furnace of the original robot: Find the robot with the serial number that matches the saved variable.

② Look inside the furnace

(3) Overwrite and save the new number in the variable

This loop ends when the "0" robot is found, so we can upload a program that gives us new instructions.

So what happens? After just five iterations, Hedge finds the original robot, with a "0" written in the furnace of robot 733.

In no time at all, the program was transmitted to all the furnace robots, and Adira was in control.

And I decided to have the furnace robot burn a fake fire and secretly hide all the works of art.

Now that Ethik has succeeded with the furnace robot, it's Adira's turn to keep her promise.

She took Ethic and Hedge to the location of the first item - the Stone of Power.

When we got there, it became clear that we had no choice but to steal it.

she's lucy

In college, I majored in mathematics, and I always got top grades in my "probability and statistics" class.

Which is more likely? 2. Lucy is a portrait painter. Lucy is a portrait painter and poker player

In a similar study, 80% of participants chose the equivalent of Option 2. Lucy is a portrait painter and poker player

Anyway, we don't know the connection between Lucy and art, but we do know that statistics and probability are useful in poker.

but the answer is wrong

let's look at the options again

How do you know option 1 is more likely?

That's because there are fewer conditions than option 2.

If Lucy is a portrait painter, it doesn't matter what else she does.

It's easy to imagine that she's playing poker more than art, because of prior information, but option 2 is only correct if she's doing both.

It's counter-intuitive to imagine that Lucy is a painter, but Option 2 is less likely because of the extra conditions.

In any given event, the probability of A occurring is higher than the probability of both A and B occurring.

If you take a random sample of one million mathematics majors, the subset of people who are portrait painters might be relatively small.

But this subset is always larger than the subset of "I'm a portrait painter and a poker player."

Everyone in Group 2 is also in Group 1, but not vice versa.

As the conditions increase, the probability of that event occurring decreases.

So why do things with more conditions sometimes seem more plausible?

This phenomenon is known as the "conjunction fallacy".

When we have to make a quick decision, we look for shortcuts.

In doing so, we look for what seems plausible, not what is statistically most likely.

The very fact that Lucy is a painter goes against what we expect, it's an act of prior information.

The additional information that Lucy plays poker seems plausible because it matches our intuition.

People choose choices that represent their overall image, regardless of their actual probabilities.

This phenomenon has been observed in a variety of studies, including participants with a good grasp of statistics, such as students rolling a string of dice or foreign policy experts predicting the likelihood of a foreign policy crisis.

Conjunction fallacies aren't just a problem in hypothetical situations.

Conspiracy theories and false news stories often use the conjunctive fallacy to make them seem more credible.

But in the end, the probability that the story is true is never greater than the least probable component of the story.

Juana Ramirez de Asbahi sat before a group of eminent theologians, jurists, and mathematicians.

The Viceroyalty of Nueva Espana invited the young women to test their knowledge, asking them the toughest questions they could gather.

But Juana got the right answer to every challenge, from complex equations to philosophical questions.

Examiners later likened the scene to 'a royal galleon parrying a number of canoes.' The woman who responded to the barrage of questions was born in the mid-17th century.

At that time, Mexico was a Spanish colony for more than a century, and a complex, multi-tiered society developed.

Juana's maternal grandparents were from Spain and were among the most respected in Mexico.

But Juana was born to unmarried parents, and her father, a captain in the Spanish army, left her mother, Madame Isabel, to raise Juana and her sisters single-handedly.

Luckily, my grandfather was middle-class, which ensured a financially comfortable life.

And Madame Isabel was a tough example for her daughter, and despite her ignorance and disdain for women, she managed one of her father's two estates well.

Perhaps this set the precedent for Juana's lifelong self-confidence.

At the age of three, she snuck into her sister's school.

Later, when he learned that higher education was only for men, he begged his mother to let him attend in disguise.

Her wish didn't come true, but her grandfather's archives gave Juana some solace.

By my early adolescence, I had mastered philosophical debate, Latin, and the Aztec Nahuatl language.

Juana's precocious intelligence caught the attention of the court of Mexico City, and at the age of 16, the viceroy and his wife accepted her as a handmaiden.

Here her skits and poems left the court at times dazzled and at times outraged.

In her provocative poem, "Foolish Men," she loathsomely criticized sexist opportunism, accused men of corrupting women, and accused men of immorality.

Despite controversy, her work was admired, and she received numerous marriage proposals.

But Juana was more interested in knowledge than marriage.

And in the patriarchal society of the time, there was only one place where she found her knowledge.

The Catholic Church in Mexico, strongly influenced by the Spanish Inquisition, tried to allow Juana to maintain her independence and social standing as long as she remained celibate.

At the age of 20 she entered the Convent of San Jerónimo, Santa Paula, where she was christened Sol Juana-Inés de la Cruz.

For years, the church treated Sol Juana as a treasured possession.

In addition to sacred music and poetry, he wrote plays, comedies, and even philosophical and mathematical treatises.

As her creative collection grew, many eminent scholars sought her out.

While serving as the monastery's treasurer and archivist, she protected her nieces and sisters from men who tried to exploit them for their livelihoods.

His outspoken nature finally led to conflict with his patrons.

1690 Bishop publishes Sol Juana's personal commentary on a noble sermon

Upon publication, the bishop advised Sol Juana to devote himself to prayer rather than debate.

She countered that if God didn't want women to have intelligence, he wouldn't give them intelligence in the first place.

Once this exchange caught the eye of Mexico's conservative archbishop,

Sol Juana's reputation was tarnished, and she was forced to sell her books and give up writing.

Furious at this censorship, but reluctant to leave the church, she reluctantly made new vows.

As a final act of defiance, I wrote in blood, "I am the worst of all—"

Deprived of his studies, Sol Juana turned to charity and died in 1695 from an illness he contracted while tending to his sisters.

Sol Juana is now recognized as the first feminist in the Americas.

She has been the main character in countless documentary films, novels and operas, and her portrait appears on the Mexican 200 peso note.

As Nobel laureate Octavio Paz said, "It is no exaggeration to say that Sol Juana's work is the product of history, and I must add that history is also the product of her work."

The first question is why should we worry about the threat of an infectious disease pandemic?

what are we worried about?

By "we," I mean the Council on Foreign Relations, to which I belong.

The interests here are the national security community, the biological and public health community.

Globalization has increased human mobility, allowing anyone to go anywhere, anytime, anywhere in the world.

This means that we have hitchhikers called microbes on board.

For example, the Surat, India epidemic was not an uncertain event, but a global event, and global concerns have changed the risk equation.

What we've learned from Hurricane Katrina is that we can't rely entirely on the government to respond quickly and to handle everything.

In fact, epidemics are many times more threatening than Katrina.

Our biggest concern right now is the H5N1 influenza virus, also known as bird flu, which first emerged in southern China in the mid-1990s, but it wasn't known until 1997.

By the end of last Christmas, H5N1 was confirmed in just 13 countries.

But now, 55 countries around the world have confirmed outbreaks of this virus, either in birds or humans or both.

During the bird flu outbreak, the virus was found in most of the world, with the exception of the Americas.

So why did it spread so quickly?

In poultry, especially chickens, the mortality rate is 100%.

It's spread all over the world, and in recent years it's one of the highest fatality rates ever seen in any century.

Killing lots of chickens was the answer, but unfortunately in most cases smallholder farmers are not compensated, which leads to cover-ups.

It is also carried by migratory patterns of wild migratory aquatic birds.

A symbolic event happened at Lake Chenghai in China.

Two years ago, there were a series of incidents among migratory birds. Thousands of birds died because of mutations in the virus, which led to a dramatic increase in strains of avian flu.

This virus is carried by birds to Siberia, Europe and Africa, something that was not possible before.

Humans are now in epidemics, and so far, fortunately, outbreaks are small and outbreaks are infrequent.

The virus has mutated dramatically over the last two years, with two separate families of H5N1 viruses that have branched out further, each with different, worrying properties.

So what are we worried about? First, at no point in history have we been able to successfully produce a specific vaccine in a timely manner for more than 260 million patients.

This has not been successful in global disease.

It is said that they have a large stockpile of vaccines.

When a real epidemic hits, I don't know if it's really going to work.

And here comes an idea: after 9/11, when airports closed, the flu season was delayed by two weeks.

So the idea was that if we knew that human-to-human H5N1 infections were spreading, or that the virus was mutating and spreading from human to human, we would shut down airports.

But a large-scale analysis of the effectiveness of this method using supercomputers has shown that it doesn't buy much time.

Of course, there's going to be a lot of chaos in the readiness plan.

For example, all masks are made in China.

How would you distribute it around the world if all airports were closed?

How do we get vaccines around the world? How do we get drugs?

So closing the airport is counterproductive.

We're concerned about this virus because unlike other flus we've studied, it can be contracted by eating raw meat from an infected animal.

It used to infect stray cats and domestic cats, and now domestic dogs too.

Experiments feeding rats and ferrets showed that the animals exhibited symptoms never seen before in influenza, including seizures, central nervous system disturbances, and partial paralysis.

So it's not just your run-of-the-mill flu.

It's analogous to the resurgence of the 1918 influenza virus as we now understand it, the last pandemic that passed directly from birds to humans.

We've seen many viral evolutions and incredible mortality rates in humans, and 55% of those infected with H5N1 actually die.

And most of the time, if you get infected, you'll develop symptoms.

In our monkey feeding experiments, we were actually able to suppress certain immune system modulators.

As a result, it's not the virus itself that's the direct cause of death, but your own immune system, which overreacts and says, "I'll react ferociously to whatever foreign material this is."

As a result, most of the people who die are people under the age of 30, and they're young, healthy people.

So far, we've seen human-to-human transmission in at least three populations, and fortunately transmission requires very close contact, so the whole world hasn't been at risk yet.

you surprised me

You probably think the government will do something about it.

we have spent a lot of money

In fact, most of the spending in the Bush administration has been directed toward anthrax and bioterrorist threats.

But a lot of the money is being spent at the local and governmental level on fighting infectious diseases.

The net result is that only 15 states are allowed to mass distribute pandemic vaccines and medicines.

Half the states will run out of hospital beds in the first week, maybe the second week.

And 40 states already have a serious shortage of nurses.

Add in the threat of a pandemic and you're in big trouble.

What has been done with this budget?

All over the world it's been practice and drills.

Suppose there is a global epidemic

If you run around and play your part

the result is chaos

most people don't know what they can do

Eventually, with each exercise, you'll end up in a situation where no one knows who's responsible.

no one knows the chain of command

In Los Angeles, the mayor, the governor, the president of the United States, the secretary of homeland security?

In fact, according to the federal government, the person responsible is the Chief Federal Administrator, under the jurisdiction of the Transportation Security Administration.

According to the government, the federal government's responsibility is basically to keep the virus out of the country, but as you know, that's impossible, so it's mainly about mitigating the impact on the economy.

The rest is the responsibility of your local community.

it's all about the town you live in

How well does the city council work? Will the mayor, who is in charge, do a good job? about it

Most of the facilities in the area are competing to get a federal stockpile of a drug called Tamiflu.

there will be fierce competition

You've probably heard that we bought the vaccine, manufactured by sanofi-aventis.

Unfortunately this was manufactured against the current H5N1.

This virus mutates, so another virus is born.

Then this vaccine probably won't work.

What is needed at this time is a policy decision.

Suppose you are the local mayor

Do you want to order all pets out of the house?

When H5N1 emerged last year in Germany, this was done to minimize the spread of the virus through household cats, dogs, etc.

What if I don't have an isolation room with negative pressure ventilation? A hospital room where medical personnel treat patients

This is the case in Hong Kong, there is no such facility here.

What about quarantine?

Quarantine worked well during the SARS epidemic in Beijing.

Quarantine policies across the United States are not harmonized

And in some states it's different from county to county.

But what can be done easily? Should all schools be closed?

What about your employees? Parents can't go to work if their kids don't go to school

Encourage working from home? In what occupation?

The UK government implemented a work-from-home model

For six weeks, people in the banking industry assumed a pandemic was underway.

What they found was a core function: banks exist, but people can't transfer money at ATMs.

no one uses credit cards

I couldn't pay my insurance

Basically, the economy would be devastated.

This is only for clerks and bankers

We don't know how effective handwashing is against the flu. It's a shock.

But in fact, what's hotly debated in the scientific community is what percentage of human-to-human influenza infections are caused by sneezing and coughing, and what percentage is transmitted through hands.

The US Institute of Medicine looked at masks.

We don't make masks in the US, so we don't have enough of them. All masks are made in China Do you need N95 masks? Cutting-edge, top-of-the-line, face-fitting mask

Or can a different kind of mask be substituted?

What I learned from the Hong Kong SARS epidemic was that most of the time, people were wearing masks inappropriately.

My hands got dirty on the outside of the mask and then I rubbed my nose. infected with SARS

Airborne viruses were not the cause

There's a lot of false information floating around on the internet right now.

I end up buying this N95 mask, which is ridiculous.

In fact, we don't have standards for first-line protective gear for frontline workers.

And Tamiflu, you know this drug, it's patented by F Hoffmann-La Roche.

There is a possibility that it will buy time during an epidemic

One of the side effects of long-term use of Tamiflu is suicidal thoughts.

A study on public health analyzed its effects and found that the widespread use of Tamiflu made things worse by conflicting with public health measures.

Another interesting point is that when humans ingest Tamiflu, only 20% is properly metabolized to the active compound.

The rest is transformed into stable compounds, and none of it stays in the body and flows into the sewage system, thus exposing the very waterfowl that carry influenza to the potential for resistant strains to develop.

Tamiflu-resistant strains are now seen in human-to-human transmission in Vietnam and human-to-human transmission in Egypt.

So, in my opinion, Tamiflu has a very limited lifespan as an effective drug, in fact very limited.

And yet most governments base all their flu policies on stockpiling Tamiflu.

In fact, Russia is well equipped to prescribe 95% of Russians.

we only have 30%

"Enough" means two weeks

So after that, we'll be on our own, because a pandemic lasts 18 to 24 months.

Some poor countries have had H5N1 and have stockpiles of Tamiflu, but it's past its expiration date, it's past its expiration date.

What have we learned from the last pandemic of 1918?

the federal government has abdicated most of its responsibility

And all that was left was a stopgap regulation, and so is America as a whole.

Each city, county, state responded differently.

And the statutes and the beliefs were very different.

At one point, schools, churches, public facilities, everything was closed.

The pandemic cycled three times in 18 months, an era without commercial airlines.

The second wave was a superkiller wave of mutant strains.

In the first wave, we had enough medical workers.

But by the time the second wave hit, many of the lives of health care workers had been claimed, many of the doctors and nurses on the front lines.

A total of 700,000 people died

This virus was 100% fatal to pregnant women, and we don't know why.

Also, most of the deaths were between the ages of 15 and 40, healthy young people.

was likened to the plague

I don't know exactly how many people died

A conservative estimate is 35 million people.

This is an extrapolation from European and North American data

A new study by Chris Murray at Harvard University found that Indians had a 31-fold higher mortality rate, according to data archived by British people in India.

And what we're pretty sure of is that in poorer places, the mortality rate is much higher.

And the actual number of deaths would have been between 80 million and 100 million, and that was before commercial aviation.

So are we ready?

as a country yet

People in leadership positions will admit it, and they'll say it takes time to prepare.

So what does that mean for you? First of all, I don't personally stockpile anything, either for myself, my family, or even my employees, unless I've done enough research to be sure.

which masks are valid and which are not

How many masks do you need? about it

Research from the Institute of Medicine suggests that masks cannot be reused.

If the epidemic lasts for 18 months, would you buy 18 months worth of masks for each family member?

It makes me think, so back to Tamiflu, the number one side effect of Tamiflu is flu-like symptoms.

So if everyone in your family is on Tamiflu, how do you know if you've had the flu?

When you think of this as a community as a whole, and as a company, as a whole, you can see how limited the options for Tamiflu are.

Many people come to me and ask me, I stockpile water and food. What do you stockpile? and

Are you serious? Do you have a place to actually stockpile food for 18 months? What about 24 months of food?

Want to deal with the threat of a pandemic like you did in the 1950s? Back then, as a matter of civil defense, people built personal shelters against a flu pandemic.

i don't think it's reasonable

We should be prepared as a community, not as individuals, but as a country, as a state, as a city.

But right now, most of the preparedness is seriously flawed.

I hope I can convince you all, but what I really want you to do is go out and say to your local leaders, your national leaders, "Why are you letting this issue go unsolved?

Why aren't we using what we learned from Katrina to fight the flu? "and

Apply pressure where you need it

But I also want to point out that if you're running a company and you have employees, I think you have a certain amount of responsibility.

UK banking plans say working from home will work, at a minimum.

It probably reduces the risk of infection because you don't come to the office, you don't cough with each other, or you don't touch common things, you don't share things through your hands.

But can you keep the company that way?

Internet companies may be able to

otherwise it will be difficult

I'll answer your questions

(Applause) Participant: What factors determine the duration of a pandemic?

Laurie Garrett: We don't know what determines the duration of a pandemic

can describe different situations

But I honestly don't know

What I can say for certain is that the bottom line is that the virus eventually weakens, ceases to be lethal to humans, and seeks out another host.

But I don't know "how" or "why" this happens.

It's a very complex ecology.

Participant: What are the triggers?

i think you know better than us

It's a catalyst that, when it happens, will become a global epidemic.

Garrett: That's when there are signs of serious human-to-human transmission.

It's not transmission between close family members who are caring for sick siblings, but it's community transmission -- campus spread, dormitory spread, and so on.

And now it's global recognition, led by the World Health Organization, and it's time for a warning.

Participant: Statins are found to be effective in one study.

tell me about it

Garrett: Okay, the evidence suggests that cholesterol-lowering statins, like Lipitor, reduce a person's vulnerability to influenza.

But the reason for this is not clearly known

the mechanism is not clear

I don't know if there's a way for parents to responsibly give their kids Lipitor or whatever.

I have no idea what the side effects are.

May cause very dangerous consequences when used on children

Participant: How advanced is our understanding of whether someone is actually infected - whether they are infected before they even show symptoms?

Garrett: We've been talking about this for quite some time now, but what we really need is a quick diagnosis.

The U.S. Centers for Disease Control and Prevention calls the diagnostic tests they developed rapid diagnostics.

It takes 24 hours, even with skilled technology, in advanced laboratories.

i'm thinking dipstick

You can use it for your own child Color changes

If it's H5N1, then you'll know

As for where we are in science, we're not far behind in things like our ability to identify DNA.

It's still not enough. We don't have the funds to get there.

Participant: In the 1918 flu, it was theorized that the virus was somewhat weakened before it could infect humans.

Is there any chance of that happening this time as well?

100% mortality is pretty serious.

Garrett: Well, so we don't really know the lethality of the 1918 strain in wild birds, before it spread from birds to humans.

What's interesting is that we didn't see mass deaths of chickens and poultry across the United States before the human pandemic.

Perhaps these events were happening on the other side of the world that no one was paying attention to.

But the virus did circle the world, and it was such a mild form that the British military in World War I did not see it as a threat, nor did it affect the outcome of the war.

After traveling around the world, it's back with a high fatality rate.

What percentage of those infected would have died?

Again, I'm not quite sure about the details.

What's clear is that if you're undernourished, if you have a weak immune system, if you live in a poor country like India or Africa, you're more likely to die.

But I don't really know

Participant: I've heard that the actual cause of death in flu infections is due to comorbid pneumonia, and that a pneumonia vaccine might increase survival by 50 percent.

Garrett: For a long time, researchers in emerging diseases were somewhat dismissive of the threat of an influenza pandemic because in 1918 there were no antibiotics.

Also, about 360,000 people worldwide died from the common flu in common flu years, most of them in the elderly, and it wasn't the flu that killed them, it was the immune system being attacked.

Infection with pneumococci and other bacteria, streptococci, causes bacterial pneumonia.

But in 1918, we know that wasn't the case.

So far, similar bacterial infections have not been a problem in humans with H5N1.

It's just that the immune system is amazingly wrecked, and that's the main reason people die from this virus.

I'd like to add that the same thing happened with SARS.

So what's happening here is that your body's immune system goes all out on the lookout and says, 'What the hell is this?

I've never seen anything like this before."

Bringing in snipers (immune cells) won't do anything because they don't have antibodies.

Throwing in tanks and cannons (T cells) has no effect, the T cells don't recognize it.

Then we had to deal with it entirely with nuclear power, stimulating the production of cytokines.

The entire immune system rushes to the lungs

Pneumonia causes fluid to build up in the lungs and kills.

But this is not bacterial pneumonia.

It's not the kind of pneumonia that vaccines work for

It seems the time has come. Thank you very much for today.

(applause)

Ladies and gentlemen, thank you for joining us today. I'm sure you all know that long-term urban development can save humanity from self-destruction.

But outside of TED, I'm often told that really green policies are impossible, especially in big cities like New York.

Because most decision-makers, in the public sector and in the private sector, have no sense of personal danger.

I'm standing here today because of a dog, an abandoned dog I found in the rain in 1998.

I never thought it would get this big

Around the time I picked him up, I was campaigning to protest the construction of a giant landfill site along the East River, because this little neighborhood in New York City had already processed 40 percent of the city's industrial waste: a sewage fuel plant, a sludge treatment plant, four power plants, and the world's largest food distribution center, plus more than 60,000 heavy duty diesels every week that other industries were pulling in.

It also had the lowest ratio of park area to population in the city.

So when the city's parks department approached me and told me they were going to give me a $10,000 grant for a riverfront development project, I knew they were well-intentioned, but I was a little naive.

I've lived in this area all my life, but I couldn't get close to the river, because it was full of these wonderful facilities.

But one morning, while I was jogging with my dog, he pulled me into what I thought was a pile of illegally dumped garbage.

There was nothing but weeds and heaps of garbage and other filthy things, but the dog kept pulling me, and I could see the river beyond the property.

I had a hunch that this forgotten little end should be protected like my abandoned dog.

And I knew this must be the beginning of a community-led plan to revitalize the South Bronx.

This idea, like my dog, turned out to be much bigger than I thought.

With a lot of help along the way, Huntspoint Riverside Park was completed, the first waterfront park in the South Bronx in over 60 years.

It was a $10,000 subsidy, and we got 300 times more support, and it became a $3 million park.

And in the fall I will exchange vows of marriage with the one I love.

(Applause) Thank you.

(Applause) It's him doing the buttons there.

(Laughter) (Applause) In a world of environmental justice, humans like us are like canaries in a coal mine.

I'm still feeling the problem right now, and I've always been.

Environmental justice may be unfamiliar to some of you, so I'll explain it by saying that one region shouldn't have to bear more of the environmental burden than others, and no one should be able to receive less from the environment than others.

Unfortunately, race and social class are extremely reliable indicators, which means that if you look at your population, you can tell whether there are things you like, like parks and trees, or things you don't like, like power plants or waste facilities.

As a black American, you're twice as likely as a white person to live in an area where air pollution is your biggest health risk.

You're five times more likely to be within walking distance of a power plant or a chemical plant, and in fact I am.

Such land-use decisions create an uninhabitable environment, leading to problems such as obesity, diabetes and asthma.

No one goes for a walk in a polluted environment because it's good for their health, right?

The obesity rate in my area, 27 percent, is one of the highest in the United States, the most obese country in the world, and obesity goes hand in hand with diabetes.

One in four children in the South Bronx has asthma.

The number of asthma hospitalizations per capita is seven times the national average.

No one is immune from these effects.

The health problems from garbage and pollution take a huge toll, and what's worse, black and Hispanic young people who end up in prison without fulfilling their limitless potential.

50% of the population lives below the poverty line 25% are unemployed

Low-income citizens often use the emergency room as an alternative to their family doctor.

It's expensive for the taxpayer, and the benefits aren't worth it.

the poor remain poor and unhealthy

Fortunately, many of us, myself included, are working hard to find solutions that won't threaten the livelihoods of low-income communities of color in the short term, and that won't destroy humanity as a whole in the long term.

Doom is something we all want to avoid

What else do they have in common?

First of all, we are all very good looking.

(Laughter) High school, college, graduate school, meaningful travel, early teens, no kids, financial security, no prison history.

roughly like this

(Laughter) But there are differences, besides being a black woman.

I once saw half the buildings in my neighborhood burn down.

My brother Lenny was gunned down a few blocks from his family home after returning from the Vietnam War.

ah…

There was a drug depot across the street from where I grew up.

Yes, I was a poor black kid who grew up in a slum.

These are the differences between you

But what sets me apart from most people in my hometown is what you and I have in common: I stand between these two worlds with a willingness to fight for justice.

What made it so different?

Born the son of slaves, his father, a sleeper railroad porter in the late 40s, bought a house in the Huntspoint neighborhood of the South Bronx and married his mother a few years later.

At the time, the population of the area was mostly white, working class.

not only father

As blacks pursued their own version of the American dream, whites moved to the suburbs in the South Bronx and many other cities across the country.

Banks have delineated special warning areas and no longer invest in those areas of the city, including our district.

Many landlords thought that in such a situation, it would still be more profitable to set fire to the building and collect the insurance money than to sell it, regardless of whether the residents were killed or injured.

Huntspoint was originally a neighborhood where people lived and worked, but now residents have no jobs and no homes to return to.

The region's plight has been exacerbated by a national highway construction boom.

In New York State, there was an aggressive highway expansion spearheaded by Robert Moses.

One of its main goals was to make it easier for wealthy people in Westchester County to travel to Manhattan.

The South Bronx, in between, had no chance.

It was not uncommon for homes to be demolished with less than a month's notice.

600,000 people have nowhere to go

People began to think that the South Bronx was all about pimps, drug dealers and prostitutes.

In such a situation, if you grow up being told that the area you live in is ugly and ugly and that nothing good will ever come of it, there's no way you can avoid being adversely affected.

Apart from the fact that it was our home and nothing else, the property value of our home was next to nothing.

I was fortunate enough to have a family, the love there, the help of teachers, people I respected and friends.

Why is this story important?

Because in terms of planning, economic deterioration leads to environmental deterioration, which in turn leads to social deterioration.

The de-investment that began in the 1960s was at the root of all the environmental inequities that followed.

Because of outdated zoning and land use regulations, pollution-producing facilities are still being built in my neighborhood.

Are such factors taken into account when determining land use policies?

What are the costs associated with such a decision?

Who will pay the bill and who will make money?

Is it possible to justify the harm suffered by the local population?

This was a one-sided "plan" that ignored the convenience of us residents.

Realizing that, we decided to plan for ourselves.

The small park I mentioned earlier was the first step in the South Bronx Green Road movement.

We applied for a $1.25 million federal transportation grant to plan a riverside boardwalk with a bike path.

Physical improvements help guide public policy in establishing facilities such as road safety and waste disposal, and if done properly, do not threaten the quality of life of local residents.

Bringing opportunities for residents to exercise and local economic development

For example, a bicycle or juice shop

We've secured $20 million to build the first phase.

Redesigned by Matthew Nielsen Landscape Architects — Lafayette Street.

When completed, more than 1.6 square kilometers of Randall's Island Park will be connected to South Bronze by a boardwalk.

It's currently separated by about eight meters of water, but that will change when the boardwalk is completed.

If you nurture the natural environment, the rich nature will return more than that.

We have a project called the Bronx Conservative Training, which provides vocational training in the field of ecosystem conservation, to foster job competitiveness so that locals can get well-paid jobs.

Little by little, we're planting the seeds of ecological jobs in our communities, for people who have a financial or personal stake in the local environment.

The Sheridan Highway is an underutilized relic of the Robert Moses era, built without any thought for the social divisions it would create.

Even rush hour is barely used

So the locals created an alternative transportation plan that would allow for the removal of this highway.

So there's an opportunity for all stakeholders to come together to rethink how this 11-square-meter property can be expanded into parks, affordable housing, local economic development, and more.

We also used the roof of our office for New York City's first Green Cool Roof Demonstration Project.

A cool roof has a highly reflective surface that does not absorb solar heat and raise the temperature of buildings and the atmosphere.

A green roof is made of soil and plants.

Neither, unlike petroleum-based roofing materials, neither absorbs heat and causes the heat island effect, nor decomposes in sunlight and evaporates, which can be inhaled by humans.

Green roofs can also capture up to 75 percent of rainwater, saving the city from spending money on expensive end-of-pipe technology, which happens to be located in an area like mine.

And the Green Roof will also be our little friend's home.

[Butterfly] (laughs) How nice!

This demonstration project is the starting point for a green roof installation business that we've started ourselves, bringing jobs and a green economy to the South Bronx.

[Green is the next classic] (Laughter) (Applause) I like it too.

Now, Chris told me not to pitch, but it's a good opportunity.

"Forgiveness after the fact is better than prior permission"

(Laughter) (Applause) Now let's talk about Hurricane Katrina.

Before Katrina, the South Bronx and New Orleans' Ninth Ward had a lot in common.

Both are largely poor people of color, and both are home to cultural innovations like hip-hop and jazz.

Both are on the riverside, close to residential areas and factories.

After Katrina, we had even more in common.

Both are at best ignored and at worst mistreated: negligent regulators, harmful building regulations, and murky government accountability.

Destruction in both the 9th Ward and the South Bronx was avoidable.

But we came back with a valuable lesson in resilience.

We are not just symbols of urban devastation, nor are we a problem to be solved with the hollow promises of presidential elections that come and go.

Do you want the New Orleans Bay Area to fade like the South Bronx in 10 or 20 years?

Or do you take proactive steps and learn from a local resource of civic activists born out of desperation, as my district did?

I don't expect individuals, corporations, or governments to make the world a better place out of a sense of justice and ethics.

This presentation is only a small part of my experience.

you can't even imagine

If you want to hear it, let's talk later.

(Laughter) At the end of the day, what motivates people is profit and what appears to be profit.

I focus on the "three benefits" of long-term urban development.

It's a development that has the potential to benefit all of these stakeholders, the developer, the government, and the community where the project takes place.

Not currently in New York City

New York lacks comprehensive urban planning.

City grants are pouring into the construction of big stores and stadiums in the South Bronx, but city officials lack planning on how to deal with the cumulative impacts of increased traffic, pollution, waste and impacts on vacant lots.

The city's approach to local economy and vocational development is so naive it's no joke.

Because, on top of that, the richest sports team in the world is tearing down two of our beloved local parks to replace Yankee Stadium.

This will reduce the number of parks even further than the statistic above.

Also, less than 25 percent of South Bronx residents own a car, and this project involves parking lots for thousands of cars, and there's no mention of public transportation.

What's lacking in the wider public debate is a comprehensive cost-benefit analysis of leaving unhealthy, poorly-environmented areas in place versus adopting sustainable structural change.

My organization works with Columbia University and others to explain these issues.

To be clear, I'm not anti-development.

We're talking about cities, not nature reserves.

I also cherish the capitalist way of thinking.

And -- (Laughter) I'm sure you are too.

(Laughter) I don't care about developers making money.

There are precedents for building wealth through forward-looking, community-friendly development.

TED speakers like Bill McDonough and Amory Robbins have proven that it's possible, and I have a lot of respect for them.

What I'm concerned about is development that over-exploits politically vulnerable areas for profit.

It's a shame that it doesn't go away, because we are all responsible for the future we create.

To expand the possibilities, one of the things I keep in mind is to learn from visionaries in other cities.

This is what I mean by "globalization"

one of them is bogota

Bogota is in the developing world of South America, where shootings and drug dealing are commonplace, and it has a reputation similar to that of the South Bronx.

But in the late 1990s, a very powerful man, Enrique Peñalosa, took office as mayor.

The mayor turned his attention to the city's demographics.

The city devoted most of its budget to the very minority of citizens who owned cars.

If you're the mayor, there's something you can do.

The mayor expanded the city's highways from five lanes to three lanes, banned street parking there, expanded sidewalks and bike lanes, created open spaces, and created the most efficient public transportation system in the world, using buses.

I was on the verge of being impeached for my brilliant efforts.

But when residents began to realize that they were the number one priority on issues that affected their daily lives, something wonderful happened.

No more littering

The crime rate went down because the streets were bustling with people.

We solved a number of classic urban problems at once, and on a developing-world budget.

In America, a developed country, there are no excuses

But the point is, Bogotá's people-first policy wasn't about punishing those who could afford a car, it was about giving every Bogotá citizen the opportunity to participate in the city's revitalization.

The idea that development should not come at the expense of the majority of the population is still considered radical in the United States.

But the example of Bogota has the power to change that.

You are endowed with the ability to influence

That's why we're here and we see value in the exchange of information here.

Use your influence everywhere to support inclusive and sustainable change.

Don't stop at TED talks

This is the policy agenda that I'm trying to spread across America, and as you know, politics begins with individual consciousness.

Let's make green the next classic color together

Let 'sustainability' be glamorous

Make it part of the conversation over dinner or over drinks.

Help me fight for environmental and economic justice

Please support investment in “three benefits”

Contribute to the democratization of sustainability by advocating for all-hands conversations and inclusive planning anywhere.

Good thing we still have some time left

Now, when I spoke with Al Gore the other day after breakfast, I asked him how he plans to include environmental justice activists in his new "smarketing" strategy.

And they said, "It's a grant program."

You didn't seem to understand that I wasn't asking for financial assistance.

I was actually asking for help.

(Applause) What struck me was that the "top-down" approach is still alive and well.

don't get me wrong i need money

(Laughter) But we also need grassroots organizations to participate in the decision-making process.

According to Gore, we waste 90 percent of our energy resources every day, but let's not waste our own vitality, intelligence, and hard-earned experience.

(Applause) I've come a long way to meet all of you.

Please don't waste my activities

By working together, we're joining a small but rapidly growing group of people in the world -- a group of bold and courageous people who believe they can change the world.

We've come to this room from very different lives, but we all have one thing in common that's incredibly powerful.

It means that you have nothing to lose and nothing to gain.

(Spanish) Thank you!

(applause)

At TED last year, I talked about the LHC (Large Hadron Collider).

I promised to give you an update on that at the next opportunity, as to whether the equipment is working well.

And that's what I'm going to tell you today.

The goal is to recreate the situation, that is, to recreate the state of the universe less than a billionth of a second after it began, up to 600 million times per second.

It's a really ambitious experiment.

It's a device in the basement of Geneva.

Take a picture of a small big bang occurring inside the detector

This is the device I'm in charge of, it's called the ATLAS detector, it's 44 meters wide and 22 meters in diameter.

This is a great photo of ATLAS under construction.

On September 10th of last year, the device was switched on for the first time.

Photo taken by ATLAS

The control room was overjoyed

Here's a photo of the first beam particles, orbiting the LHC, hitting the LHC and bombarding the detector with particles.

So the photos taken on September 10th showed that the device worked, and it was a huge success.

I don't know if there's ever been more joy than this, and at Google, the front page looked like this.

And that means that we were able to make an impact, both culturally and scientifically.

A week later, we've had a problem with our equipment.

13,000 amperes flow through this wire when the device is running at full power.

If you're an engineer, you're probably thinking, "You can't do that with wires that thin."

But it's possible if you're in an ultra-cold state called a superconducting wire.

At minus 271 degrees, colder than interstellar space, this wire can carry that much current.

There was a manufacturing defect in one of the joints that connect the more than 9,000 magnets used at the LHC.

This caused the wire to heat up slightly, and the 13,000 amperes of current suddenly became resistive.

this is the result

There are no words, a magnet that weighs over 20 tons and moves over a foot.

About 50 magnets were damaged

I had to take out the damaged magnet

Repaired the magnet and made it usable again

I'm returning to the basement now

We should be able to restore the LHC by the end of May.

We believe that if we turn it on, we will have data in June or July, and we will continue our quest to find out what the building blocks of the universe are.

But of course, on the one hand, this accident has rekindled the debate about the value of advanced technology, and it's easy to argue against that.

I believe that the fact that it is difficult, the fact that we have to work hard, is the value of something like the LHC.

I would like to end with the words of the British scientist Humphrey Davi, who, when he was being accused of having no merit in the experiments his disciple was conducting, said that disciple, Michael Faraday, said, "The most dangerous thing about the spiritual progress of mankind is to think that we have reached the limit of our scientific horizons, that there are no more mysteries in nature, that our feat has been accomplished, and that there is no new world to conquer."

thank you

(applause)

We all pay attention to the media, and seeing and hearing news from Iraq, Afghanistan, Sierra Leone, conflict is very mysterious.

It was this feeling that inspired me to start this project.

But as a physicist, I thought, if I had the data, I might be able to decipher it.

Being a naive New Zealander, I thought, well, let's go to the Pentagon first.

So I ask if you can give me some information.

Of course the answer is no. (Laughter) So I had to use my head.

I was in Oxford at the time, watching the news one night

Looking at the telop that appears under the channel

There was something there that could be called splendid information.

The data was hidden in the news subtitles that flowed sideways

Information is actually hidden in this kind of noise around us.

So I started to think that there is something here that I would call open source wisdom.

If enough data is collected from here, it may give us the first key to understanding war.

So here's how we did the research: First, to form the team, we brought in scientists from across disciplines, from economics and mathematics and other disciplines.

We welcomed them and the investigation began.

done in 3 steps

First, the information gathering: We gathered information from over 130 sources ranging from NGO reports to newspapers to cable television.

We're going to jumble and filter these underlying data

Then extract the key that can be a variable from the information

The database included the timing, location, scale and weapons used of attacks.

This kind of thing is actually hidden in the information that is leaked every day.

From here on it's your thing

How about looking at the distribution of the scale of attacks?

what can we say from here

That's where we started, and as you can see, the horizontal axis is the number of people killed in the attack, which is the scale of the attack.

And on the vertical axis, I put the number of attacks

Then, each example can be placed here

I think you can see some kind of random distribution here: 67 attacks can kill 1 person, 47 attacks can cause 7 deaths.

I did the exact same thing, just for the Iraq example.

I had no idea what the outcome would be.

Get amazing results

Out of all the armed conflicts, and the chaos, the noise of information, and all that stuff, we can derive a mathematically consistent distribution of the ways in which orders are made in this conflict.

I was astonished

Why would an example like Iraq have these results as a fundamental feature?

Are there any laws in war?

There was still so much I didn't know

I think Iraq is a special case.

I decided to try other cases.

I also verified Colombia and Afghanistan Senegal

Again, the graph follows the exact same pattern.

Could it be possible?

It's a completely separate war, and the sects, political parties, and socio-economic problems should be completely different.

Yet there is a consistent underlying pattern.

So I extended my hand

We expanded our reach to the world and collected as much data as possible.

From Peru in South America to Indonesia in Asia, the same pattern was drawn again.

What we found was that not only the distribution of these lines, but also their slopes (coefficients) were clustered around a value of α = 2.5.

From this, we were able to derive a formula that allows us to predict the likelihood of an attack.

What this shows is that the probability of an attack that takes X lives in a country like Iraq is equal to the constant C multiplied by the scale of the attack, x, raised to the -alpha power.

-α is the slope (coefficient) I showed you earlier.

so what do you mean

It's just data, statistics. What can that tell us about war?

It was a challenge for us physicists.

how should i explain

I found something called α. Ultimately, it's the group structure of the rebel organization.

α is the distribution of the scale of attacks, and at the same time the distribution of the power of the group to carry out the attacks.

So I focused on changes in group dynamics.

So I tried to put numbers in there, and see if I could simulate it.

Therefore, we will examine whether we can derive a pattern like that seen in the case of Iraq.

Again, with proper handling

can do the simulation

We applied group dynamics to reconstruct a graph that could explain the underlying patterns of warfare around the world.

Well, what is it

Why do wars that are at least superficially disparate follow the same pattern?

What I've found is that armed groups evolve and adapt over time.

There is only one solution to fight an enemy that is mighty once or twice.

Unless you find a solution to it as part of an armed group, that person is as good as nonexistent.

That's why we see this phenomenon in every armed group activity, in every war and conflict.

I think that's what's happening

Let's take it one step further. How can we change this?

How can a war like Iraq end?

What would the graph look like then?

α was the structure This number keeps 2.5

The number indicates how long the war will last

just change it

If you raise the number, the power will start to divide.The number will increase, but it will weaken.

Or if you lower the number, it will become stronger, but the scale will shrink.

So the graph I'm going to show you is

It's literally freshly made and hasn't been seen by anyone yet.

Here you can see the transition of the numerical value α

In the first stage, the numbers approach a steady state, the numbers that wars around the world have in common.

Even in the Fallujah invasion, it continues to wander around the number α. That number continues until the bombing of Samara during the 2006 Iraqi elections.

And then the numbers start to mess up and go higher and higher, towards splitting.

That's when the war escalated

Opinions are divided, but at the time, it was expected to get even more intense.

but it does the exact opposite

the group grows stronger

will be solid

Here, okay, I hope the numbers will continue to go down.

We can talk and work toward solutions, but it also has the opposite effect.

Numbers go up and populations start to become more dispersed

In these two aspects we can find a key to end the conflict.

Either we will return to a situation in which armed groups have no influence, as in the early days of the conflict, or we will settle into a fragmented and evacuable level.

I don't know a clear answer to end the war

But to answer that question, it seems we need to look at the structure of war.

Thank you for your attention

(applause)

Corn now accounts for more than 10 percent of global crop production.

The United States alone has enough cornfields to cover Germany.

There are many other crops, but more than 99 percent of cultivated corn

It's called Dent Corn No. 2, which means that humans grow Dent Corn No. 2 more than any other plant on the planet.

So how did this one plant, one variety, become one of the greatest agricultural successes in history?

Maize, also known as maize, was domesticated about 9,000 years ago from pig maize, a wild grass that originated in Mesoamerica.

The rock-hard berries of pig corn were hardly edible, but the fibrous pods became an all-purpose material.

Over the next 4,700 years, farmers bred this plant into a staple crop with larger cobs and edible kernels.

Maize played an important role as it spread across the Americas, and several indigenous societies worshiped the "Mother of Maize" as the goddess who created agriculture.

When Europeans first arrived in the Americas, they avoided this strange plant.

Many Europeans even believed that this plant made a physical and cultural difference between them and Mesoamericans.

But attempts to grow European crops on American soil quickly failed, forcing the pioneers to broaden their food horizons.

As soon as they found corn to their liking, it spread across the Atlantic, and corn, which grows in a variety of climates, has become a popular crop in many European countries.

But when the United States was founded, it remained the center of corn.

In the early 1800s, varieties of different sizes and flavors were produced all over America.

But in the 1850s it proved difficult for railroad companies to pack these various varieties and for merchants to sell them.

Chambers of commerce at major transit points on the railroad network, such as Chicago, have recommended that corn farmers grow one standardized crop.

At the 1893 World's Fair, this wish finally came true, and James Reed's dented yellow corn won the Blue Ribbon Award.

Over the next 50 years, dent yellow corn spread across the country.

Harvesting machines became popular due to the diversion of advanced technology from World War II.

It took me a day to harvest corn by hand, but now I can harvest it in just five minutes.

Another wartime technology, the chemical explosive ammonium nitrate, also found its way on the farm.

This new chemical fertilizer allowed farmers to plant corn more closely spaced year after year without the need to replenish nitrogen through crop rotation.

While this advance made corn an attractive crop for American farmers, American agricultural policy limited how much farmers could grow to keep prices high.

But in 1972, President Richard Nixon lifted those restrictions while negotiating a massive grain sale to the Soviet Union.

Because of this trade deal and the technology developed during World War II, corn production became a global phenomenon and took off.

Many preparations have been devised from piles of corn.

Cornstarch was used as a thickening agent that could be used for anything from gasoline to glue, or it was processed into a low-cost sweetener called high-fructose corn syrup.

Corn has exploded around the world as one of the cheapest animal feeds available.

This made meat cheaper to produce, which in turn increased demand for meat and corn feed.

Today, we only eat 40 percent of the corn we cultivate, and the other 60 percent supports the consumer goods industry around the world.

But the spread of this marvelous crop comes at a great cost.

Excess ammonium nitrate runoff from cornfields is polluting water sources around the world.

Corn accounts for the majority of agriculture-related carbon emissions due to the increased meat production it has enabled.

The use of high fructose corn syrup may contribute to diabetes and obesity.

And with the rise of monocultures, our food supply has become dangerously vulnerable to pests and pathogens, and a single virus could undermine the supply of this ubiquitous crop.

Corn has gone from being a weed in the bush to being an important part of the world's industry.

But whether this leads to a labyrinth of unsustainability, only time will tell.

I'd like to take the time today to talk about a little existential anxiety that I've been feeling for the last few years, if that's the wrong way to say it.

What's going on is basically shown in these three quotes.

"When God created the color purple, he was just showing off," Alice Walker's "The Color Purple."

It's from Zora Neale Hurston's "Dusts on the Road." "Inquiry is formal curiosity.

It's about probing and peeping for a purpose." And finally.

When I think about the near future, I take this stance that anything that can happen will happen.

The Cheshire Cat says

"If you don't really care where you want to go, it doesn't matter which way you go."

That said, I think it matters which way you go and which way you choose, because as I envision the near future, what I consider to be the most important challenge, and the one that's really crucial and essential, is the immediate rebirth of art and science, right now, in 2002. (Applause)

If we look 10, 20, 15 years into the near future, it means that what we do today will be very important, because the society of 2015, 2020, 2025 will be built on the foundational knowledge and abstractions and discoveries we make today. It's the exact same thing that was knowledge and ideas.

This is the substrate we're working with today.

Whether it's the Internet, genetic engineering, laser scanners, guided missiles, fiber optic HDTVs, images produced remotely from space, 3D fabrics, TV shows like "Tracker" and "Enterprise", CD-Rs, flat-panel displays, Alvin Ailey's "Sweet Otis", Sarah Jones' "Your Revolution" and "The Revolution Isn't Between Your Thighs". is based on

So we need to ask ourselves, what are we adding to our legacy?

I'm really worried when I think about that, quite frankly.

i am concerned

I doubt that we have contributed anything

In a way, it's not working towards the future.

intentionally consciously procrastinating

we are lagging behind

Franz Fanon, a psychiatrist from Martinique, said, "In the midst of this ambiguity, each generation has to find its mission, and either it fulfills it or it defies it." What is our mission? What do we need to do?

Our mission is

I think it's about reconciling and reintegrating science and art, because today's popular view is that they're split.

It's because people think that science and art are two very different things.

It's been thought of as something else. It's probably been around for centuries, but it's really become a problem now, because we're making decisions about our society every day.

both are deeply related

everyone knows

But don't be surprised, there are people out there who think it's cool and say, "Look, scientists and science aren't creative.

Scientists may be original, but they cannot create."

And then there's this tendency, as many career counselors and others say, "Artists are not analytical.

Perhaps they are original, but not analytical."

And when these ideas become the foundation of education and the way we think about the world, it becomes a problem because it prevents us from supporting everything.

If you're willing to accept this dichotomy, even half-jokingly, and try to apply it to the real world, or try to build the foundations for it, you're ruining the future, because no one is original.

You don't want to be an illogical person

If you had to choose one or the other, talent would flee from both realms.

And that leads to the idea that you can be creative and be logical at the same time.

Well, I grew up in the '60s, and I'll be honest, my childhood was the '60s.

And I think there's a younger generation here who's aspiring to be a hippie, and we always talk about the '60s.

It's a story about how chaotic it was, but remember the '60s.

What I think we can learn from that is that there was hope for the future.

everyone seemed to be able to get involved

Wonderful and surprising ideas were always circulating, and a lot of what's hot and cool today is based in part on that idea, like the people trying to put into practice the Fleet Philosophy in Star Trek, or the 3D fabrics and fax machines you read about in the weekly magazines about the latest technology.

But there was one problem left over from the '60s.

I mean, I always wanted to go to space, because I was interested in all of this, and I also loved art and science.

As I grew from being a little kid into a teen, I loved designing and making clothes for dogs, and I wanted to be a fashion designer.

I took art and pottery classes, and I loved dancing.

Lola Farana, Alvin Ailey and Jerome Robbins

And I was also avidly following the Gemini and Apollo programs.

I worked on my science assignments, had a stack of astronomy books, and took classes in calculus and philosophy.

about infinity and the big bang theory

I pondered

And while I was at Stanford, in my senior year, I majored in chemical engineering, but half of my friends thought I majored in political science and theater, and that's understandable, because I was a president of the Black Students League, and I was taking a few other courses as well.

In my final semester, I worked my way through my schedule, studying the separation process of chemical engineering, logic classes, NMR spectroscopy, and also working on the production and choreography of a dance stage.

I also had to do some lighting and design work, and I was trying to decide whether I should go to New York and try my hand at becoming a professional dancer, or go to medical school.

Well, on this matter my mother

(Laughter) But when I went to space, when I went to space, I took a lot of stuff.

Alvin Ailey poster You guessed it, I love to dance. A poster of Alvin Ailey with Judith Jamison as Cry. A dance dedicated to all black women. A Bundu statue from the Women's Association of Sierra Leone.

A colleague asked me, "Why did you take so many things with you?"

"Because it represents the creativity of mankind. The creativity required to conceive, realize and launch the Space Shuttle. The creativity that made it possible. From the same source springs the imagination and analysis required to carve the Bundu statue, the design, the choreography and the originality to perform Cry."

Each one of them is a different manifestation, an embodiment of creativity, an embodiment of human creativity.

We need to reconcile these connections within our own psyches.

The difference between art and science is not that intuitive as opposed to analytical.

The square of E＝mc is

I needed an intuitive leap, and I needed an analysis after the fact.

Einstein actually said, "The most beautiful thing we experience is the unknown, which is the source of all true art and science."

Dance is about expressing the joy in life, and it requires a passion for expression, and you have to figure out how to make the right movements.

The difference between art and science is not that it's constructive and deconstructive, because yes, many people

I think science is about taking things apart, you have to take things apart.

Yes, particle physics breaks it down, literally trying to break apart atoms to understand what's inside them.

I learned from the great sculptors that sculpture is also decomposing, because you take a part and remove what you don't need from it.

biotechnology is constructive

Orchestral arrangements are compositional

So in fact, constructive and decomposing techniques are used in everything, the difference between science and art is

They're not two sides of a coin, they're not different parts of the same continuum, they're just different ways of saying the same thing.

Like different quantum states of one atom

Or, in a 21st-century way, it could be a different vibrational state of superstring theory.

Let's stop talking about this (laughs).

they both come from the same source

Art and science are human creativity

It's an incarnation, an attempt, as a human being, to make sense of the universe that surrounds us.

It's an attempt to influence the universe inside of us and outside of us.

Science, to me, is the embodiment of our attempts to express and communicate our understandings and experiences to the universe outside of us.

Science does not depend on individuals

It represents the universe as we all experience it.

Art is an attempt to express and communicate our desires and reach out to others, especially through our unique experiences as individuals.

Let me restate it again: science teaches us about universal experience, art teaches us universal understanding about personal experience.

We have to think about this: both are part of us, both are part of the continuum.

It's not just a tool, it's not just scientific knowledge, it's not math, it's not just numbers, it's not statistics, because it's right here on the stage that music is math.

You've heard that art doesn't just use clay, art doesn't just use clay and light and sound and movement.

We also use analytics

But I'm sure there are people who would say, I still like to think of it as analytical versus intuitive, because we all like to talk about right-brain or left-brain.

We're all accused of being right-brained or left-brained at some point, depending on who we're up against.

(Laughter) You see, intuitive means contact with nature, exploring ourselves, exploring relationships, and analytical means focusing on a problem.

tell you a little secret

As you all know, sometimes this is what we think of as analytic thinking, and the most important sciences are considered to be the truths outside of ourselves and those that can be elevated to truths.

On the one hand, you have the artist, and you know, it's equally true, but the artist says of the scientist that the scientist is so obsessed with substance that he's cut off from the world, and so on.

It's a story that came out on this stage, so I don't know what it's about

Don't pretend. (Laughter) I've heard about the Flat Earth Society, I've heard about the flower arrangement, and even as I understand it better, there's always a division here.

They say you have to choose one or the other.

It's really silly to have to choose one or the other: intuitive or analytical.

it's a stupid choice

as if realistic or ideal

It's like choosing, you need both in life.

why would you choose one

Sydney Brenner is a molecular biologist, and he's 70 years old, and he's got this realization.

“It is important to distinguish between chastity and impotence.”

Now... (Laughter) I'd like to share with you a simple equation.

How do we apply our understanding of science and art to the way we live? What's happening in this field? What's being talked about at this design conference?

This is a small realization for me: understanding + focus + will = results you get Understanding + focus + will = results you get

Understanding is our science, it's our art, it's what we believe in, it's how we perceive the world around us. It's the resources, the money, the effort, the ore, that's what we need to work with in the world.

More importantly, our will

Visions and wishes about the future, hopes and dreams, struggles and fears.

our successes and failures

All of the engagements I just mentioned affect the outcome, for me, designing, engineering, and skilled labor are all involved in the engagement, and that affects the outcome, which is the quality of life.

what kind of world do you wish for

May I

No matter how we look at this, no matter how we view art and science as separate, or as separate, they are both influenced and troubled together.

I launched a project called "Knowing the Future," which stands for Science, Education and Engineering.

It was about how we should assess the effective use of government funds.

brought together scientists of various ranks

i was teaching

I came down to Dartmouth College and talked to theologians and business scientists about what the issues are in public funding for science and engineering research.

what is the most important

The question that was raised was the

The problem was, first of all, this is the state of science and engineering. The state of science and engineering that made us the world leaders is not what it was in the '40s, '50s, '60s and '70s when we emerged as world leaders, because we're not competing with fascism or Soviet-style communism.

That race wasn't just military, it was also a social race, a political race, and so we looked to space as a platform to prove that our social system was superior.

Another thing they discussed was that the infrastructure that supports science is outdated.

If you look at universities, colleges, small and medium-sized community colleges across the country, the lab is outdated.

And that's where scientists and researchers and teachers grow.

And then there's the problem of the media only trying to spread banal, empty information: pseudoscience, crop circles.

Alien autopsies, haunted mansions, disasters.

This is how I live my daily life

It's not the information you really need to make decisions about how to engage with democracy today or to make decisions about what's going on.

There was another story

He says that the attitudes of companies have also changed. Government funding has always been for basic science and technology research.

As expected, companies are now spending more energy on short-term product development than on basic scientific research.

And the standard of education is not maintained.

Kindergartens and elementary schools are running out of labs, just to put computers in.

They think it's an alternative to mixing acid and growing potatoes.

And government spending is declining. Let's say, let the companies take over. That's a mistake.

We have to admit that there are rewards for the cost when it comes to basic scientific and technological research.

We need to know that we have a responsibility as global citizens.

We also need to look at educating people.

We need to focus our resources to make sure that education is done in such a way that people understand the importance of these things.

We have to support the vitality of science, but it's all about the same thing.

It doesn't mean that we have to share one thing or know what the outcome will be, but it does help support the energy and the intellectual curiosity that comes with it, when we realize that science and art are similar.

You can see how competition from the Bolshoi has made the Joffrey Ballet School and the New York City Ballet better.

Base museums, theaters, cinemas are disappearing across the country, when there's nothing to see.

More and more TV stations are spending more and more money remaking old TV shows into movies.

We also have funding for companies like this, one of which asks, as a condition of support, that the artist paint a picture of the company's product somewhere.

renamed over and over again by companies

There's also a stadium. What's up with Enron Stadium?

(Laughter) And art and education in schools is disappearing, and it looks like the government is trying to gut the National Education Association and other programs.

We really should stop and think about what we're going to do with science and art.

need to be rejuvenated

must pay attention

I'm going to give you a quick rundown of what I'm working on. (Applause) Just briefly what I've been doing.

I feel the need to integrate some ideas that have been around for a long time.

I am aware of the need to properly correct the split between mind and body.

My mother always told me, "You need to be very observant and know what's going on with your mind and body."

And as a dancer, I know my body as well as I know colors.

And so I went to medical school, where I was told to make decisions based on machine measurements of my body.

You know, when you try to ask a patient a question, some people say, "No, no, what the patient said.

Don't listen." Patients know their bodies better, and are now trying to break away from old ideas.

We need to reconcile the patient's own knowledge of the patient's body with the physician's diagnosis.

Some people talked about measuring emotions and letting machines understand them to prevent abnormal behavior.

should not be measured

Machines shouldn't be used to measure driver rage or prevent it.

A machine could help us realize that we're enraged, and then not rely on the machine to handle the situation.

You have to know how to hold it down, you have to be aware without the machine.

What I'm very interested in is how can we strengthen our self-awareness as a human being and as an organism.

Michael Moschen said that we must teach and learn to touch with our eyes and see with our hands.

We have all kinds of possibilities in terms of using our senses, and that's what we have to work on.

What I'd like to do is try to use biometrics to assist our senses in our behavior, now in a company called BioSentient.

It's a job I'm working on

I knew I had to do it, because I'm an entrepreneur, and entrepreneurs say I do what I want because I'm not in need of a full-time job.

(Laughter) What I'm working on now at Biosentient is the synthesis of these things.

My personal design challenge for the future is to consider and integrate intuition and analysis.

Art and science are not separate

Finally from my high school physics class, my high school physics teacher picked up the ball and

I used to say, this ball has potential energy,

Nothing happens until I release it and the state changes.

You can think of ideas as potential energy.

Ideas are really great, but nothing happens until you take the plunge and put them into action.

This conference is full of great ideas.

Although many things are spread

Nothing will happen until you take the plunge and put these ideas into action.

New vitality in today's arts and sciences

We have to give, we have to take responsibility for the future.

There's no excuse for corporate profit, or business, or being an artist, or being a researcher.

How should we judge what we're doing? I talked about the balance between intuition and analysis.

As my favorite cynic Fran Lebowitz put it, there are three important questions to ask, and let's apply them to design: "Does it have charm?"

this is intuitive

"Are you dumbfounded?" This is an analysis "Do you have humility?"

this is the balance thank you

(applause)

This is a sculpture that I made, an unconventional object with different degrees of freedom.

You can balance on one point

This is a bronze ball, an aluminum arm, and a wooden disk.

This wooden disc was designed to be easily grasped and slid and turned like this.

Aluminum is used because it is light.

Bronze is moderately hard and strong and can be rolled on the ground.

Inside the bronze ball, there's a lead weight that's free to oscillate on the axis of rotation of the two bearings that pass through the middle, and that's how the weight is balanced.

so you can roll

And this sphere has the inertia of balance, so it's always stationary from all directions, and it looks the same from all directions.

But when you put something on top of it, it becomes unbalanced and flips over.

But since the interior can swing freely against the sphere, we can keep the same point.

And as a second step for this object, I thought it would show what I'm interested in: the diameter of the moon and the ratio to the diameter of the earth.

I've been researching levitation objects for quite some time.

and came up with a lot of ideas

So here's the resulting sculpture, which is magnetically levitated.

This is actually a little dangerous.

It is usually kept strictly in the museum.

Let's see if we can manipulate it a little, oops

What you're seeing right now is just levitation, balanced in each direction by a permanent magnetic field.

But there's a thin tether attached here to keep it from leaving the magnetic field.

I feel like I'm floating on a wave crest of a magnetic field.

Supports the body and plays a role in maintaining balance

Staff, please play the tape here

I would like to introduce a collection of video recordings of various exhibitions.

This sculpture is a proportional representation of the sun and the earth.

In eight and a half minutes, it shows two relationships between light and gravity.

This is Earth. It's made of bronze with units smaller than 1 millimeter.

and here is a similar sculpture

The sun is at the far end

And then we're shrinking the size of this set of 55 balls proportionally, decreasing proportionally the size of each ball and the space between them, down to this little Earth.

This is in the Sculpture Park in Daejeon, South Korea

This is about the Moon, which is also proportional to its distance from the Earth.

This is a small ball of stone that's floating.

As you can see, it's also magnetically levitated with a thin tether.

And here is part one, the sun is 109 times the diameter of the earth, so 109 spheres are used.

So this is the size of the sun

And these little spheres are the size of the Earth relative to the size of the Sun.

It is made up of 16 concentric structures. Each consists of 92 spheres

This is the alchemist's courtyard in the 20th century

In my opinion, the sun is the ultimate alchemist.

The moon is in the center. and floating. this is france

this is sapporo

It's balanced on an axis and a ball at or slightly above the center of gravity, which means the bottom half of this object is a little heavier.

you can see it spinning here

This weighs about a ton or more than a ton

Made of stainless steel and quite thick

but balanced so that the balance is kept

Moves under the influence of air flow

This is also a collection of works I have been involved in.

These are arrayed. These spheres are suspended, and they have magnets placed horizontally inside them, so they act like compasses.

In this case, the red side facing a certain direction is south

the blue side faces the opposite direction

So when you turn around you see different colors

This is based on the structure of a diamond.

The organizational structure of the diamond is the starting point.

There's a big cavity between atoms.

So we put another kind of element into these cavities.

these are white spheres

These were projected intermittently onto the sphere with a video projector.

And these partially capture the image, and when you can walk through them, the spheres can appear three-dimensional with lots of color.

This is something like a tactile communication system that I built.

This is what separates the tactile component of the sculpture and introduces it into a communication system.

This is an image of a moving sculpture ball, and it was operated on a nearby computer.

This is the clock that I designed

This is a compilation of Dymaxion maps invented by Buckminster Fuller.

It rotates once a day, synchronizing with the movement of the earth.

And these are the ones I struggled to make a little bit.

(Laughter) This is a diamond lakebed.

floating islands water or fresh water can fly from place to place

And I think this could grow with nanotechnology in the future.

While doing various jobs, I became interested in a wide range of areas.

And some of them are the idea of ​​creating media -- media as sculpture, creating media that's always fresh and ever-changing, or that can really alter the sculpture itself.

I've always been interested in crystal balls.

Peeking inside a crystal ball and predicting the future, and seeing something pop up on TV is like magic, isn't it?

Once upon a time in the late '60s, when it was still just the beginning for me, my thinking was influenced by Buckminister Fuller's grand project for the United Nations power grid, and other things that were happening at the time, such as the space program, the Whole Earth Catalog.

My idea was to mass-produce spherical televisions and then use them to communicate with satellite cameras.

Next video please

It continues to evolve as it transforms into various forms.

And this latest model is an airship about 35 meters in diameter, roughly 110 feet in diameter.

The entire surface is covered with 60 million red, blue, green, and yellow diodes, and high-definition images can be viewed even during the day.

and a plan came to mind

At Paul McCready's company, AeroViroment, we did a feasibility study, analyzed it, and figured out how we could use these novel ideas.

And we have a plan to make them come true

This is the control room of the airship.

And with this flying genie idea, this could be anything mutable.

It's like a travel show

It also has a built-in speaker and a camera on the surface.

You can also take close-up shots of the outside environment, assimilate and disappear.

This is how the legs are stretched.

The cabin can be opened and closed freely

Weighs about 20 tons

A generator is also installed on board.

Approximately 1 million kilowatts will be generated and set to be as bright as during the day

I imagine a travel show

I want to make something that can contribute to art and exchange.

We also have a crew of artists and musicians on board, which are really conscious objects that can react instantly, interact and communicate as one.

Completely silent and non-polluting

This has an electric motor with an advanced propulsion system

You can interact with many people in different ways

What I'm primarily interested in is conversations like, for example, this is on a college campus, using this to learn about geoscience, the world, what's happening on Earth, and so on.

I think the default image is probably a high quality image of the Earth.

But because it's interactive, you can also learn about plate theory, global warming, immigration, and other things that interest you right now.

The idea for nighttime use is to get out of the way and use it for other uses like music and lights so everyone can have fun.

Then you can use it in the park.

Or in the square of a college campus

And it will have a corresponding website showing the itinerary.

Images of the same type are related

Also, if you make it open source code, anyone can get involved.

You can also share ideas from various people on a huge screen like a bulletin board.

That's it

yes. thank you

(applause)

Last year, I showed you these two slides, and you can see that in the last three million years, the polar glaciers, which were the same area as the United States, excluding Alaska and Hawaii, have shrunk by about 40 percent.

But the bigger problem is actually the thickness of the glacier.

Polar glaciers are the beating heart of the world's climate system, so to speak.

Expands in winter and shrinks in summer

So on the next slide, let's fast-forward over the last 25 years.

Red color is permanent glacier

It expands to the dark blue area, and this is the winter annual glacier, which shrinks in the summer.

A permanent glacier is something that's over five years old.

In the last 25 years, it's become like this.

This is a problem because as temperatures rise, the frozen ground in polar waters warms up, causing the frozen carbon dioxide to melt and be methanated by microorganisms.

The total amount of global warming pollution in the atmosphere can double beyond this critical point.

Methane is already bubbling to the surface of shallow lakes in Alaska.

Katie Walter, a professor at the University of Alaska, went to study another shallow lake last winter.

Video: Wow! (Laughter) The professor was fine, but what about us?

One reason is that this giant heat sink heats Greenland from the north.

This is what happens every year when the river ice melts

The water level is much higher than before

This is the Kangerlusuaq River in the southwest

How the sea level rises as the ice on the ground melts, and this is where the melted ice reaches the ocean.

This trend is accelerating rapidly

And on the other side of the world, in Antarctica, where the world's largest glacier is located,

Last month, scientists reported negative ice balance across the continent.

And the western part of Antarctica, which has been lifted up by an island in the sea, is melting particularly rapidly.

Like Greenland, it is about 6 meters above sea level.

The Himalayas have the third largest glacier in the world, and in recent years it has melted to form a lake at its summit.

40% of the world's population depends on this melted water for half of their drinking water.

In the Andes region, this glacier is the source of drinking water.

the flow rose

When there is no water, there is no drinking water

In the Sierra mountains of California, the amount of snow has decreased by as much as 40%.

It's hitting the reservoir

The forecast for the future is quite grim.

All over the world, with this kind of water shortage, there's been a significant increase in fires.

And all over the world, catastrophes are increasing at an unprecedented rate.

There have been four times as many disasters in the last 30 years as in the previous 75 years.

If this pattern continues, it will get worse.

If you look at it in relation to history, you can see what the impact of this is.

For the last five years, we've produced 70 million tons of carbon dioxide every 24 hours, and 25 million tons in our oceans every day.

If you look closely at the eastern part of the Pacific, if you look west from the Americas and then on either side of the Indian subcontinent, you'll see a dramatic change in ocean oxygen.

One of the causes of global warming is 20% deforestation, but fossil fuels are also a big contributor.

Oil is a problem, but coal is a more serious problem.

Together with China, the United States leads the way in terms of coal usage.

And there are plans to build more coal plants.

But there are signs of big change

In the last few years, all these projects have been cancelled, and greener alternatives are being planned.

(Applause) But in our country, we're at odds over this issue.

The coal and oil industries spent 250 million dollars last year alone promoting greener coal, but there's no such thing as coal.

Does this image look like anything

(Laughter) In my hometown of Tennessee, a billion gallons of coal sludge spills around Christmas.

you've seen it in the news

This is a nationwide problem, the second largest pollution stream in the United States.

This happened at Christmas time

Here's one of the ads the coal industry aired at Christmas

Video: ♪♫ Coal Frosty is jolly and happy

America has a lot of them and they help our economy grow.

Coal Frosty Day by day earth friendly

It's cheap and cute, and it's a wage for workers.

Gore: Most of the coal comes from West Virginia

The largest coal mining company here is Massey Coal Coal, according to a statement from its president.

Video: Don Blankenship: Let's face it, Al Gore, Nancy Pelosi and Harry Reid don't know anything.

Gore: So the Climate Alliance has launched two campaigns, two campaigns.

this is part of one

Video: Actor: At COALergy, we see climate change as very dangerous to our business.

So we've made it our primary goal to invest a lot of money in publicity to reveal and complicate the truth about coal.

In fact, coal doesn't pollute.

It's beautiful and smells good

Don't worry about climate change

leave it to us

(Laughter) Video: Actor: Green Coal

I hear you a lot, so let me take you inside a state-of-the-art, eco-friendly coal mill.

wonderful! The sound of the machine is loud

But this is the sound of green coal technology.

Burning coal is one of the main causes of global warming, but the eco-friendly coal technology we see here changes everything.

Look closely, this is today's green coal technology.

Gore: And finally, overcoming economic issues and national security issues as well -- here's a promising alternative.

Video: Narrator: America is in Crisis Economic, National Security and Climate Crisis

What these problems have in common is an addiction to carbon-based fuels such as toxic coal and foreign oil --

There is a revolutionary way out of this predicament

Repower America within 10 years with 100% clean electricity

By revitalizing America's economy, we'll make the nation safer and keep global warming at bay.

Finally a big solution that can solve our problems

Repower America.

Join us Gore: This is the last time

Video: Narrator: Bringing Power Back to America

That's the fastest way to end our dependence on traditional polluting fuels.

Man: The future is here Wind, sun, new energy, grid

Man 2: Make new investments to create high-paying jobs

Narrator: Repower America It's time to get serious

Goa: An African proverb says, "If you want to go fast, go alone."

If you want to go far, go together."

we have to go far and fast

thank you

(applause)

The one conversation that lifted me more than any other conversation I've ever had in my life was with a woman who told me that a few days earlier she had driven her Jeep Wrangler to the edge of the Grand Canyon cliff where she parked and was about to rev the engine and jump off the car.

I have severe social anxiety disorder, but somehow this time I was able to have a conversation without feeling nervous at all.

(Laughter) The woman told me what had happened in her life in the days leading up to it, what she was thinking the moment she was about to jump, why she wanted to die, and why she held back.

After nodding each other and exchanging faint smiles, it was my turn to tell my own story The story of how I arrived at the table in the clean common room of the psychiatric ward of a mountain village hospital.

After taking too many sleeping pills and being treated, the hospital said, "You're most welcome to be a guest in our psych ward."

(Laughter) Me and the woman even joked that if we had really jumped off the car, it would have been a masterpiece postcard.

(Laughs) Excited with depression stuff

(Laughter) With her, I had the experience of being very depressed and at the same time being genuinely connected to other people.

For the first time in my life, I told someone that I had depression, and it made me feel good, that depression isn't a bad thing.

Now, if one of the people at the common room table is a member of your family or a close friend,

Are you comfortable talking to that person?

What if I could tell you that I'm really depressed at home at the kitchen table instead of in the psych ward?

According to the World Health Organization, depression is the leading cause of ill health and disability worldwide, affecting 350 million people.

The National Institute of Mental Health reports that 7 percent of the American population experiences depression in one year.

I mean, depression is pretty normal, but in my experience, most people don't want to talk to depressed people unless they pretend to be happy.

It's reasonable to behave cheerfully in a casual relationship

When ordering a pumpkin spice latte and asking for more syrup, no depressed person explains, "I've completely lost hope of escaping the bottomless darkness of my heart, so I need more syrup— (Laughter) Today."

(Laughter) Depression doesn't make you less want to connect with other people, it just makes you unable to do so.

I don't know what you think, but talking to a friend or family member who is depressed can be very easy and even fun.

But it's not the fun of "taking a selfie with Lady Gaga while out at night and posting it on Facebook!"

No one feels uncomfortable, and no one blames a gloomy face for ruining their vacation.

Why does such a groove exist in the first place?

On the one hand, there are people with depression, and they may say or do things that make them uncomfortable or embarrassing, because they're fighting an enemy in their heads that no one else can see.

On the other side, the majority of people are watching from the other side of the ditch, frowning, as if to say, "Why am I so depressed? I don't know why."

You may also feel this chasm at times.

Would you like to build a bridge over this ditch?

No, you may think that I will refrain

Or maybe you want to get along better, but your doubts and worries are outweighing them.

I named it "Attack-type..." No, it's "People who care about that side"

(Laughter) Here are some possible reasons why people avoid depressed people.

They may be afraid that if they interact with someone who is depressed, the responsibility for that person's mental health will suddenly fall on them.

But you don't have to deal with psychology guru Dr. Phil.

Just in a friendly way, more like the comedian Ellen

(Laughter) You may be afraid that you won't find the right words to say. Every time you try to speak, you feel awkward.

"What you say" is not so important

You don't have to be afraid of anything, but maybe you're just afraid.

Wouldn't it be amazing if you could escape from the negative emotions that lurk in your heart?

just keep running

(Laughter) Even people who are ignorant of people's emotions can relate to people who are depressed.

Maybe you've heard that depression is contagious and you're worried about getting it?

Then you should sanitize your hands

(Laughter) You're much more likely to become infected with the joy of human bonding.

Or maybe we see depressed people differently.

You think you're a problem person, or a flawed person.

Studies from various universities have shown that the brightest students are more likely to suffer from manic-depressive symptoms.

Depressed people's brains aren't broken or injured, they just work differently than other people.

For years I thought, "I don't understand happy people."

(Laughter) I ended up not discriminating against happy people.

I used to spend most of my time in hard and painful times, but now I'm enjoying life.

I've successfully dealt with manic depression and overcome other mental health problems like bulimia, addiction and social anxiety.

Now I'm living on both sides of this ditch

Today, based on my own experience, I'd like to offer some tips to bridge that gap, if you'd like.

It's not scientifically based, but it's advice that I've refined over time with many people who have experienced depression.

First of all, from what I want you to avoid

One of the words I don't want you to say the most is "Forget about that and get well."

It's a good idea, and it's great, but we've already thought about that.

(Laughter) Depression is when you can't get well as easily as you say that.

(Laughter) (Applause) We feel depression in our bodies. For us, it's physical pain.

Medically, it's the equivalent of saying to someone with a broken bone or cancer, "Forget about it and get well."

Don't try to cure your depression at all costs

Thank you, but

For depressed people, it's pressure and they feel like they're not living up to their expectations.

What may cheer some people up may not work for us.

You can't cure mental illness with ice cream.

That's a sad story, but it would be great if it really healed

(Laughter) Don't be offended if someone with depression reacts negatively.

About a year ago, a friend of mine texted me that she was feeling very isolated and depressed.

So I gave him some advice, but he just said, "No," and he wouldn't listen.

I'm so angry Who would you like to not listen to my wonderful advice?

(Laughter) But it reminded me of a time when I was depressed, how I was desperate for the future, and suddenly I felt like everyone hated me.

No matter how much I was told otherwise, I didn't believe it.

So I told the friend that I was on his side, and decided not to feel bad about it.

Don't be upset if a depressed person doesn't feel good

You're not being attacked by a shark

"Call the Coast Guard, my friend looks sad!

(Laughter) Just because you're depressed doesn't mean you're in danger.

I'll say it again. In this society, everyone is taught the exact opposite, so it's strange to think of it as common sense.

Just because you're depressed doesn't mean there's something wrong

Ladies and gentlemen, some advice that applies to each of you

Please select

And you don't have to force yourself to get along

But if you want to get along, the next thing I would advise you to do is:

Speak in a natural tone of voice

(Laughter) Just because we're depressed doesn't mean you have to look sad, just like you don't have to hang your nose when you talk to someone who has a cold.

(Laughter) You look fine, so it's not rude.

Please stay as you are

If you want to help, be clear about what you can and can't do.

I say, "You can call me or send me an email anytime, but I may not be able to reply on the same day."

It doesn't matter if you don't try to do anything, and I don't mind if you offer me a little help with clear conditions.

The important thing is to give the depressed person a choice.

I want you to understand

A while ago, when I was depressed, a friend called me and said, "I want to know how you're doing, can I call you every day?

email me every day

Will you call me at the end of the week?

what should i do ”

She tried to get my permission so I could trust her and she's still my best friend.

And my final piece of advice is to get involved in the normal side of things that isn't depression.

I have a friend who says that people who are worried about him call him and ask if he wants to go shopping with him or if he wants to help clean out the garage.

(Laughter) What I'm saying is that you should encourage the depressed person to contribute to your life in some way, even something as small as asking them to go to the movie you want to see.

Well, I said a lot of "do's" and "don'ts", but this is by no means a fixed list.

But remember, they're all based on one guiding principle.

That goes for the woman in the Jeep, who effortlessly set me on the path to recovery.

Because even at that moment, I was just as I was, but I had a presence value, and it was a way to talk that I was not lacking as a conversation partner.

If someone with depression talks to you with the understanding that their life is as rich and important and beautiful as your own, there's no need to build a bridge between them and you anymore, because the chasm is already closed.

Please value this more than words, and it might be the most heart-warming conversation in that person's life.

what will it bring to your loved one

what about yourself

thank you

(applause)

About 30 years ago, my country had to rebuild everything from the ground up.

After years of Soviet rule, Estonia regained its independence, but nothing was left.

No infrastructure, no administration, no law.

it was chaos

Out of necessity, the leaders of the time made the boldest choice possible for our country.

There was a lot of experimentation and uncertainty, but there was also a lucky part: we had great visionaries and cryptographers and technologists to turn to.

i was still a kid

Today, my country is said to be the most electronic society in the world.

In my country, Estonia, tax returns have been filed online since 2001.

Electronic IDs and electronic signatures have been in use since 2002

Voting has been online since 2005

Almost every public service you can think of is now online: education, police, courts, starting a business, applying for benefits, looking up your medical records, even filing a parking violation online.

In fact, it's almost as easy as counting the things you can't do online.

You need to go there to get your ID card and to get married/divorced or to sell real estate.

that's about it

So don't be surprised when I tell you that you look forward to tax returns every year.

(Laughter) All you have to do is sit on the couch, pull out your phone, swipe a few pages over your completed income and deductions, and hit send.

Three minutes later, I'm looking at the refund amount

i feel like i got something

No tax accountants, no receipts, no calculations

I haven't visited the government office for seven years.

Given the possibilities of today's technology, a labyrinth of bureaucratic procedures shouldn't exist in modern life.

Such things have almost completely disappeared in Estonia through the concerted efforts of an electronic government.

For example, the e-Cabinet minister's filing cabinet is completely paperless.

At the heart of such developments is the idea of ​​changing the role of the state and the digitization of credit.

please think about it

In most countries, people don't trust their governments.

Government doesn't trust people

A cumbersome paper-based formality is supposed to solve the problem.

doesn't really solve

I'm just making life difficult

Estonia's experience shows that technology can be a means to restore trust, create efficient, user-centred services, and enable them to proactively respond to the needs of their citizens.

It wasn't by digitizing bureaucracy as it was that we were able to do that.

By setting some strong general principles, reworking rules and procedures, removing unnecessary data collection and duplication of tasks, and being open and transparent.

Let me briefly talk about the basic principles of e-Estonia today.

First, we need to ensure privacy and confidentiality of data and information.

This is made possible by strong electronic IDs that are issued by the state and can be used anywhere.

All Estonian citizens have

This ID has an electronic signature and is accepted, usable and legally binding in both Estonia and the EU.

Once the system has verified who the user is in a secure and proper way, all of that person's personal data and public services can be accessed from one app, and electronically signed for all transactions.

The second principle has had the most impact, and it's called the "once only" principle.

This means that a country cannot request the same data more than once and store it in more than one place.

For example, if you have submitted your birth or marriage certificate to the registry office, that is the only place that data is stored.

You will not be asked to submit again by any other authority

The once and for all principle is a very strong rule that defines the overall national data collection system, what information is collected and who is responsible for maintaining it, avoids centralization and duplication of data, and ensures that data is kept up to date.

This decentralized approach also avoids the problem of single points of failure.

On the other hand, data can't be duplicated or collected more than once, so public sector services need mechanisms to ensure that information is always and securely accessible.

It's been running since 2001 in the role of a data exchange platform called X-Road.

Like a highway, it connects public databases and registries with local governments and businesses, enabling real-time, secure, and controlled exchange of data, and keeping an auditable record of each activity.

Here is a screen image showing the status of data requests and connected services on X-Road

Here's a diagram of a real-world connection between a public database and a corporate database.

As you can see, there is no central database.

Confidentiality and privacy are very important

In a digital world, the reliability and integrity of information also become operationally important.

For example, if someone were to alter your allergy medical record without your doctor's or your knowledge, the treatment could be fatal.

So in a digital world like Estonia, when you don't have paper masters, you only have electronic masters, the integrity of your data, your data exchange rules, your software log files, is extremely important.

We're using a kind of blockchain, invented in 2007, long before blockchain was a hot topic, to verify and guarantee data integrity in real time.

Blockchain is our auditor, ensuring that no data is accessed or manipulated without a record.

Data ownership is another important principle in designing systems.

Are you worried that governments, tech companies, and other companies in the world are owning the data they collect about you? They don't give you access to the data, they don't show you how it's used and how it's shared with third parties.

It's a situation that worries me a lot

The Estonian system is based on the principle that any personal data collected belongs to you, so you have an absolute right to know what data has been collected and who has access to it.

When police, doctors, and government officials see a citizen's personal data, they must be logged in and only access information that is deemed necessary for their job.

And every time you request access to information, it's logged.

This detailed log enables true transparency in some of the country's public services, letting you know if there's been a breach of your privacy.

Of course, this is a simplified summary of e-Estonia's design principles.

Now governments are working to build a new generation of public services that can leverage artificial intelligence, a coherent service that is automatically activated according to the circumstances in a person's life, whether it's childbirth, unemployment, or starting a business.

In a digital world without paper copies, problems can arise.

We believe in the robustness of our systems, but from our experience in 2007, we've never been too cautious. We had our first cyber incident, where parts of our network were blocked, leaving us without service for hours.

we got over

After this incident, cybersecurity became a top priority, both for platform hardening and backup.

How do you back up a nationwide system in a small country where everything is so close together?

For example, a copy of the data can be kept at an extraterritorial embassy outside the country.

Today, there are a number of data embassies that hold some of Estonia's most important digital assets, enabling uninterrupted protection of administrative data, and most importantly, maintaining sovereignty, even if the country is under attack.

Some of you may be wondering what the downside is

Going fully digital is more efficient both administratively and cost-effectively.

You might get the impression that doing it through a computer makes the human factor, politicians, and participation in the democratic process less important.

For some people, the pervasiveness of technology threatens to obsolete their skills.

Unfortunately, moving the country to a digital system does not eliminate political power struggles and social conflicts, and that's what we saw in the last election.

As long as humans exist, it will not disappear.

Last but not least

If all services can be accessed from anywhere in the world, why not make some services available to foreigners who do not live in Estonia?

Five years ago, a national program called the eResidency program was launched and now has tens of thousands of people enrolled.

Business people from 136 countries have created companies electronically, transacted online, run virtual companies on the Estonian system under the EU legal framework, and can do so from anywhere in the world with an eID card that is similar to my ID.

The Estonian system is human-centric and location-independent.

We focus on being usable by everyone, being open and trustworthy.

Centered on security and transparency

The data is in the hands of its rightful owner.

not just listen to me

Please try it

thank you

(applause)

Have you ever felt lonely?

Have you ever felt the urge to connect with someone but it seemed like no one really wanted to get in touch with you?

Ever wanted to be with someone on a Friday night but never felt like going out Staying home all night watching Netflix and feeling more and more alone?

I feel like I'm a monster, and I'm in the middle of nowhere between decent humans.

this is loneliness for me

I'm an artist, so I organize my emotions by sharing them through art.

If you share your emotions with someone else, and if the other person understands and shares their emotions, then you have a deep emotional connection.

That's why sometimes I feel lonely even though I'm surrounded by hundreds of people and have changed partners one after another.

Because you haven't made the deeper connections that I mentioned earlier.

I was always a happy child

You're probably smiling or making people laugh in most of your pictures.

But that too...

Well, if you say so even now

It wasn't until my late teens, when I moved to another city, that I started working for the first time as a cartoonist.

Like all the growing young people in the world, I put all my energy into my work.

But if you spend 90 percent of your capacity in a day to be successful at work, of course you're completely empty and can't care about other important aspects of your life, like relationships.

It's a job to build rich friendships as an adult.

must always try to keep the relationship

you have to be open and honest

I had a hard time with that, because I tend to camouflage my true feelings, trying to look happy all the time, trying to make other people feel happy and trying to help them solve their problems.

Many of us feel guilty about this, because it's an easy way to stop thinking about our own problems.

right?

hey? hey? hey?

(laughs) So

The turning point came just a few years ago when I was dating someone who was abusive to my heart.

He isolated me and made me feel more and more alone

It was the worst time of my life, but it also woke me up, because it was the first time I felt really alone.

Many people put their emotions into their art.

A never-ending stream of books, movies, paintings, and music, all filled with the artist's true emotions.

As an artist, I did the same.

shared my feelings

I wanted to help people deal with loneliness.

Yes, I wanted to help people understand and truly experience loneliness through my art, in the form of an interactive narrative, a video game.

So in our game, Sea of ​​Solitude, you're a character named Kay, who suffers from so much loneliness that the feelings inside her -- anger, hopelessness, and worthlessness -- come to the outside, and she becomes a monster.

This game, or rather, Kay, is actually me.

The game is actually set in Kay's mind as she walks through a world flooded with her tears, and the weather changes according to her moods.

And the only thing Kay wears, the only thing she has, is her backpack.

This represents the baggage we all carry in our lives.

And because Kay doesn't know how to deal with her emotions properly, the backpack grows bigger and bigger until it explodes, and she's finally forced to overcome her own struggles.

Our stories show different ways of loneliness.

The loneliness of being excluded from society is really common.

In the game, Kay's siblings were bullied at school and just want to hide and run away.

So we represented him as a giant bird monster shrouded in thick fog.

You're going to actually walk through his school and relive it, and it's going to hurt really badly, and that's what he's been feeling, because nobody really listened to him for a long time.

But the moment friends and family begin to listen, the first steps are taken to overcome this loneliness.

The game also shows that even relationships can be lonely. It's the kind of loneliness where parents live together just for the sake of their children, and end up hurting the whole family.

We put the player literally between the parents who are fighting, and you get hurt in the middle.

The parents don't even realize their daughter, Kay, is there until she collapses.

It also shows loneliness through mental health issues. Kay's boyfriend suffers from depression.

This boyfriend also has a tendency to camouflage his emotions, seemingly like an aloof, bright white wolf.

The moment he becomes involved with his girlfriend Kay, that mask of him peels away, revealing a black dog beneath it: depression.

Sometimes we put smiles on our faces and don't face the problems that are happening right next to us, which can end up making things worse, affecting people around us and damaging our relationships.

And Kay herself was portrayed as a being torn apart by some basic emotions.

Some emotions help me, some emotions try to hold me back.

The giant creature of self-doubt keeps telling Kay how worthless she is and that she should surrender.

Just like in real life, self-doubt gets in the way and seems impossible to overcome.

Beating overbearing self-doubt is a time-consuming process.

But in the game, you can slowly taper off, transforming self-doubt into healthy skepticism, and eventually trusting the advice of that emotion.

"Self-destruction" will also appear

It's a giant creature that always hides near the surface of the water.

"Self-destruction" is actually the main enemy in this game, and it's always plotting to drown you in tears.

But even if the creature tries to drown you, at some point before that, you'll wake up and have another chance to move forward.

What we wanted to show is that everyone goes through hardships in life.

At least if you try to get up and move on, there's a pretty good chance you'll get out of this uphill battle, one step at a time.

Joy is hard for Kay to hold and touch.

always far away

We portrayed Joy as a child's version of Kay, wearing a yellow raincoat and not daunted by a sea of ​​tears.

But joy can also turn into obsession, and it can make Kay suffer, like when she starts obsessing over her boyfriend.

Joy returns to normal when Kay realizes that her happiness depends on herself, not on anyone else.

Our monsters are so huge and terrifying, but if you get out of the way of resisting them and approach them, you'll soon find out they're not monsters, they're just weak beings overwhelmed by what life throws at them.

All of these feelings -- self-doubt, even self-destruction -- don't completely disappear in this game.

The important thing is not just to pursue joy and happiness, but to accept and balance all your emotions, to learn to be okay when things aren't okay.

Everyone has their own story of loneliness that they want someone to hear.

I realized that everything changed

I became much more open to my emotions and much more focused on my private life, with my friends and family.

Right when we released this game, thousands of fans messaged us, told us their stories, told us they weren't alone anymore, because they played our game.

Many people told me that they felt hopeful, and that for the first time in decades they felt optimistic about their future.

A lot of people told me they were thinking about going to therapy because playing this game gave them hope that they could overcome their suffering.

This game isn't therapy, it wasn't made for that purpose

It's just me and my friends sharing our stories in what we think of as art, video games.

But we're so grateful for each and every message that you said it made you feel better, even though we just shared our stories.

Therefore

I haven't quite overcome my urge to help.

But I don't want to overcome it anymore

I love it

What I needed was to keep it to a healthy level, one that no longer got in the way of building deeper relationships, but one that helped me connect with people around me.

So if you have a monster born of negative emotions living in your mind, don't just aim to defeat that monster, but also understand that we humans are complex beings.

What parts of your life are big and what are you lacking?

What emotions do you rarely feel? Maybe you feel them too strongly and are trying to suppress them.

Above all, it's important to understand that each one of a wide range of emotions and suffering is what makes us who we are as human beings.

thank you

(applause)

In 1990, the Italian government asked top engineers to help stabilize the Leaning Tower of Pisa.

After many attempts to straighten the tower over its 800-year history, the team's computational numerical models reveal the urgency of the situation.

They expected the tower to fall if it tilted 5.44 degrees, but now it tilted 5.5 degrees.

No one knew how the towers were still standing, but the danger was clear, and they urgently needed to solve a problem that had plagued engineers for hundreds of years.

To understand this situation, it's helpful to know why the tower leaned in the first place.

In the 12th century, the wealthy coastal Republic of Pisa set out to turn its cathedral square into a gorgeous landmark.

Workers decorated and expanded the existing church, and built a baptistery with a large dome on the square.

In 1173 he began the construction of a free-standing bell tower (aka bell tower).

The engineers and architects who gathered at that time were experts in their craft.

But for all the engineering knowledge they had, they knew very little about the land they were building on.

The name Pisa comes from the Greek word for "marsh," which was a fitting description of the clay, mud, and wet sand beneath the city.

The ancient Romans responded to similar conditions by erecting huge stone pillars called piles on the stable bedrock of the earth.

But the tower's architects thought that a three-meter foundation pile would be enough for a relatively short structure.

Unfortunately, in less than five years, the south side of the tower had already sunk underground.

A foundation that would move like this would normally have been a fatal flaw.

If the workmen had added more weight, the pressure from the upper floors would have caused the structure to sink and become fatally slanted.

But in Pisa, the hostilities dragged on, and when the fourth floor was reached, construction was halted for nearly 100 years.

This long hiatus allowed the soil to harden, and when construction resumed in 1272, the foundations stood on slightly more stable foundations.

Under the direction of architect Giovanni De Simone, the workmen raised only the south side of the next few floors to compensate for the tower's slight inclination.

But the extra masonry on one side caused that side to sink even deeper.

By the time we finished building the 7th floor and the bell room, the slope was 1.6 degrees.

For hundreds of years, engineers have experimented with countermeasures against tilting.

In 1838, a passage was dug around the base to investigate the sunken foundation.

But removing the supporting sand made it steeper.

In 1935, an Italian engineering association poured mortar to strengthen the foundation.

But the mortar doesn't spread evenly across the foundation, and it sinks again very quickly.

All these failed attempts, combined with the continued subsidence of the foundation, brought the tower to the brink of collapse.

And without precise knowledge of soil composition, engineers couldn't know the exact angle at which the tower collapsed, nor could they devise a way to stop it from tilting.

In the years after World War II, researchers developed tests to identify its unknown value.

And in the 1970s, engineers calculated the leaning tower's center of gravity.

With this data and new computational techniques, engineers were able to model the consistency of the soil, the tilt of the tower, the amount of excavation required for the tower to stay.

In 1992, the team dug a hole diagonally and removed 38 cubic meters of dirt from the north side of the tower.

Then, after temporarily balancing the building with 600 tons of lead ingots, they anchored the foundation with steel cables.

More than six centuries have passed since its construction, and the tower is finally straight, but it is tilted by about 4 degrees.

No one wants the tower to fall, but they didn't want to lose the most famous feature of the historic building.

Today, the tower stands about 55 to 56 meters high and will remain a stable, imperfect monument of beauty for at least 300 years.

During the First World War, the most feared thing in trench warfare was a yellow poisonous gas called mustard gas.

Unfortunately, the exposure made it difficult to breathe, caused chemical burns to the eyes, and caused large blisters on the exposed skin.

Scientists have tried their best to develop an antidote to this brutal weapon.

In the process, we discovered that the poisonous gas destroyed the bone marrow, and the gassed soldiers stopped producing blood cells.

So the poison gas was terrible, but it gave scientists a clue.

Both cancer cells and myeloid cells are characterized by rapid division.

So a brutal example of war might be a winner in the fight against cancer.

Scientists in the 1930s tested this idea by injecting a compound isolated from mustard gas into the veins of cancer patients.

It took time and trial and error to find a treatment that would do more harm than good, but at the end of World War II, the first known chemotherapeutic drug was discovered.

Today there are over 100

Chemotherapy drugs are given in the form of tablets or injections, and they use compounds that are toxic to living cells, called "cytotoxins."

Essentially, these drugs harm every cell in the body to some degree, even healthy cells.

But it's the rapidly dividing cells that are characteristic of cancer that have the most potent effects of these drugs.

For example, let's take the first chemotherapeutic drug still in use today, called an alkylating agent.

When chemotherapeutic drugs are injected into the bloodstream, they are distributed throughout the body's cells.

Once inside the cell, the drug damages the constituent molecules of the DNA double helix as it exposes its DNA as it replicates. Unless the damage is repaired, the cell can die.

Because cancer cells replicate so rapidly, they take up high concentrations of alkylating agents, and their DNA is repeatedly bombarded and rarely repaired.

So, cancer cells die more frequently than normal cells, which have time to heal from DNA damage and don't accumulate the same concentration of alkylating agents.

There are also microtubule-stabilizing agents that are used in chemotherapy.

Cells have microtubules that polymerize and depolymerize, which are necessary for cell division and DNA replication.

Microtubule stabilizers prevent microtubules from depolymerizing once inside the cell.

The cell cannot complete replication and dies.

These are just two of the six chemotherapy drugs currently used to treat cancer.

But despite all of its great therapeutic benefits, chemotherapy has one major drawback: it damages healthy cells in the body that normally regenerate rapidly.

That means your hair follicles, the cells in your mouth, the mucous membranes of your digestive system, your reproductive system, and your bone marrow are being attacked like cancer.

Like cancer cells, the rapid production of these normal cells means that they are taking up nutrients more frequently, making them more susceptible to chemotherapy drugs.

Chemotherapy has some common side effects, such as hair loss, fatigue, infertility, nausea, and vomiting.

Strong anti-nausea medications are usually prescribed to reduce these side effects.

For hair removal, a device called a cooling cap lowers the temperature of the head and constricts blood vessels to limit the amount of chemotherapy drugs that reach the cells in the hair follicle.

And at the end of the course of chemotherapy, the normal tissue badly affected by the drugs recovers and begins to regenerate normally.

In 2018 alone, 17 million people worldwide were diagnosed with cancer.

But chemotherapy and other treatments have changed the outlook for many people's recovery.

For example, about 95 percent of patients with testicular cancer actually survive the cancer, thanks to better treatments.

Even those with acute myeloid leukemia, a highly aggressive blood cancer, 60% of those under the age of 60 who receive chemotherapy are in remission after the first course.

Researchers are also developing more precise therapies that target only cancer cells.

It improves survival with less harm to healthy tissue, and it improves chemotherapy, one of the leading modalities for cancer treatment.

i'm not a cook at all

I won't be doing a cooking demonstration, so don't worry.

But there's something I want to talk to you about, and I think it's very important to all of you.

Speaking of bread, bread is a common commodity, a basic essential staple.

And hardly a day goes by without eating some bread

Bread is common unless you're on a California low-carb diet.

Not only as a daily meal in the West

As I'm about to tell you, it's a cornerstone of modern life.

Now, I would like to bake bread for you all.

In the meantime, I'll talk to you. It may be confusing, but please bear with me.

First of all, I would like to ask you to participate

Here are two loaves of bread

I was told that a loaf was the normal stuff you'd find in a supermarket, white bread, prepackaged, and called Wonderbread.

(Laughter) I didn't know that name until I came here.

And this other, mostly whole wheat, homemade bread made in a small bakery.

now, please raise your hand

Who prefers whole wheat bread?

Let's ask a different question. Does anyone prefer Wonderbread?

(Laughter) Two hesitant men raising their hands.

(Laughter) Okay, so the question is, why do the majority prefer whole wheat bread?

I think it's because we think whole wheat bread is real.

It's about the traditional way of life

maybe a more genuine and honest way

This is a photo of Tuscany, Italy, looking at this place, we think that agriculture is still beautiful,

I feel that life is really beautiful.

And I think this place has good taste and tradition.

Why do you have such an image?

Why does whole wheat bread feel more authentic than white bread?

I think it has a lot to do with history

For the first 10,000 years of farming, in fact, most of our ancestors were either farmers or were closely involved in food production.

So we have this mythical image of old country life.

Artwork helps keep that image alive

it was a mythical past

Of course, the reality is quite different.

These poor farmers used their hands or animals to plow the land and grow crops, yielding yields comparable to today's poorest farmers in West Africa.

But for some reason, in the last few centuries, or decades, we've started to have a mythical rural image of agriculture in the past.

The Industrial Revolution came just 200 years ago.

And so, while I'm making this bread for you, the important thing to understand is what the revolution did for us.

The Industrial Revolution brought capabilities such as mechanization and chemical fertilizers

In fact they also increased yields

The nasty work of harvesting beans by hand can now be done by machines.

I'll talk about it later, but these are all real, big improvements.

Of course, especially over the last decade, we've successfully spread food around the world through dense supermarket chains and global trade.

What that means is that now you're eating food from all over the world.

that's the reality of modern life

Now you may prefer this whole wheat bread

Please excuse my hand, but this is what it looks like

But it's this white Wonderbread that really stands out historically as a modern bread.

Don't hate white bread, because I really think white bread is a symbol of how bread and food has become plentiful and affordable for all.

We don't really notice it, but it's something that deserves attention.

white bread changed the world

This little bland bread, and this bread with so many problems, changed the world.

so what's going on

It's best to look at a few quick stats

With the advent of the industrial revolution, and with the modernization of agriculture, over the decades since the 1960s, per capita food availability in the world has increased by 25 percent.

Meanwhile, the world population has doubled

What that means is that we now have access to more food than ever before in human history.

It's a direct result of successful increases in production scale and output.

And this is true in all countries, including the so-called developing countries.

So what happened to our bread?

More food means we've also been able to reduce the number of farmers, which in high-income countries averages less than 5 percent of the population.

Only 1% of Americans are farmers

So we can be free from farming and do other things -- we can attend TED conferences without worrying about food.

Historically, it's a very rare situation.

Never before has it been the responsibility of so few people to feed the world.

And never before has so many people gone unaware of that fact.

Food is plentiful and bread is cheaper

As bread became cheaper, bread producers decided to mix things up.

sugar

I added raisins, oil, milk, and many other things, from simple to caloric, to make bread.

And today, bread is associated with obesity, which is very strange.

Bread is the most basic and essential food that we have been eating for tens of thousands of years.

Wheat is the most important grain, the first grain cultivated by man, and the most important grain we grow today.

But now, strangely enough, bread is equated with high-calorie content.

Not just in this country, but all over the world, we have this image.

Bread has also spread to tropical countries, where middle-class people now eat French rolls and hamburgers, and commuters find bread more affordable than rice or cassava.

So bread has become a staple food, a source of calories, associated with obesity and considered a source of modernity in modern life.

And in many countries the whiter the bread the better

This is the story of bread as we know it

But of course, there's a price to pay for the mass production of the big change.

And when you get big, you've destroyed a lot of landscape, you've destroyed biodiversity. A lonely emu in a soybean field in the Cerrado, Brazil.

The damage is horrendous: water pollution, destruction of all habitats you know.

All we have to do now is get back to understanding what food is.

And this is what I want to ask you

How many of you can distinguish wheat from other grains?

How many people can make bread? This way, without using a bread machine or using bagged condiments

Can you make bread? Do you know how much a loaf of bread actually costs?

We don't know what the bread we're eating really looks like.

In fact, not many people know that bread was not originally made in Europe.

Bread was first made by farmers, especially in Iraq and Syria.

The second small ear from the left is actually the ancestor of wheat.

This is the beginning of bread, and this is where farmers 10,000 years ago started making bread, and it continues to this day.

Now, it's no surprise that this mass production and scale has spawned a resistance movement, and it's a big movement here in California.

The resistance movement is "Let's go back here

Let's go back to traditional farming

Let's go back to the small farmer's market, let's go back to the little bakery,' it's great.

Don't you agree with me?

To a traditional scene like Tuscany, I would love to go back to the gastronomy of eating good food.

but this is a fallacy

We think like this because we have idealized the forgotten past.

If we go back in time and stick to traditional small-scale farming, we are actually driving out poor farmers. I have lived with these poor farmers for many years, and they work without electricity and water to be productive.

Poor farmers want a way to increase production, something that makes the soil more fertile, something that gets their crops safely to market.

I don't think we can solve the world's food problems just by going smaller.

It's a luxury solution for those who want to cover the cost and can afford it.

We don't want this poor woman working in a land like this.

If we go back to small-scale production, as we see here, and eat only locally grown food, poor Hans Rosling and others can't even eat oranges anymore, because Scandinavia doesn't grow oranges.

So local food production is no longer an option.

But I also don't want to push rural people into poverty.

And I don't want to starve the urban poor.

So I have to look for other solutions

One of the problems is that global food production needs to increase rapidly -- it will need to double by 2030.

In fact, the main factor is meat

Especially in Southeast Asia and China, it's raising the price of grain.

Animal protein still needed

We'll talk about potential replacements for that another time.

What should I do?

Can we find a solution to increase production?

It can be done, but it requires mechanization.

Therefore, I would really like to appeal

However, I strongly believe that we cannot ask small farmers to sow crops, plow the land to pull out weeds, and crawl 150,000 times on all fours to grow one hectare of rice.

You can't make people work under these conditions.

We need clever, conservative mechanization, like avoiding the problems that happened with large-scale mechanization.

What should I do now?

We have to feed 3 billion people in cities

We don't have small farmers markets in cities, so we don't do it through small farmers markets.

They live on low wages and benefit from cheap, affordable, safe and varied food.

This is what we should aim for in the next 20 to 30 years.

But there are some solutions

Let's say something a little more conceptual. If you think of science as controlling the production process, and if you look at the scale on the horizontal axis,

As you can see, we started with a small, less controlled, traditional farm on the bottom left.

That turned into a massive and highly controlled one on the right

My ideal is to keep the science alive, and even use more science, but at a local scale (middle), not just at the size of the field, but at the whole food network.

this is the direction we should go

It doesn't exactly apply to crops, but the ultimate direction is a horticultural system (vegetables, etc.) in the top left of the screen, which has a completely closed ecosystem.

So we have to think about agricultural science in a different way.

To most people, and I don't think many of you are here, many farmers have a bad image of polluting and destroying the environment on a large scale.

but not necessarily

Humanity needs more science, and better science

What science can we use?

The first thing that comes to my mind is that we can do much better with existing technology.

Use bioengineering for convenience, especially for pest and disease resistance.

Others could use, say, a robot that recognizes weeds at a resolution of 1.27 centimeters.

there's a smarter way to irrigate

If you don't want the water to flow, you don't have to.

And we have to be very sober about the relative merits of small versus large.

We need to consider that land is multi-functional.

Land has many functions

There are various methods that we must use, such as residential, natural, and agricultural.

Livestock also needs to be revisited

Become local and become an urban food system

I want to see a pond with fish swimming in the parking lot or basement

I think it would be nice if the gardens and greenhouses were at the top of the living space.

We want to heat our living spaces using the energy we get from those greenhouses, or from fermenting grains.

There are many ways to make it possible

You can't solve the food problem with bio-agriculture.

but we can do more

And what I really want to ask you most, whether you are going back to your own country or staying in this country, is to ask the government to implement an integrated food policy.

Food is as important as energy, security and the environment

because everything is interconnected

Integrated food policies are possible, combining these functions in densely populated areas, such as where I live in the Dutch Delta.

So this isn't sci-fi, even in a social sense, you can combine things to make the countryside more accessible, for example, to provide homes for chronically ill patients.

there's a lot you can do

But there's something you all have to do. It's not enough to say, "Let's bring more daring science into agriculture."

you have to go back and think about your own food chain

Talk to the Farmers When was the last time you visited a farm and talked to them?

Please talk to the people at the restaurant.

And understand where you are on the food chain and where your food comes from.

Realize that you are part of this gigantic chain of events.

The food chain leaves you free to do other things

Especially for me, food is respect

What I mean by respect is that when you eat food, you understand that many people are still struggling to get their daily food.

And there's no ethical justification for the simplistic idea that we sometimes come up with that we can solve it by hand-crafting everything.

We need to lift the poor who are short of their daily food from poverty.

We should make them proud to be farmers, because they are the reason we survive.

As I said earlier, never before has food responsibility fallen in the hands of so few people.

And never before have we taken that luxury for granted, because food is so cheap now.

And I don't think anyone has explained it better than the person I'm about to introduce you to, that food is, after all, sacred in our own traditions.

I'm not talking about nutrients or calories

It's about sharing, it's about integrity, it's about agency.

It was Mahatma Gandhi who said this in beautiful words, 75 years ago he said about bread.

He didn't talk about rice. In India, he said, "God appears as bread to those who have to go without two meals a day."

So the bread is about to be baked, but I'll try not to burn myself.

Please let me distribute this to the people in the front row.

let me share some food

take my bread

And eat and try

some bread please

I want you to think that each bite connects you to the past and to the future. To the unknown farmers who first planted the seeds of the first wheat. To the farmers who make this bread. You don't even know who they are.

All your meals are made with ingredients from all over the world.

All food is a great privilege, we can eat it, and we don't have to struggle to get it every day.

And that's what's unique, evolutionarily speaking.

This has never happened before

so please taste the bread

Eat your bread and feel privileged

thank you for listening

(applause)

I'm sometimes asked for strange talks

I was once asked to speak to people wearing costumes at a sporting event.

Unfortunately I couldn't go

At least most of these people have turned themselves into costumed animals at sporting events for a living.

I thought you knew what it was like to entertain an audience.

Shortly after that, I was asked to speak at a convention of people making balloon animals.

I couldn't go this time either, but it was a fascinating group.They make animals out of balloons.

The participants ranged from people making gospel animals to people making erotic animals.

Occasional problems, but not too much

What I can say about these people is that they know what they do for a living.

making animals out of balloons

But what do we do for a living?

What do the people watching this do every day?

Isn't that what we're doing is trying to change everything?

From the current situation, find out what worries you, what needs to be improved, and what you don't feel comfortable with if you don't change it, and change it.

We are trying to change something big, lasting, and important.

I don't think of it that way

Also, we haven't taken the time to think about what the process of change looks like.

I have been studying it for several years

I'm here today to talk about the results.

First, it's about Nathan Winograd.

Nathan was number 2 at the San Francisco Animal Abuse Prevention Association (SCPA)

In case you didn't know, the SPCA was originally set up to kill dogs and cats.

The city issued a charter to the SCPA to remove stray animals from the city and destroy them.

Four million cats and dogs were killed each year within 24 hours of being rescued in the city.

Nathan and his superiors couldn't bear to see this.

So they set out to make San Francisco a "kill-free" city, where all dogs and cats across the city were given to foster parents instead of being killed unless they were sick or in danger.

everyone said it was impossible

Nathan and his boss went to city council to try to change the regulations.

SPCAs and human rights groups from all over the country flew to San Francisco to testify against Nathan and others, saying, "It hurts the whole movement and it's inhumane."

They were tenacious. Nathan reached out directly to the community.

We partnered with people who were interested in this issue, people who weren't experts, but who were passionate about it.

And within just a couple of years, San Francisco became the first kill-free city, not even in the red, with full community support.

Nathan left and went to Tompkins County, New York, a place that was strangely different from San Francisco in the same United States. So he did it again.

He started out as a pretend dogcatcher and completely transformed the community.

He then went to North Carolina and did the same thing again.

Went to Reno and did it again

When I think of what Nathan did and what people here do, I think of ideas.

The idea that creates the idea, the idea that spreads the idea, it's more behind.

I don't know if you've ever been to a Jewish wedding, but they take out a light bulb and smash it.

There are many reasons and anecdotes about

One of them is to "show change" before and after

a particular moment in history

I believe that we are now at the very moment when the process of generating, spreading, and establishing ideas is about to change.

We started with the idea of ​​a "factory," that if we had a factory efficient enough to mass-produce change, we could change the world.

Then we went to the idea of ​​"television." If you had a big mouth, and you could be on TV multiple times, and you could run enough ads, you could win.

Now we're in a new model of leadership, where it's not money or the power that drives change, it's leadership.

Let's think about these three cycles, first the factory cycle.

Henry Ford had a brilliant idea

Now you can hire a man who used to pay 50 cents a day for five dollars a day.

Because we were able to build an efficient factory.

That advantage allowed us to build a lot of cars.

You can make a lot of changes, make a way

can change the structure of entire nations

The essence of what we're doing here is that you always need cheaper labor, faster machines.

The problem is that we are losing both

Easier Labor, Faster Machines

"This light will never turn green": (Laughter) Okay, let's switch gears for a moment.

If you have a good idea, spread it around the world

i have a better strategy

If I have enough money to tell a lot of people, I'll sell it."

And advertising creates a whole new industry.

Advertise your baby if you want

Other Ads Have Babies

If the baby doesn't work, send a doctor

But be careful

One advertisement is placed side by side so that the ad next to it says the opposite.

(Laughter) In this model, you have to act like a king.

You're in charge, tell everyone what to do next.

Just draw a diagram and you're here and throw it out into the world

This method of "mass marketing" requires an "average idea" because it's aimed at the "mass", and it requires a lot of advertising.

What we do as spammers is hypnotize people into buying ideas.

The problem is that this is no longer working

(Laughter) But we have some very good news just around the corner.

That's the "tribal" idea

"Tribe" is a very simple concept that's been around for 50,000 years.

to lead and connect people with ideas

this is what people always want

Many people are familiar with spiritual tribes, or association tribes, workplace tribes, community tribes, etc.

But now, thanks to the explosion of the Internet and mass media, and all the other things that are happening in societies around the world, tribes have become ubiquitous.

It was thought that the Internet would homogenize the whole by connecting everything.

Instead, we made it possible to create interest silos (towers)

For example, there is a group of women with red hats.

There is also a group of "red hat triathletes"

"Organized Army"

There are also “unorganized forces”

If there is a group of "white hat cookers"

There is also a group of "white hat sailors"

And the point is, you can also find a "Ukrainian Folk Dance" group and connect with it, just because you want to connect.

Because people on the edge can find each other and go somewhere together

Every city has a volunteer fire brigade, and they understand this way of thinking.

(Laughter) This is a genuine, untouched photo.

A firefighter acquaintance said this was not uncommon.

Firefighters take a building that they plan to demolish for training, set it on fire, and then put it out.

But before that, I will definitely take a commemorative photo.

(Laughter) The pirate tribe is fascinating.

I have my own flag and I'm wearing an eyepatch

If you run into someone from the tribe, you'll know right away

And what I found was that it wasn't the money or the factories, it was this tribe that brought many people into unity to change the world and change politics.

Not because we force people to do things they don't want, but because people want to connect.

What we all do for a living is to find something worth changing, to bring tribes together, to put tribes together, to spread ideas, and to spread ideas.

It becomes a group much larger than ourselves, a movement.

When Al Gore set out to change the world again, he didn't do it alone.

didn't run a lot of ads

he created the movement

Thousands of people across the country are presenting for Al, because he can't be in 100, 200, 500 towns every night.

not everyone needs

Kevin Kelley told me tonight, I don't know, I don't know, you just need a thousand real fans, a thousand enthusiasts, they'll approach you next time, next time, next time, and so on.

So you're the idea, the product, the movement, it doesn't have to be for everyone, it doesn't have to be for the masses.

The key is finding true followers.

When you hear what I've said so far, people tend to think, "Wait a minute, I just can't be that kind of leader."

There are two leaders here, they have very little in common.

they're the same age but that's it

What they've done is create different ways for you to move forward with technology, each in its own way.

So some people invite people to the team

Different people are calling to the other team

It also tells us how we make decisions when creating products and services.

this is one of my favorite gadgets

But shamefully, this gadget is not designed to help authors make movements.

What if when you used this Kindle, you could see the comments, quotes, notes, etc. of someone who read the same book you are reading on the spot?

Or from your reading group, friends, or people in various circles.

What if authors and people with ideas could organize people who have something to say with version 2 coming out on Monday?

There are so many mechanics that I would like to share with you.

Let's see some of them

The Beatles Didn't Invent Teenagers

I was just trying to lead

What most movements, most leaders, do is find groups that have something to say but are unrelated to each other.

The video Meatrix, made by Diane Hutz, has been running around the internet with videos of how domesticated animals are treated, but she didn't create the idea of ​​being a vegan.

I didn't come up with the idea to pay attention to this issue.

She just organized people and helped it become a movement.

Hugo Chavez didn't create a disaffected middle and lower class in Venezuela, he simply led it.

Bob Marley didn't create a Rastafarian

I just stood up and said "Follow me"

Derek Silvers created "CD Baby" to help indie musicians have a place to sell their music without having to sell themselves, a place where they could connect with each other in their original mission.

What these people have in common is that they are all heretics

The maverick sees the situation and says, "It can't be this way. I can't stand it.

I promise to stand up and move the status quo forward."

"I saw the situation, I don't like it"

Rather than read all these little rules and follow them one by one Or half-asleep sleepwalker Bow your head like a sheep in a sheep farm And do what you're told Sometimes someone stands up and says, "I don't like it."

"This is important

We have to organize this well.”

Not everyone does, and not everyone has to

It just takes a few people (Laughter) to see the rules, realize that it doesn't matter, and know how much they want to connect.

Tony Shea doesn't run a shoe store

Zappos is not a shoe store

Zappos is the only place in the world where shoe freaks can come together to discover each other, talk about their passions, and connect with people who care more about customer service than making a little bucks.

It can be as mundane as a shoe, or as big as overthrowing a government.

Both have the same behavior

As Geraldine Carter discovered, all it takes is "I can't do this alone, but if I

If I could gather others on my Climb and Ride, we could do something we all want."

we just need a leader

Michelle Kaufman is a pioneer in developing eco-friendly architecture.

She didn't do it while building houses one by one

She told her story to anyone who wanted to hear her story.

By connecting tribes and people who strongly want to connect

By leading a movement By making a difference

It keeps repeating

So I'm going to ask you three questions

First: Who exactly are you disturbing?

If you haven't upset anyone, you haven't changed the status quo

Second: who are you connected to?

For many people, that's what life means, the connection that comes between people.

Third: Who are you leading?

Focus on the part. It's not the structure of what you're making, it's the person leading it, the lead, where change happens.

So Tom's cobbler Blake came up with a simple idea.

What if someone buys these shoes and I give them to someone else who has never owned shoes?

This isn't about winning shelf space at Neiman Marcus

This is the story of a product with a story

And when you walk in these special shoes, someone says, "What's that?"

You'll tell the story on behalf of the people who got the shoes, instead of Blake.

And suddenly it's not just about shoes or 100 shoes

I'm talking about thousands of shoes

My friend Red Maxwell has been battling juvenile-onset diabetes for the last ten years.

Instead of fighting against disease-fighting organizations, he fights with them, leads them, connects them, and challenges the status quo because that's what's important to him.

Those around him need cooperation

We need leaders, and that's where change happens.

You don't need forgiveness to lead

But if you need it, here it is: they and we are waiting for you to tell us where to go next.

So there is one thing all leaders have in common. First, they challenge the status quo.

challenge what is there now

Second, they create culture

A secret word, a seven-second handshake, a way to know if you're a friend or not.

They have curiosity Curiosity within the tribe Curiosity to outsiders They ask

they connect people with others

Do you know what people want most?

It is to make people feel that they are lonely when they are not there.

From the day I left,

I want you to be sad when I'm gone

tribal leaders can

The great thing is that all tribal leaders have charisma, but you don't need charisma to be a leader.

Being a leader gives you charisma

If you study successful leaders, you'll find that leading creates charisma.

Finally they commit

They are committed to the cause, they are committed to the tribe

I commit to those who are there

I want you to do something

Please think before you reject it as too much

It only takes 24 hours, it's creating a movement

It's important, start doing it, everyone wants it

Thank you for your attention

(applause)

Let's take you on a journey in a hurry

I'll take you to lesser-visited places around the world to explain my wish.

When I was 24, Kate Stoor and I created an organization that involved architects and designers in humanitarian work, not just dealing with natural disasters, but structural issues.

I realized that where resources and expertise are scarce, innovative and sustainable design can make a big difference in people's lives.

This is where it all started -- from my early days as an architect, I've been interested in designing for society and how to influence society.

But when I was studying architecture, that thought seemed strange.

Many architects thought of design as creating a piece of art that they wanted, whereas I felt that design was something that either improved or harmed the area in which it was designed.

So we design not just for the people who live in the building and the people who use it, but for the community as a whole.

In 1999 we started to address the housing crisis for refugees returning to Kosovo.

I'm in my mid-twenties and I didn't know what I was doing.

So I called them out, and to my surprise, within two months, there were hundreds of people from all over the world.

Some prototypes have been built and some of the ideas are being tested.

Two years later, I started a project to develop mobile clinics in sub-Saharan Africa to combat the HIV/AIDS epidemic.

It had 550 participants from 53 countries.

Designers from all over the world participate

After that, I held an exhibition of my work.

2004 was a tipping point for us.

I started dealing with natural disasters, started working in Bam, Iran, and followed up on work in Africa.

Working in the United States, many people think of foreign faces when they think of poverty.

I live in Bozeman, Montana, and the Indian plains to the north, or down to Alabama and Mississippi, are far worse places than any developing country I've seen, even before Katrina.

So we worked in poor urban areas and other parts of the country, and we have other projects.

mother nature kicked us in the ass in 2005

2005 was a terrible year when it came to natural disasters.

Thanks to the Internet, I was able to connect to blogs and things like that, and literally within hours of the tsunami, the fundraising started, I got involved, and I started working with the locals.

In the first two days, we received 4,000 emails from people seeking help on two laptops.

We participated in the project there

Of course, this year, while dealing with Katrina, I also followed up on rebuilding work.

Here is an overview

In 2004, we couldn't keep up with the number of people we wanted to help and the number of requests we received.

Requests were coming to laptops and mobile phones

So we basically decided to apply the open source model of doing business, where anyone, anywhere in the world, could set up a local chapter and get involved in local issues.

I don't believe in utopia

All problems and their solutions are region-specific.

If you think about it, people who live in Mississippi should know more about Mississippi than I do.

As a result of using online tools, 40 chapters have been set up, and thousands of architects from 104 countries have joined us.

Main point -- I'm sorry, I don't usually wear a suit, and I knew I'd take it off in the middle.

So let's hurry up, and in the last seven years, we've gone beyond non-profit.

It's become a grassroots movement of socially responsible designers, all of whom believe that the world is getting smaller and smaller and that we have the opportunity, not the responsibility, to make a difference.

(Laughter) Add this to your time.

And if you don't know, we have a website with thousands of designers working all over the world and a staff of three people.

Do what everyone told you couldn't do

I did it, so innocence is good too

7 years later Supporting and promoting We have developed to the point where we can realize it We "support" excellent design

Through student workshops, lectures, public forums, editorials, books on humanitarian work, but also dealing with disaster mitigation and public policy.

We could talk about FEMA, but that's another story.

Encourage communities and NGOs to develop ideas while holding open source design competitions

Pair link design and community

And "doing" -- actually going there and doing the work, because even if you invent it, it's never real until it's built.

If you design to make change, it's important to actually make that change.

I will show you some selected projects

Kosovo Kosovo in 1999 We held an open design competition

It led to all kinds of ideas

This isn't an emergency shelter, it's temporary housing that will last five to 10 years and will be built next to the land where the residents used to live so they can rebuild their homes.

Instead of forcing buildings on locals, we gave them the tools and the space to rebuild and regrow as they wished.

From the sublime to the silly, it worked.

This is an inflatable hemp house built and working.

This is a shipping container, built and working.

And then there's a lot of ideas, things that aren't exactly architecture, like the issue of self-government, or the idea of ​​building communities through complex networks.

So we hired not just designers, but professionals in all kinds of technology.

Using rubble from destroyed houses to build new houses

Adopting the straw wall construction method, which has excellent heat insulation effect

Then something amazing happened in 1999.

I went to Africa with the intention of looking at the housing problem.

Within three days, I realized that the problem wasn't housing, it was the spreading HIV/AIDS epidemic.

I didn't hear this from the doctor, but from the villager we stayed with.

So instead of having people walk 10 or 15 kilometers to the doctor, we came up with the brilliant idea of ​​bringing the doctor.

We started to get the medical community involved, and this epiphany made us proud that we were geniuses -- a brilliant idea to deploy mobile clinics across sub-Saharan Africa.

So the medical community said, "I know, I've been saying this for the last 10 years.

I just didn't know how to say it."

So, in a way, we took a need and offered a solution.

and also offered all kinds of ideas,

This is my personal favorite, because the idea is that architecture isn't just about solutions, it's about raising awareness.

This is a kenaf clinic. Seeds are sown on the parcel of land.

Kenaf grows over 4 meters in a month

In the fourth week, the doctor comes and cuts the middle part and puts a tent roof on top.When the doctor is done treating the patients and villagers, he cuts off the clinic and eats it.

(Laughter) If you have AIDS, you need to keep your nutrition up, so the idea is that nutrition is just as important as getting antiretroviral therapy.

this is a neat solution

This is also a great idea. The idea isn't just a clinic -- it's a community center.

This can be a self-sustaining project that looks at the mechanics of trade routes and economic powerhouses in a community.

All of these projects are sustainable

It's not because I'm an eco-conscious person

To live on $4 a day, you're living for survival, so it has to be sustainable.

We need to know where the energy we use comes from, we need to know where the resources we use come from, and we need to keep maintenance costs down.

This is an economic engine that turns into a movie theater at night.

So this is a community center, not an AIDS clinic.

These ideas became prototypes

See it being built

We have clinics starting this year in Nigeria and Kenya.

From there, I started a project called Syatemba.

It started when communities raised the problem of girls not getting an education.

We work in an area where the HIV/AIDS rate among young women aged 16 to 24 is 50 percent.

It's not because they're deranged, it's because they're ignorant.

So we decided to create a youth sports center that doubles as an HIV/AIDS aid center from a sporting perspective, where the women's coach is a trained doctor.

That's how you slowly build confidence in your health care.

We shortlisted nine designs, and the nine designs were distributed throughout the community, and the community chose the design.

They say, this is our design, not just to engage with the community, but to energize it, and involve them in the rebuilding process.

Here is the final chosen design

Of course, we actually go there and work with the community and the customers.

This is the designer, and he's actually building the first women's soccer team there in Syatenba Kwa-Zulu-Natal.

they speak better than me

Video: "My name is Sisi because I work at the Africa Center.

I'm a consultant for the South African soccer team

Also a Bafana Bafana player

I also play in the Vodacom League with a team called Tembisa, now called Syatemba.

This is home ground."

I'm running out of time, so I'll show you this later.

Chris is looking at me

It was through connections that I met someone who was trying to develop Africa's first telemedicine center in Tanzania.

We literally met about two months ago and already had a design

The team is already there, working in partnership.

This is thanks to the mediation of some TED associates, Cheryl Heller and Andrew Zori, who gave me the opportunity to meet this wonderful African woman.

Construction will begin in June and will be complete by the time TED Global.

Come see us at TED Global

We're probably known for disaster preparedness and development, and we've been involved in a lot of issues, like the tsunami and Hurricane Katrina.

This is an easy-to-assemble $370 shelter

This is a community center designed by the community.

We actually live in the community and work with the residents, so they're part of the design process.

The children actually mapped out where to build the community center, and in the end

Build buildings with us through technical training

this is another school

This is what the United Nations gave these guys for six months -- 12 plastic tarpaulins

This is August and has superseded this

Expected to last 2 years

You can't hear anything when it rains.In summer, the indoor temperature is about 60 degrees.

So when it rains, I try to store water

All schools have very cheap rainwater collection systems.

$5,000 to install rainwater collection for three classes.

I collected this from selling hot chocolate in Atlanta

built by the children's parents

The children are at the construction site

We opened a few weeks ago, and we have 600 kids attending.

(Applause) Disasters can happen anywhere near us.

There were various reports of damage in the news, but there was no good news.

Communities here banded together and refused to just wait

We've mapped out the East Biloxi region, partnering with various organizations and who's going to be involved.

over 1500 volunteers

I studied FEMA regulations and participated in rebuilding and repairing homes without waiting for instructions on how to rebuild.

work with residents to keep them from getting sick

Get them out of the house and this is what they cleaned themselves

House Design This house will start construction in a few weeks.

This is a restored house completed in four days.

This is a utility room for women who need walking assistance

She's 70 and this is what FEMA gave

$600 two days ago

We made a laundry room together

It's done, it's up and running, and she's just starting her business today, washing other people's clothes.

This is Chandra and the Calhoun family, photographer.

Documenting the Lower Ninth for the last 40 years

It's their house. These are the pictures they took.

we are helping them build a new building

Completed projects Projects we supported

Why Don't Aid Groups Do It? This is the United Nations tent

This is the new UN tent introduced this year

It's quick to assemble, it has a lid, and it's an invention.

It took 20 years for this to be designed and used in the field.

When I was 12, this is a problem

luckily we are not alone

Hundreds of architects, designers and inventors around the world have become involved in humanitarian causes.

More hemp houses -- this is said to be a Japanese theme

i don't know if i smoke

It's a grab-and-go clip, designed by someone who said, "All you need is something to attach the membrane structure to the physical support struts."

This man used to be involved in NASA design, and now he's involved in housing.

I'm going to give this a quick introduction, because I think we only have about two minutes left.

All this has been done in the last two years

Traditional methods would take 20 years

This has happened in the last two years -- only selected ones built.

Brazil to India Mexico Alabama China Israel Palestine Vietnam

The average age of the designers who participated in this project was 32 -- that's my age young --

I'm going to stop here for a minute. It's the best toilet in the world designed by Arup right here. If you ever go to India, use this toilet.

(Laughter) Ask Chris Lubukman of Arup.

he will be happy to tell you

The future won't be a city of skyscrapers like New York, but this, people see this as a crisis.

I see many inventors

1 billion people live in abject poverty

i always hear about them

4 billion people live in developing and fragile economies

1 in 7 people live in unplanned settlements

If we don't do anything about the housing crisis, 20 years from now, one-third of the people will be living in unplanned settlements or refugee camps.

How can we improve the living standards of 5 billion people?

with 10 million solutions

So I want to develop a community that embraces innovative, sustainable design that improves the living conditions of all people.

CA: Hold on, is this your TED wish?

CS: This is my TED wish CA: This is his TED wish!

(applause)

We started Humane Building with $700 and a website.

For some reason Chris offered me $100,000

So why can't even this many people do it?

Open source architecture is the way

We have a community of different participants, and we're planning not only inventors and designers, but also funded models.

My role is not a designer, but a conduit between the design world and the humanitarian world.

All we need is to replicate me all over the world 'Cause I've been too busy to sleep for the last seven years

(Laughter) Second, how is this going to turn out?

Designers want to respond to humanitarian crises, but they don't want Western companies to take their ideas and profit from them.

So Creative Commons developed the Developing Countries License.

And this means that the designer -- the Syatemba project that I showed you is the first building to have a Creative Commons license.

As soon as it's built, anyone in Africa or any developing country can take a working blueprint and reproduce it for free.

(Applause) Why don't we give designers these opportunities while protecting their rights?

What we want is a community where we can upload ideas, and these ideas can be tested in earthquakes, floods, all sorts of harsh environments, and that's the point.

Because I don't want to wait for the next Katrina to test if the house works.

It's too late then I need to do it now

We're going to do this on a global scale, this needs to be done in several languages.

When I think of architects, I think of older white people.

I can't see it I can see the faces of the world

So I want everyone on the planet to be a part of this design and development.

Need-Based Competition -- "X-Prize for the 98% Left" might be a good name

We'd also like to see how to broker, how to partner with funding partners, and the idea of ​​integrated manufacturing -- to take the fab lab out into the world.

When I heard that a $100 laptop could help educate every kid, designers around the world should be able to educate every shantytown.

If you put one in every slum

innovation will happen

how developing countries do

It's a reverse-flying innovation adopted by developed countries, as I wrote in Worldchanging.

You learn a lot more in the field than you do here. You learn a lot more in the field than you do here.

Apply and use these ideas

Ideas like this should be applicable and evolveable. They should be developed in every country in the world. They should serve every country in the world. What would it take to do that?

I should have a sheet, but I don't have time to read this.

I'm being dragged down from here

CA: Leave it alone for a while

What is needed? is your knowledge

It requires a lot of computing power, because the idea is that you can connect from laptops all over the world and not only participate in the development of designs, but also use them and participate in design reviews.

Arup engineers are the best in the world, so I want them all over the world to connect and make sure we're on the right track to make it happen.

So I think these -- just to add

I have two laptops and one is this There are 3000 designers registered here What happens if I drop this laptop?

So it's important that these tried-and-true ideas are posted in a way that's easy to use and accessible.

(Laughter) I'm tired of talking about change.

unless you take action

We changed FEMA guidelines, we changed national policy, we changed international reaction -- based on building things.

For me, it's important to create a real conduit for innovation, and that's free innovation.

Like free culture, this is free innovation.

someone said a few years ago

Give points to those who know this

"By 1985, all mankind will be able to live a high standard of living at the expense of no one." He was 25 years too early, now is the time.

thank you

(applause)

(Applause) AIDS was discovered in 1981, the AIDS virus was discovered in 1983.

This Gapminder bubble shows us a look back at how far the AIDS virus spread around the world in 1983.

What we have here is the percentage of infected adults on the vertical axis.

And on the vertical axis is per capita income in dollars.

The size of the bubble, the size of the circle like this, indicates how many people have been infected in each country, and the color indicates which continent that country is on.

Let's start by looking at what the United States looks like in 1983. It still has a very low infection rate, but it has a large population, so it's a fairly large bubble.

I'd say there were quite a few people infected in the United States.

Now let's look at Uganda there

A whopping 5% of the population is infected. It's a very big bubble, even though it was still a small country at the time.

Uganda was probably the most infected country in the world.

So what happened?

Now that you understand how to read the graph, I'm going to show you, in the next 60 seconds, the HIV prevalence in the world.

But wait a minute. I'll show you my new invention

(Laughter) I fixed the laser pointer beam.

(Laughter) (Applause) Okay, let's start!

Uganda and Zimbabwe show rapid gains first

It goes up like this

In Asia, Thailand is the first to be severely infected, with infection rates reaching 1-2%.

And Uganda will start to come back, while Zimbabwe will rise sharply, and in a few years there will be a terrifying rise in South Africa.

Look! India also had a high number of infections, but it's still at a low level.

the same thing is happening here

Uganda is going down, Zimbabwe is going down, Russia has reached 1%.

In the last couple of years, global HIV infections have reached a steady state.

it took 25 years

But steady state doesn't mean it's getting better, it's just that it's stopped getting worse.

Still, albeit at steady state, roughly 1 percent of the world's adult population is HIV-infected.

That's 30 to 40 million people. That's the whole of California. It means everyone is infected, and that's the situation in today's world.

Now let's look at Botswana again

It's an upper-middle income country in southern Africa, it's got a democratic government, it's got a decent economy, and this is what happened there.

It was low at first, then it rose sharply, peaked there in 2003, and now it's going down.

But it's going to go down slowly, because in Botswana, we have a good economy and a good government, so we can treat the infected.

Infected people who get treatment don't die from AIDS

I don't think this ratio will go down, it will survive the next 10 or 20 years.

Therefore, there is a problem with this measurement method.

On the other hand, in the poorer countries of Africa, the low-income countries around here, the infection rate is dropping very quickly, because the infected are still dying.

Despite the generous PEPFAR (US President's Emergency Plan for AIDS Relief), treatment is not reaching everyone: only 60 percent of those treated in poor countries are still on treatment two years later.

Lifelong treatment is not realistic for everyone in the poorest countries.

Of course what's happening now is great.

However, we are now more focused on prevention.

The world can't deal with AIDS well without stopping the epidemic.

Medicine is too expensive -- even if we had a vaccine, even if a more effective vaccine were available, it would be too expensive for the poor.

It's not the medicine itself that's the problem, it's the treatment and care that goes with it.

If you look at this pattern, you can see something immediately. Look at the blue bubble. HIV is said to be very common in Africa.

But the truth is, even in Africa, it's completely different.

You'll find that the countries with the highest HIV prevalence in the world are in Africa, but you know, Senegal, right here, has the same prevalence as the United States.

So is Madagascar, and there are many other African countries that have similar infection rates to the rest of the world.

It's an oversimplification to say there's only one Africa.

we have to stop that way of thinking

It's not respectful, and it's not what smart people think

(Applause) I was fortunate enough to have the opportunity to work in the United States for a time.

It turns out that Salt Lake City and San Francisco are different.

(Laughter) Africa is the same. there is a big difference

So what's causing this? is it war

it's not. look here

Here is the war-torn Congo. 2, 3, 4 percent

Meanwhile peaceful Zambia is here. neighboring country, 15 percent

There are valid studies of refugees from the Congo where the infection rate is two to three percent, whereas in peaceful Zambia it's much higher.

War is terrifying, as many studies show, and rape is terrifying, but that's not the reason for the high infection rates in Africa.

Is it because of poverty?

At a macro level, it would seem that the richer the country, the higher the HIV prevalence.

But that's too simplistic. Now let's look at Tanzania.

Divide Tanzania into 5 income groups From highest to lowest So here we go

The highest incomes, not the richest, but the better ones, and they have the highest rates of HIV.

The difference ranges from 11 percent to 4 percent, and the difference is even greater for women.

Now, there's a lot of what I consider to be good research, and the research that has been done by African institutions and researchers and by international researchers has shown otherwise.

This was a difference within Tanzania

I would like you to see Kenya as well.

kenya is here

divide kenya into regions

look

Within an African country, it ranges from very low level to very high level, and in most parts of Kenya it's very common.

So what exactly is causing this?

Why do some countries have extremely high infection rates?

I agree. Countries with multiple partners, countries with low condom use, and countries with age-gap sex, where older men have sex with younger women.

We find that young women are more infected than young men in many high-infection countries.

So where are such countries located?

Switch the table bubble to a map

Look. Countries with high infection rates account for 4 percent of the world's population, but they account for 50 percent of people living with HIV.

HIV exists worldwide

Look. there are bubbles all over the world

There are many people living with HIV in Brazil.

Not so in Arab countries, but there are a lot of them in Iran

Because there are a lot of heroin addicts and prostitutes.

There are many in India because of its large population.

It's in Southeast Asia, and so are others.

But it's still a part of Africa, and the difficulty is, on the one hand, we shouldn't have a one-size-fits-all view of Africa, and we shouldn't jump to the simple idea of ​​why that's the case.

On the other hand, it's a big deal because there's a scientific consensus about this pattern.

UNAIDS finally released valid data on how HIV spreads.

can be said to be in parallel

A virus of some kind

There may also be other factors that cause the high frequency of transmission.

After all, as long as healthy people are having sex with the opposite sex, the risk of infection from a single sexual intercourse is 1 in 1,000.

Please wait a minute, then don't think about tonight

(Laughter) You could be in a bit of an unlucky situation.

But what we think is more important is concurrency

So what is concurrency?

In my native Sweden, there is no concurrency

we have monogamy in a row

Drink vodka on New Year's Eve and find a new partner for spring

Drink vodka on the eve of summer celebrations and find new mates for autumn

Drink vodka, and so on. do you understand?

There will be many ex-lovers in it

And so chlamydia becomes a terrifying epidemic.

HIV peaks three to six weeks after infection, which is why engaging in multiple sexual intercourse in the same month is what makes HIV transmission so much more dangerous than other infections.

This is probably due to a combination of these

But I'm very happy that we're making progress, and that these charts are getting us closer to reality.

This chart is available for free

UNAIDS data uploaded to Gapminder.com

I hope that in the future, when we tackle various problems in the world, we will use not only our hearts, we will not only use our money, but also our heads.

thank you very much

(applause)

There was a time when simple infections were deadly, but that's a thing of the past now, thanks to the wide availability of antibiotics.

But really, I should say yes, because the overuse of antibiotics these days has led to the resistance of the bacteria that cause these infections.

This must be really scary for everyone.

If we don't change our behavior and stop using antibiotics, the United Nations estimates that by 2050, antimicrobial resistance will be our number one killer.

action must begin

But "where" is the big question, because humans aren't the only ones using antibiotics.

Between 50 and 80 percent of the world's antibiotics are used in animals.

Not everything is dangerous to human health, but if we don't get this under control now, it has a terrifying future for both humans and animals.

First, let me tell you the story.

The first large-scale use of antibiotics was in the early 1950s.

The West got richer, people wanted more animal protein.

When livestock got sick, they could be treated with antibiotics, so they didn't die and grew.

But we soon discovered that adding small doses of antibiotics to the diet all the time could keep animals healthy, promote growth, and reduce feed consumption.

Antibiotics worked, it's really amazing.

As livestock production increased, so did the use of antibiotics around the world.

Unfortunately, so did antibiotic resistance.

Doctors tell us to take all the antibiotics because taking them for too short a time doesn't kill all the bacteria.

And the remaining bacteria become resistant to antibiotics.

It's the same problem when you feed livestock with small doses of antibiotics all the time: it kills some bacteria, but not all.

And that spreads across the industry, accidentally creating a reservoir of resistant strains.

But I hate to say it, but that's not the only problem.

Who else is taking antibiotics?

Fluffy the cat and Rover the dog at home.

(Laughter) Pets are the heaviest users, and it's even more dangerous for pets to use antibiotics for human health.

Combined with living in close proximity to pets, you understand the risk of acquiring resistant strains from your pets.

But how does resistant bacteria in livestock affect you?

Give an example with your data

In European pigs, the proportion of salmonella that is resistant to various antibiotics has gone from less than 1 percent to 60 percent.

This means that, in most cases, antibiotics no longer work against Salmonella.

In addition, there was a strong association between resistant salmonella in pigs and meat products.

Whether it's pork chops, spare ribs or ground beef.

Fortunately, less than 1 percent of raw meat, raw fish, and raw eggs contain salmonella.

And this risk is only when it's not cooked properly.

Yet there are over 100,000 cases of salmonellosis in the EU and over a million cases in the United States.

23,000 people are hospitalized and 450 die each year in the United States.

That death toll is likely to rise as salmonella strains become more resistant to antibiotics.

It's not just when you eat

This year, more than 100 people contracted multidrug-resistant salmonella after feeding their pet dogs pig's ears as treats.

We really need to reduce the use of antibiotics in livestock production.

Luckily this is about to start

The EU was the first region to ban small amounts of antibiotics in food.

Starting in 1999, we gradually reduced the amount of different types of antibiotics available, and in 2006 we banned them entirely.

Antibiotics are allowed only when a veterinarian has diagnosed an animal disease.

Does this look good?

problem solved

but please wait a moment

Once the curtailment program began, it quickly became apparent that the antibiotics had completely masked many inappropriate activities on the farm.

One after another, livestock became ill, and antibiotics were needed to treat them.

So instead of declining, overall antibiotic use increased.

Of course this is no good

Fortunately, the story doesn't end here.

Across the European agricultural sector, we've started exploring, and I think we can all learn lessons from this.

This is also a site that I have been involved with.

I have joined a leading European feed compounder

Feed formulators provide farms with a full range of livestock feeds, but they often also advise on how to raise livestock.

I was motivated to work with my colleagues, veterinarians and, of course, farms to find ways to keep animals healthy and antibiotic-free.

There are three important things to do to go antibiotic-free.

let me introduce the strategy

First, of course, it all starts with hygiene.

By making barns and drinking fountains cleaner, we prevent diseases from emerging and spreading throughout the barn.

And this is also very important, but what I was personally most interested in was improving the diet of livestock, which is nutritional.

Giving a balanced diet is important.

Think about it this way: if humans don't get enough fiber, they don't feel well.

Some of the food you eat isn't digested on your own, but instead fermented by bacteria in your large intestine.

By eating, you feed these microbes.

Early on, young animals were fed diets that were low in fiber, high in starch and protein, and finely ground for easy digestion.

It's like a human eating a hamburger bun or rice or a waffle or a protein bar.

We turned it into a low-protein, high-fiber, coarse-grained diet.

It's like eating whole grains, meat, bean salad, and so on.

This made the livestock's intestinal flora more beneficial, reducing the opportunity for pathogens to flourish.

It may surprise you, but it's not just the composition of food that plays a role, but also its morphology.

In fact, it's a fact that the same diet with a coarser form leads to better digestive development and healthier livestock.

Most importantly, farms have actually started buying these feeds.

Unlike in other parts of the world, farms in Western Europe largely decide where they buy their feed and where they sell their livestock.

So the final product that is sold actually reflects the local needs of the farm.

For example, the protein content of piglet feed is already 10 to 15 percent lower in countries like Germany and the Netherlands, which are eager to cut back on antibiotics, than in countries such as the United Kingdom, which have been slow to embrace the cuts.

But like hygiene, improved nutrition can help, but it doesn't completely prevent you from getting sick.

still need

That's where the microbiome came in.

Making your feed and water more acidic and favorable to beneficial bacteria can help create an environment that deters pathogens.

It's like a fermented food, whether it's yogurt or sauerkraut or salami, it doesn't go bad.

Now, using modern technology, based on things like DNA testing, we know there are many more different microbes out there.

We call this ecosystem the microbiome, but it's much more complex.

It turns out that there are about eight times more bacteria in the gut than there are cells in the human body.

and this is the same for livestock

So if you want to farm animals without antibiotics, you have to make them stronger.

That way, if you get sick, the livestock will tolerate it better.

And a nutribiotic approach using these three, including the host, the nutrient and the microbiome, is the way to do it.

At the farm level, it's a little cheaper to produce livestock with antibiotic feeds or feeds that lead to the use of antibiotics.

But this is only a few percent difference in price at the final consumer level.

It's a very small price difference for middle and high income groups in the world.

It's a really small amount if you're concerned about the health crisis for you and your family.

So which direction do you want to go?

Will we allow antimicrobial resistance to become the number one killer of humans, at a huge financial and personal cost?

Or will we actually start producing antibiotic-free livestock in addition to reducing antibiotic consumption for humans?

It seems to me the obvious choice

But to do that, we need to set reduction targets and follow them around the world.

because there is competition among farmers.

And at the national level, with trade agreements and international markets, cost is very important.

must also be realistic

Achieving this reduction will require farms to invest more in better management and feed.

In addition to legal regulation, the market can play an important role by offering products with reduced or no antibiotics.

As consumer awareness increases, these market forces will increase.

All of the things I've been talking about seem to be beneficial to humans.

What about animals?

it will improve their lives

A healthy, stress-free and happy life

Well with this

Now that we know how to produce meat, eggs and milk with little or no antibiotics, I would argue that such efforts are a small price to pay to avoid a future in which infectious disease is the number one killer.

thank you

(applause)

For years we women have called men out.

it was meant to happen

(Applause) But these days, I think we need to do more.

In the words of my good friend Tony Porter, find a way to call men in.

When I was five years old, I started being sexually abused by my father.

My father came into the room regularly at midnight.

I was insane

Abuse continued until age 10

When I tried to reject him, when I could finally say no, he became violent.

my father called me a fool

treated like a liar

The sexual abuse itself ended when I was 10, but it never really ended.

Because abuse has changed me

I was always filled with anxiety, guilt, and shame, and I didn't know why.

I hated my body, I hated myself, I was prone to sickness, my thinking was weak, I was forgetful.

I was attracted to dangerous types of men and women, and I tolerated, or even invited, mistreatment because that was the form of love my father taught me.

I kept waiting for my father to apologize

Without even pretending like that

died without apology

And in the wake of the recent spate of male celebrity scandals coming to light, I've come to realize that I've never heard a male rape or assault victim publicly apologize to his victim.

It begs the question: What does a true, heartfelt apology look like?

Then strange things started happening

When I started writing, my father's voice started coming through.

My father started telling me what he did and why he did it.

and started apologizing

Nearly 31 years after my father died, I saw the power of apology in the words of my father's death, the words I wrote on his behalf.

An apology is a very solemn oath

I have to expose everything

It takes deep introspection and time.

can't hurry

I've found that there are four stages to an apology, and if you don't mind, let me introduce them here.

The first is to talk in detail about one's actions.

don't muddy your words

Neither "I apologize if I hurt you" nor "I apologize if I sexually abuse you" are not enough.

I have to tell you what really happened

"I walked into your room in the middle of the night and took off your underwear."

"I was jealous of you. I wanted to hurt my self-respect, so I hurt you."

It is this specificity that is the key to liberation.

An apology is something you don't forget

connect the past with the present

The act of acknowledging that something that happened in the past actually happened

Second, ask yourself "why?"

Victims are dominated by the question of "why"

Why did the father want to sexually abuse the eldest daughter?

Why did my father grab my head and slam it against the wall?

Speaking of my father, he was the youngest, much older than the rest of his siblings.

A child born as a result of an unplanned pregnancy, later hailed as a miracle

I was doted on and received all my expectations

But doting isn't true love

Doting is projecting a desire for someone to be perfect.

My father was not allowed to act like himself in order to meet the unreasonable ideals of those around him.

Not allowed to show kindness and fragility, curiosity and hesitation

I couldn't help but cry

I had no choice but to bury all these feelings to the bottom of my heart, and in the end I became sick.

Eventually, my repressed emotions turned into a darkness in my heart, and my father could not control it, until it turned into a torrent and attacked me.

The third is to open up and feel the raw emotions of the victim.

to hurt yourself deeply

Feel firsthand the fear, the betrayal, and the long-lasting harm of the abuse you committed.

You have to face the pain that the other person has suffered.

And the fourth, of course, is to take responsibility and make amends for what you've done.

So what motivates us to go through such a harsh and humiliating process?

What is the motive for the act of tearing yourself apart?

because this is the only way you can free yourself

Because it's the only way to set the victim free.

It wasn't just the victim that you tore to pieces, it was yourself.

Because no one can be violent against another person and not suffer the repercussions.

Violence breeds the most evil and toxic minds that can eat away at your life.

From my own apologies, I've learned something about the different perspectives we have to adopt in order to understand the issues of male violence that I, and countless other women, have endured.

We tend to look first at "punishment"

Because that's instinct, but the truth is -- yes, sometimes punishment works, but it's not enough.

my father "punished" me

I closed my heart and was deeply hurt

Punishment makes you hard, but it doesn't teach you a lesson.

Enlightenment does not come from humiliation

Rather, what we should create is a process that can open the way, even if it involves punishment, so that men can truly be converted and reborn.

For so many years I hated my father

I wished that I should die and be put in prison

But that anger actually tied me to my father's past.

What I really wanted was not only for my father to stop

for the father to change his mind

It was an apology from my father.

That's what victims want.

It's not that I want to tear the other man to pieces, and I don't want to just punish him.

I want you to look at us.

I sincerely believe that it should be possible

I truly believe that is the right way

But that requires the cooperation of men.

I want men to be brave now and be part of the change.

I've spent most of my life calling out men, but I'm standing here to call you men in.

thank you

(Applause) Hi

(Thank you for applause

(applause)

Ethic, Hedge, and resistance leader Adira is trying to find a way to steal an item called the Stone of Power.

Power stones are used to power the heavily guarded trains that run across the country, supplying living quarters and facilities.

The task of unloading this large armored train is complex and unpredictable, and the details are displayed on a screen in the locomotive.

A "right arrow" means the train moves forward by one car, and a "left arrow" means the train moves backward by one car.

Trains move back and forth a lot during unloading, so a typical workflow might look something like this.

Also, the locomotive has a button that can only be pressed once.

Press this to remove the shield that protects the Stone of Power for 10 seconds.

Because the inside of the locomotive is made small for robots,

The only thing you can put inside is the hedge.

Members of the resistance movement will place a crane over the tracks and take the Power Stone where it's left unprotected.

Visually check when to lower the crane

But the only way Hedge can determine where the train is and when to release the shields is by analyzing the unloading procedure, because Hedge is in a windowless locomotive.

Hedge can't program itself, so it depends on the instructions Ethic gives.

Initially, the vehicle with the power stone is 10 vehicles behind the vehicle directly below the crane.

What instructions will Ethic give Hedge to press the button at just the right time?

Pause the video and think for yourself. Here's a hint for thinking.

The key to this problem, like many programming problems, is organizing the information in a way that the computer can handle it.

The computer doesn't know what a train is, nor does it need to know.

but you can work with variables

Let's think of a variable that allows us to know the position of the train.

How will that variable change as the train moves? [Pause the video and think for yourself]

Let's start by dividing the problem into two objectives.

The first is to know the position of the moving train that carries out the instructions.

The second is to press the button when the train is in the right position.

For the first purpose, it's best to think of the train as a big number line.

Think of the vehicle with the stone of power as 0 and the vehicle in front of it as 1.

So the first thing that's directly under the crane is 10 vehicles.

If the train moves one car to the right, car 9 will come under the crane.

So the right arrow would be considered a minus one, and from there if the train moved left, 10 cars would be back under the crane, and the left arrow would be considered a +1.

First we put 10 in the train position variable based on the first position.

You can use a loop to read through the instructions one by one, adding or subtracting to figure out which vehicle is under the crane.

The advantage of setting variables like this is that we know the distance between the crane and the force stone.

As soon as the variable becomes 0, the hedge can press the button.

well what will happen

While Ethic clings to the crane, Hedge scrambles to sneak into the locomotive before the train begins to move.

3 steps back, 1 step forward, 4 steps back

Then it goes forward so big that Ethic loses sight of it, then back again.

When the item is finally in place, Adira lowers the crane and wishes them well.

At the last minute, the shield was lifted

Ethic reaches out and grabs the Power Stone

The unbelievable happens when Ethic tries to deposit the Powerstone with Hedge.

Items glowed and began to reveal the past When that giant crystal was unearthed, no one could move the console inside.

The government asked people for help and let them try one by one.

Ethic likes solving mysteries, so he put himself up.

Right at the console, something kicked in and the first robot was created.

The government hired Ethick on the spot as chief robotics engineer.

In less than a year, her robots were powering every aspect of society, nations and people flourished, and people no longer had to work in fields or factories.

After the past footage ended, Hedge detected a second item, heading southeast, in Forest 198.

Luckily, this is where the train is going, and it looks like there's just enough fuel left for the trip.

Ethick and Hedge secretly board the train to find a place to hide during the long journey.

Let's get started It seems like it's finally my turn I've been unlucky so far, so I'm exhausted, right? But you gotta get up and get moving Now let's wake up yeah that's right They said the demo sounded like Take 6 and we said 'I'm gonna remix it' They didn't take it seriously so we didn't get any money It took me a few years to realize I was dealing with a shithole They didn't understand the boogie down in the Bronx So I went to Townsen, Alabama to make a production We signed a contract with John Neil We sold 10,000 copies on tour We went to the WBA in Nashville and Festplatte people came and said we were geniuses It means we have sharpened ears and eyes From the Bronx to Berlin Toured Europe Released an album called "What is it?" Let's let everyone know on the way That's right, it's time to raise your voice and take off Now let's fly! When it's time to leave the nest Let's fly! There's no time to rest Let's fly! There's something to do Let's go Spread your wings... Leaving familiar places And keep flying! There is no time to stand still If you aim for success! There's so much to do Show your talents to the fullest Take a step! Aim for a new place When you soar into the sky! Keep flapping your wings Now's your chance! Don't miss this We'll show you what we're capable of... Let's fly! Take off Let's fly! Let's soar higher and higher! Spread your wings and take off to the farthest reaches of the sky Instrumental!

It's time to fly! (Applause) Thank you.

(applause)

Today I want to think about India in terms of the evolution of ideas.

Now, in any society, especially in a democracy, change only happens when ideas take root, and the evolution of ideas is an interesting observation.

Ideas gradually transition into ideology, into policy, into action.

In the 1930s, India experienced the Great Depression, and thus the concept of national security and social security was formed during the Roosevelt era.

In the 1980s, deregulation began following the Reagan Revolution.

In light of the experience of the global economic crisis of the 21st century, today there are all sorts of provisions for government intervention.

Ideas have the power to change a country

In the case of India, there are four kinds of ideas that are important factors for change.

The first thing that comes to mind is what I call "sticky ideas."

This idea is what made India what it is today.

The second is 'developing ideas'.

The concept has been accepted but not yet realized.

The third is what I call "disputed ideas," where there's an ideological debate about what to do next.

And the fourth is the most important factor: ideas that require anticipation.

Developing countries can look at other countries' problems and see how things turn out differently.

Now, I believe there are six key ideas that have made India what it is today.

The first is a change in people's consciousness.

In the 1960s and '70s, humans were considered a burden.

was recognized as a liability

is now treated as an asset.

people are human capital

This shift in consciousness, re-recognizing people as capital rather than burden, is one of the fundamental elements of India's transformation.

This new way of thinking about human capital is actually leading to dividends from India's human resources today.

As health care improves and infant mortality declines, fertility rates will begin to decline, and India is exactly in this situation.

In the next 30 years, India will have more young people and more dividends from human resources.

What's unique about this dividend is that India is the only country in the world to benefit from it.

So in an aging world, it's the only country that's getting younger.

And this is very important, but at the same time, besides this dividend from human resources, there are two other demographic curves that stand out.

One is the South and West, where populations are projected to plateau by 2015, with total fertility rates nearly as low as Western European countries.

The other northern part of India, for its part, will in the future benefit from dividends from its growing human resources.

But the dividends from human capital only come when human capital is invested.

Education, health, infrastructure -- roads for commuting -- lighting for studying at night -- it's only when all these things are in place that the dividends from the human capital come into play.

In other words, without investment in human capital, the benefits of this dividend from human capital become a man-made disaster.

So India is at a critical juncture where both human resource dividends and man-made disasters can occur.

The second is the changing role of entrepreneurs in India.

At the beginning of India's independence, entrepreneurs were seen as exploitative scum.

But 60 years later, driven by the rise of entrepreneurial culture, entrepreneurs have become the norm in India and have made significant contributions to society.

Energized by this change, India was able to greatly improve its economy.

I think the third factor in India's transformation is its attitude towards English.

Originally, English was demeaned as the language of the imperialists.

But with today's globalization and outsourcing, English has become a coveted language.

everyone wants to learn english

English is becoming a huge strategic asset for India.

Technology is next

The image of the computer 40 years ago was something unapproachable, intimidating and job-killing.

Today, 8 million mobile phones are sold in India a month, 90 percent of which are prepaid because you can't sign up without a credit history.

40% of these prepaid phones have less than 20 cents on each additional charge.

Technology has become so freely accessible.

This is how technology is no longer scary or threatening, but a powerful tool.

Twenty years ago, when we were computerizing bank statements, we didn't call them electronic reports, we called them ledger recording machines.

They were hiding their computers from the unions.

When we wanted a more powerful computer, we called it the Advanced Ledger Recording Machine.

It's come a long way since those days, and there's been a shift in attitudes towards technology, and the mobile phone has become a vital tool in India.

Another point is India's adaptability to globalization, which is second to none.

Having lived for more than 200 years under the rule of the East India Company and the Empire, we Indians have naturally responded to globalization by viewing it as a form of imperialism.

But today, with Indian companies going overseas and Indians working all over the world, we have more confidence that globalization is something we can participate in.

India is the only rejuvenating country in the world, which makes globalization even more attractive to India.

And finally, there's the maturity of democracy that we've been pushing for.

Democracy that flowed into India 60 years ago was an elite concept.

This movement was promoted by those who wanted to introduce democratic ideas such as universal suffrage, the Diet, and a constitution.

Today, democracy has become a bottom-up process, and everyone recognizes the benefits of free speech and a transparent society.

So deep-rooted democracy

These six factors - 1. Recognizing the people as human capital 2. The rise of Indian entrepreneurship 3. The rise of English 4. Technology as an enabler 5. Benefits from globalization 6. Deeply rooted democracy - these are the drivers of India's historic growth today.

That said, the next problem is "developing ideas."

It's an idea that isn't challenged, but it can't be put into action.

It has four elements

The first is the issue of education.

Whether it's because of lack of funding, social priorities, or because religion has a longer history, primary education has never been emphasized.

But I think we live in an era where education plays a very important role.

Unfortunately, public schools are not functioning properly, so children go to private schools.

In India, even in slums, more than 50% of urban children attend private schools.

We face a huge challenge in making education work.

Everyone, including poor families, has a strong desire for their children to get an education.

So the importance of primary education is recognized, but it's still largely untouched.

Similarly, infrastructure has long gone unrecognized in its importance.

If you've been to India, you've probably noticed

completely different from China

But the need for infrastructure is finally being recognized and implemented.

This voice is also reflected in politics.

Twenty years ago, the political slogan was "Roti, kapada, makaan", which means "clothes, food and housing."

Today, it's "Bijli, sadak, pani," which means "electricity, water, roads."

It's a shift in consciousness that recognizes the importance of infrastructure.

So the idea is there, but it's untouched.

The third is also about urban areas.

Because Gandhi emphasized rural areas and the British Empire began to rule in urban areas, Nehru positioned New Delhi as a non-Indian city.

For years, urban areas in India have been neglected.

This is showing up in India today.

However, after economic reform and economic growth, I feel that the idea that urban areas are the driving force not only for economic growth but also for originality and innovation has finally been accepted within India.

There is a movement to improve urban areas.

This is another recognized but still untouched idea.

And the last thing is to recognize India as a single market. Ignoring India's single market was ignoring a weak market.

So each state used to have its own market.

Each region also had its own agricultural market.

There is a growing movement to re-recognize India as a single market in terms of taxation, infrastructure, and other policies.

There's a globalization that's just as important within India as it is globally.

These four elements - 1. primary education, 2. infrastructure, 3. urbanization, and 4. single market - are ideas that are recognized but not yet realized.

Then there's "disputed ideas"

It's an idea that's under discussion.

These arguments are the root of stagnation

what is it like? For example, there is the issue of ideology.

Given India's historical background, there are many Indians who have been socially marginalized because of the caste system, and how to solve this problem has become a major political focus.

This is not only related to protected areas and other policies,

It's also linked to the debate between the left and the right, and the issue of public subsidies.

Many of India's problems are related to the concept of the caste system.

This creates stagnation

one of the problems to be solved

The second is about labor policies. Current labor policies prevent entrepreneurs from standardizing jobs in their companies, and 93 percent of workers in India are not unionized.

They don't have welfare, they don't have social security, they don't have pensions, they don't have health insurance.

If we can't hire these people as formal workers, we're going to strip them of their citizenship.

Not only do we need to create new labor laws that are different from the onerous current ones,

We also need policies to formally employ more people and create millions of new jobs.

The third is the issue of higher education.

Higher education in India is fully regulated by law

It's not easy to create a private university.

Universities in other countries cannot easily advance

As a result, Indian higher education is not keeping up with India's growing demand.

So many problems arise

But "the idea we need to anticipate" is the most important concept.

India can look at what's going on around the world and see what needs to be done.

First, fortunately, while technology is still developing in many countries, India has advanced technology in place.

Starting with Governance and Transparency

in a wide variety of fields

Technology can be effectively used

The second is health issues.

Like all over the world, heart disease, diabetes and obesity are serious health problems in India.

There is no need to replace a disease in a poor country with a disease in a rich country.

So we need to start over and rethink the concept of health.

There is an urgent need to enact a national health strategy to stop health problems from getting worse.

Another social welfare problem in Western countries is the rising cost of social services, Medicare, Medicaid.

By introducing a new pension system, countries with young populations can avoid the social security problems that arise when the population ages.

In today's world where there is a demand for harmony between environment and development, India is not in a position to afford to pollute the environment either.

Annual global carbon emissions should be around 20 billion tons.

If the world population were 9 billion people, the ideal emissions per person would be around 2 tons.

India has already reached this number

But if India maintains an 8 percent growth rate, annual per capita income will increase 16 times by 2050.

That's a 16-fold increase in income with no increase in emissions.

For this reason, we must fundamentally reconsider the use of the environment and energy - the method of constructing a new development model.

How do these things relate to you?

Why does it matter to a country ten thousand miles away?

First of all, because these are all problems of more than a billion people.

Equivalent to 1/6 of the world's population

Second, because India is a democracy.

We must prove that democracy and economic growth can co-exist. We can have a democratic, transparent society and economic growth at the same time.

Solving these problems means solving the world's poverty problem.

The world's environmental problems are issues that must be resolved.

The bottom line is that carbon emissions should be limited, and energy use should be reduced, especially in countries like India.

Over the last 200 years, Western Europe has averaged about 2 percent annual growth.

I'm talking about a country that's growing eight or nine percent a year.

here is the big difference

At a time when India was growing at 3, 3.5 percent and its population was growing at 2 percent, it took 45 years for per capita income to double.

At 8% economic growth, at 1.5% population growth, incomes are doubling every nine years.

What this means is that the process of bringing prosperity to billions of people is happening at a rapid pace.

So it's imperative that we have a clear strategy for both the world and India.

So I want you to think like I do.

thank you very much

(applause)

In 1884, one patient seemed to be out of luck.

He developed a fast-growing cancer in his neck, and then developed a non-cancer-related bacterial skin infection.

But soon something unexpected happened: as I recovered from the infection, the cancer began to recede.

A doctor named William Corey examined the patient seven years later and found no evidence of cancer.

Dr. Corey was convinced that something amazing was happening. A bacterial infection must have stimulated the patient's immune system to fight off the cancer.

Dr. Corey's fortunate discovery paved the way for treating cancer with the deliberate injection of bacteria.

More than a century later, synthetic biologists have found an even better way: to program bacteria that were once considered unfriendly to deliver drugs safely and directly to tumors.

Cancer arises when the normal function of cells is altered, causing them to grow rapidly and form tumors.

Treatments such as radiation, chemotherapy, and immunotherapy, which aim to kill malignant cells, have systemic effects, destroying healthy tissue in the process.

But bacteria like E. coli have the unique property of selectively growing inside tumors.

In fact, the center of a tumor is an ideal environment for bacteria, where they can multiply in peace and hide from immune cells.

Instead of causing infection, we can reprogram the bacteria to deliver anticancer drugs to tumors, targeting them from within like a Trojan horse.

The idea of ​​programming bacteria to sense and react to their surroundings in new ways is one of the hottest topics in a field called synthetic biology.

So how can we program bacteria?

The key lies in the genetic engineering of bacteria.

By inserting specific gene sequences into bacteria, we can direct them to synthesize a variety of molecules, including molecules that inhibit cancer growth.

And biological circuitry also allows them to have very specific behaviors.

Program to take different actions depending on the presence or absence or combination of specific factors Program to take different actions depending on the presence or absence or combination of specific factors

For example, tumors are hypoxic, have low pH, and produce too much of certain molecules.

Synthetic biologists can program bacteria to sense these conditions so that they can respond to tumors while avoiding healthy tissue.

One type of biological circuit, the synchronous lysis circuit, or SLC, not only enables bacterial transport of drugs, but it also enables scheduled transport.

First, in order not to damage healthy tissue, the production of anticancer substances occurs only within the tumor along with the growth of bacteria.

After the anticancer substance is produced, when the cell density reaches a threshold, the self-destruct switch is activated and the bacteria burst.

This releases anti-cancer substances and reduces the number of bacteria.

But a certain number of bacteria survive and reestablish colonies.

Eventually, when the bacteria grow again, the self-destruct switch kicks in, and the cycle repeats.

This circuit can be fine-tuned to deliver drugs on a cyclical schedule best suited to fighting cancer.

This approach has been scientifically proven to be promising in experiments with mice.

By injecting bacteria directly into the tumor, scientists not only successfully eliminated lymphomas, but also stimulated the immune system, empowering immune cells to detect and attack untreated lymphomas that had spread throughout the body of mice.

Unlike many other therapies, bacteria target general characteristics common to all solid tumors, rather than specific cancers.

And programmable bacteria aren't just fighting cancer.

In fact, it's a sophisticated sensor that can monitor future illnesses.

Safe gut bacteria probably lie dormant in our gut and detect, prevent and treat disease before symptoms occur.

Advances in technology offer hope for the future of personalized medicine with mechanical nanobots.

Thanks to billions of years of evolution, we may already have the surprising biological form of bacteria as our starting point.

Add synthetic biology to this, and it's exciting to see what's possible in the future.

William Golding was losing faith in humanity.

Aboard a British destroyer in World War II, the former philosophy teacher and naval captain was constantly exposed to human cruelty.

Back home, with the Cold War superpowers threatening each other with nuclear annihilation, it made me think about what it means to be human.

His consideration of the inevitability of violence resulted in his first and most famous work, "Lord of the Flies."

The novel was published in 1954 after being rejected by 21 publishers.

The title is taken from Beelzebub, the demon associated with pride and war, but these two are at the heart of the story.

The novel is a dark parody of popular genres about the adventures of a group of shipwrecked boys who end up on a remote island.

In such stories, the main characters rise up in new surroundings, overcome various perils, and conquer nature.

The genre also celebrates the colonialist perspective common to British films of the time, with the boys teaching island natives "superior" British values.

Golding's irony is poignant, even borrowing settings and names from Ballantine's Three Boys on Coral Island, one of the most popular drifting adventures of all time.

Whereas Ballantine's book promises its readers "joy, learning and boundless fun," Golding's book is dark.

"Lord of the Flies" begins with the boys already on the island, but their conversations tell of a terrifying journey, and their plane is shot down in the middle of a nuclear war.

The boys are between the ages of 6 and 13 and don't know each other.

The exception is the choir, which wears a black uniform and is led by a boy named Jack.

Just like in Ballantine's Three Boys on a Coral Island, the boys' new world looks like a paradise, with drinking water, a place to sleep, and plenty to eat.

But right from the start, this seemingly peaceful situation has an eerie dark shadow.

The boys' shadows have been compared to "black bat-like creatures", and the appearance of the choir on the beach has been described as "something dark and wriggling".

Shortly after arriving, the boys exchange terrifying rumors about a ferocious beast lurking in the woods.

Golding's story begins with this ominous introduction and shows how unity quickly breaks down in the absence of adults.

The survivors first try to establish order.

A boy named Ralph blows conch shells to gather people and assign tasks.

But when Jack competes with Ralph for the leadership position, the group loses its cohesion and the boys give in to dark impulses.

The rabble of children quickly forgets their plan to be rescued, stifles their faint voice of reason, and follows Jack blindly to the edge of the island, to the edge of sanity.

Considered a literary masterpiece for its universal themes of ethics, decency, and society, the novel satirizes contemporary conventions and long-held beliefs in human nature.

Colonialism is often affirmed in adrift tales, but in "Lord of the Flies," that is turned upside down.

Instead of portraying the natives as stereotypical savages, Golding turns angelic English children into savage caricatures.

While the boys are fighting inside the island, outside the devastating war that brought them to the island continues.

Even if the boys were to be rescued from themselves, what world would they return to?

With little to tie the characters to any particular place or time period, the novel feels like a timeless reflection on raw human nature.

While some readers may not agree with Golding's bleak outlook, there is something about "Lord of the Flies" that will unsettle even the most optimistic.

Right or wrong, I'm here to offer a solution to some of the problems we face today, centered, of course, on the weather.

This is the solution to the culprits of humanity's reckless treatment of the planet and the depletion of its ecosystems.

And the culprit is the economy and industry. I graduated from Georgia Tech in 1956 and spent 52 years in the world.

He had ambitions as an industrial engineer and later became a successful entrepreneur.

Thirty-six years ago, in 1973, I founded Interface, Inc. and started making carpet tiles for office use in the United States. After some hardships from the beginning, we've become a global leader in this field.

In this book, Paul says that the economy has two responsibilities.

According to this book, I was the predator of the earth.

So I asked the people at Interface to lead the industry in becoming a sustainable company. We decided that our business, which relies heavily on oil, would only use resources from the earth that could be naturally regenerated in a short period of time, not using a single drop of new oil, and not harming the ecosystem.

Take nothing, harm the environment

"If Hawken is right and the economy and industry are to change society, who will lead the way?

Nothing happens unless someone starts it."

"Then let's do it ourselves"

Thanks to all the employees, I was able to become a "ex-plunderer" (laughs).

(Laughter) (Applause) I once told Fortune magazine, "Someday people like me will be in jail."

This made the headline in Fortune magazine.

And the article called me the greenest CEO in America.

If you're a predator-turned-predator, five years from now you'll be America's greenest CEO. Honestly, I miss America's CEO in 1999 at this level. Honestly, I miss America's CEO in 1999 at this level.

Later, in the Canadian documentary film "The Corporation," I was asked what I meant by "being imprisoned," and I replied that stealing is a crime.

Stealing the future of descendants will someday become a crime.

But for that to happen -- we have to clearly demonstrate that there are other options for "judging the future of our descendants." The industrial system of "take-make-throw" is now the mainstream of civilization, and it's stealing the future of our descendants.

According to Paul and Anne Ehrlich's well-known environmental impact equation, bad impact is a product of population, wealth, and technology.

So environmental impacts are people-generated, in the things that enriched people consume and in the process of making them.

Everyone has their own way of interpreting the equation, but population and wealth can be quantified, but technology can't be quantified very well.

This equation is only conceptual

help understand the problem

So in 1994, at Interface, we set out to create a real-life example, by reinventing the way carpets are made, using a lot of petroleum as a material and energy source, and trying to reduce our environmental impact by transforming technologies that increase our environmental impact.

According to Paul and Anne's environmental impact formula, I (impact) = P x A x T where P is population, A is wealth, and T is technology.

I wanted Interface to rewrite this formula as I = P x A / T.

If you think about it mathematically, it's easy to see that if T is in the numerator, the impact increases, which is bad, but if T is in the denominator, the impact decreases.

So we thought, "How can we move T (technology) from the numerator that increases impact (T1) to the denominator that decreases impact (T2) from the numerator that increases impact (T1)?" ”

If you think about the characteristics of the first industrial revolution, it turns out that it's the same T1 as the traditional way of interfacing, and this technology has the following characteristics.

Extraction: raw materials are squeezed from the earth

Linear model: take, make, trash

Its energy source is fossil fuel

Waste: The Unstoppable Pursuit of Labor Productivity

Increase carpet production per hour worked

If you think about it, T doesn't move to the denominator without changing all of these characteristics.

In the new industrial revolution, we have to change from mining to renewable, from linear to circular, from fossil fuels to solar and renewable energy, from waste to waste, from abuse to good sense, from labor productivity to resource productivity, from labor productivity to resource productivity.

If we can make a radical change like this and get rid of T1, we can have zero environmental impact, no climate impact.

We set this as the goal of the interface in 1995, and it's been going on ever since.

We have been rigorously evaluating our progress

It's clear how much we've accomplished in the last 12 years.

Total greenhouse gas emissions decreased by 82% by weight

(Applause) At the same time, sales increased by about two-thirds and profits doubled.

A net 82% reduction is the equivalent of a 90% greenhouse gas reduction when factored in by increased sales.

Unless all technologies around the world achieve this level of reduction by 2050, we will not be able to prevent catastrophic climate change, say scientists.

Renewable energy is also highly efficient, reducing fossil fuel use by 60% per unit of product.

The cheapest and most reliable source of oil is the oil that is no longer used due to efficiency.

Water use reduced by 75% in our global carpet tile business

We're down 40 percent in our wide-width carpet business, which we acquired in 1993, right here in the City of Industry, California, in a water-scarred area.

Renewable or reusable raw materials are 25% of the total and growing rapidly

Renewable energy accounts for 27% of the total Aiming for 100%

We've reused a total of 74,000 tons of used carpet instead of landfilling it. The cycle of materials has been closed with reverse logistics and post-consumer recycling technology.

These cyclical innovations have contributed significantly to our achievement of 78 million square meters of climate-friendly carpets, which we have produced and sold since 2004. From the production of carpets to the end of the supply chain, they have contributed absolutely nothing to the destruction of the planet's environment.

We named it Cool Carpet

This is a strong market differentiator, with sales and profits on the rise.

We started selling home carpet tiles 3 years ago The brand name is Flor, spelled as F・L・O・R

On the flor.com site, just select, click and have your Cool Carpet delivered to your home in 5 days.

Functional and nice looking

(Laughter) (Applause) Right now, we're just a little over half our target, zero environmental impact, zero carbon footprint.

We have set 2020 as the year to achieve our zero goal.

We called it Mission Zero.

And this is perhaps the most important aspect, but we've found that Mission Zero is a big help to our business.

It's a better business model, it's a way to generate more profit.

Examples of sustainability-based businesses

We've done it, and we've found that it costs less, it doesn't increase. We saved $400 million in costs by going for zero, which is the first aspect of Mount Sustainability.

All the costs associated with the reform were covered from here.

And a myth has been debunked: you don't have to choose between the environment and the economy.

And the products have been great. Sustainability has spawned new ideas, innovations we never thought possible.

Our employees are motivated together by this meaningful goal.

It's also the best way to attract talent and end power.

The market favor is also great.

No advertising, no sales strategy, no price can create this goodwill.

Costs, products, people, markets, what else?

this is a good business model

This is our company's sales and profits for 14 years.

There's been a temporary decline, 2001-2003, sales dropped 17 percent over the past three years.

But the market as a whole was down 36%

we literally gained market share

We wouldn't have survived this temporary recession without the appeal of being kind to the planet.

If all companies pursued our goals, would all problems be solved?

I do not think so

Even a partial translation of Ehrlich's quote has concerns: I = P x A / T2

This A is a capital A. It's as if wealth is the goal in itself.

But looking at Ehrlich's equation from a different angle,

If you tweak this A to a lowercase a, it's just a means, the end is to get happiness with little.

(Applause) It's going to change the way we look at our economic systems. If it doesn't happen to us, it will happen to the next species. Earth-friendly species will live on this finite planet, do the right things, be happy, be environmentally balanced with nature and natural systems, and thrive for thousands and tens of thousands of generations.

But for that to happen, will the Earth have to wait for the extinction of humanity?

Maybe so, but I don't think so

At Interface, we are working hard to become an eco-friendly prototypical production company that does not harm the environment by 2020.

The path to the summit is clearly visible

Just try to put this plan into practice

As my good friend and mentor Amory Robbins puts it, "What exists must be possible."

(Laughter) What we can do, everyone can do.

If our company, which relies heavily on oil, can do it, anyone can do it.

And if anyone can do it, then everyone can do it.

Hawken sounded the alarm to business and industry, leading humanity away from this deep chasm. If ecological decline continues unrecognized, people we care about are at risk. This is unacceptable.

who is important

neither you nor me

Here are the people most at risk

I met him when I started climbing mountains myself.

It was a Tuesday morning in March 1996, and I was trying to talk to someone about it, but I wasn't sure if I was getting my point across.

Five days after I got back to Atlanta, I got an email from Glenn Thomas, one of the people who attended the meeting in California.

After spending time with him on Tuesday morning, he wrote a poem and sent it to me.

I have never felt so happy

Because poetry told me that it was understood by one person.

I'd like to introduce you to Glenn's poem, and that person in danger is this person.

Listen to "Tomorrow's Child"

"I don't know your name, I don't know your face, I don't know when or where I'll be born, tomorrow's child, even if it hasn't been born, I met you for the first time last Tuesday morning.

That person let me meet

Listening to his serious talk I saw the world you would see It's your world, not mine

it was a shock

I didn't know that what I'm doing now would one day lead to trouble for you

Tomorrow's child, daughter, son I've finally started thinking about your happiness, though I've always known I should

I'll start, I promise

What a lot I've lost I can't forget that someday you'll live here."

Every day since I read this poem, "Tomorrow's Child" reminds me of a simple but important message, which I want to share with you.

Each of us is part of the fabric of life.

Human survival is important, but in the broadest sense, all life is textile.

Here we have to decide, in the short time we live on this blue, beautiful, green planet, whether to destroy it or protect it.

it's up to you to decide

thank you

(applause)

talk about irrational behavior

It's not about you, of course.

(Laughter) After a few years at MIT, I realized that writing papers wasn't all that fun.

I don't know if anyone has read it, but it's not fun to read, it's not very fun to write, it's even more boring to write.

So I decided to write something more interesting.

So I had the idea to write a cookbook.

The title of the book is "Eating Without Crumbs -- The Art of Eating Over the Sink"

(Laughter) This was supposed to be a look at life through the kitchen.

I'm obsessed with this idea

I was going to write a little bit about research, a little bit about the kitchen, and I thought it would be interesting because we do a lot of things in the kitchen.

After writing two or three chapters, I took it to the MIT Press and they said, "Good, but it's not for us. Ask someone else."

I tried the others, but they all said, "It's nice, but it's not for us."

Until someone says, "You know, if you really want to do this, you should write a book about your research and make some achievements. Then you'll have the chance to write another book. Do what you need to do first."

"But I don't want to write about research.

I've been doing it all day I want to write something else, something more free and unconstrained."

This person said very forcefully, "This is the only way."

So I said, "No way." "If there is no other way, write about your research.

And I'm going to write a cookbook,' so I took a long vacation and wrote about my research.

This was pretty fun for two reasons.

I enjoyed writing the first

But what was even more interesting was that I started learning from people.

It's a great time to write, I get a lot of feedback.

People write to us about their personal experiences, examples, disagreements, nuances, etc.

In the few days I've been here, I've discovered some extremely paranoid behaviors that I've never considered before.

(Laughter) I think that's absolutely wonderful.

Now, talking about irrational behavior, let's look at some optical illusions that symbolize irrationality.

look at these two tables

You've seen this illusion

Which one is longer? The vertical table on the left or the horizontal table on the right? Which one looks longer?

Is there anyone who disagrees that the left side is longer?

Isn't there? impossible

But the beauty of optical illusions is that they can easily point out mistakes.

let's add a line and see it doesn't help

let's move the line

If you can believe that I didn't shorten the lines, I've proven that your eyes are deceiving you.

Now, what's interesting is that when you remove this line, it's as if you didn't learn anything in the last minute.

(Laughter) You can't look at this and say, 'Okay, now you can see it for what it is.'

I agree? It's impossible to beat the feeling that this one is longer.

Intuition deceives us repeatedly and predictably.

There's little you can do about it except grab a ruler and start measuring.

This is another one of my favorite optical illusions.

What color do you see that the arrow above is pointing to?

Brown Thank you What's below? yellow

are actually the same color

Do any of you look the same color?

it's very difficult

If we cover all the rest of the cube,

You can see that they are the same color

If you don't believe me, get your slides later and do the same trick to make sure they're the same color

Again, removing the blindfold restores the illusion.

There is no way to avoid this illusion

If you are colorblind, you may not be able to see this.

Try to capture the illusion symbolically

Sight is our greatest ability

A large portion of the brain is used for vision, larger than anything else.

I spend more time "seeing" than doing anything else

Humans have evolved for sight

If you predictably make repeated mistakes with your best vision, what are the chances that you won't make mistakes in areas you're not good at, like making investment decisions?

(Laughter) It's not related to our evolution, it's not part of our brain for it, it's not something we spend most of our time in, so in those areas.

I may be making more mistakes

And what's worse, it's hard to see the error, because while optical illusions can easily show you the error, it's much harder to show people the error of your perception.

So I would like to point out the illusion of perception, or the illusion of decision-making as well.

This is my favorite graph in the social sciences.

It's from the paper by Johnson and Goldstein.

This basically represents the percentage of people who expressed an interest in donating their organs.

this is some european country

There are basically two types: the countries on the right are likely to donate a lot, and the countries on the left donate very little or very little.

Why do countries donate so much and

Are there countries that donate less?

When I ask this question, they usually say it's probably a cultural difference.

how considerate of others

It seems to me that giving an organ to someone else shows how caring and connected we are with society.

or for religious reasons

But when you look at this graph, you can see that countries that seem to have similar cultural backgrounds actually behave quite differently.

For example, Sweden is on the right, and Denmark, which we think is culturally similar, is on the left.

Germany on the left and Austria on the right

Holland on the left and Belgium on the right

And finally, depending on how you define European similarities, you'll find that whether or not Britain and France are culturally similar, they're very different when it comes to organ donation.

I have a funny story about Holland

The Netherlands shows a high percentage of the non-providing group

It turns out that 28 percent of that came from sending a letter to every household in the Netherlands, pleading with them to join the organ donation program.

You know the saying, "There is a limit to what you can be asked to do."

That's 28 percent for organ donation.

(Laughter) Whatever the countries on the right are doing, they're doing a lot better than begging.

What are you doing?

The secret was in the DMV (Transportation Department) form

This is what it is

The DMV in the country on the left uses a form like this.

If you would like to participate in the Organ Donor Program please check the box below

What will happen?

I won't participate

The countries with the highest donations on the right have a slightly different form.

If you do not want to participate, please tick the box below

Interestingly, the people who receive this form also don't sign it, so they will participate.

(Laughter) So let's think about what this means.

Ever since I woke up in the morning, I've been thinking I'm acting on my own

I wake up, open the wardrobe, and think I'm deciding what to wear.

Open the fridge and think you're deciding what to eat

What this actually shows is that you don't make many decisions yourself.

It's in the hands of the person who designed that form.

When you walk into the DMV building, the person who designed the form has a lot of influence over what you do.

It's very difficult to foresee these results.

how many people

You think you'll go to the DMV tomorrow to renew your license and be confronted with a form that will change your own behavior?

It's hard to believe that it affects

"Those weird Europeans would be like that," I thought, but when it came to us

There's a sense of control, a sense of control, a sense of making decisions, and it's really hard to accept the idea that you're just seeing an illusion of making decisions.

Some people will say, "This is not very important."

In fact, this is what determines what happens after you die.

I don't care what happens after I die

Ordinary economists who believe in rationality would say, "Pick up a pencil.

Because the cost of marking an X outweighs the benefits of the decision."

But not because it's actually that easy

not because we don't care

On the contrary, we care about it

it's hard and complicated

It's too complicated and I don't know what to do

I don't know what to do, so I just accept whatever is chosen.

Let me give you another example

This is from the Ledermeier and Schaefer paper

They say, "These effects

It is also common in the decision-making of highly paid professionals.”

under the guise of a patient case study

gathered a group of doctors

This patient is a 67-year-old farmer.

I have been suffering from right hip pain for a long time.

You explain to the doctors, "A few weeks ago, you decided there was nothing you could do for this patient.

None of the medicines work at all

recommended a total hip replacement to the patient

It's surgery, okay? ”

Patient is beginning procedures to undergo hip replacement surgery

Then I say to half of the doctors, "Yesterday, when I was reviewing the patient's records, I realized that I had forgotten to try one of the drugs.

Haven't tried ibuprofen yet

what should I do? Would you pull the patient back and try ibuprofen?

Or do you want me to just have the surgery?

Thankfully, in this case, most doctors decided to keep the patient and try ibuprofen.

it's good to be a doctor

To a group of other doctors, he said, "Yesterday, when I reviewed the patient's records, I realized that I had forgotten to try two drugs: ibuprofen and piroxicam."

"I have two drugs I haven't tried, what should I do?

leave it or pull it back

If you were to pull back, would you try ibuprofen or piroxicam? ”

Now think about it, this decision was easy to just let the patient go through surgery, but suddenly it got complicated to pull back.

One more thing to decide

What will happen then?

The majority of doctors choose to have their patients undergo joint replacement surgery.

(Laughter) When you go to the doctor,

The problem is that doctors don't think, "Piroxicam, ibuprofen, hip replacement, what should I do? Okay, hip replacement."

But once you set this as the default, it has a lot of power over people's behavior.

Here are a few more examples of irrational decision making

Imagine, I offer you this offer Would you like to go to Rome for a weekend trip? We pay for everything Hotel, travel, meals, breakfast Continental breakfast All free Or a weekend in Paris?

Now a weekend in Paris and a weekend in Rome are two different things.

Food, culture and art are all different

Let's add to this an option that no one wants.

"Which one would you like? A weekend in Rome A weekend in Paris Have your car stolen."

(Laughter) It's a funny idea. Does the option of having your car stolen affect anything?

(Laughter) So what if getting your car stolen was something else?

What if a trip to Rome with breakfast and everything paid for but no coffee in the morning is an option?

If you want a coffee, you pay for it yourself. It's 2.5 euros.

Now, in a way, why would you want Rome without coffee when you could choose Rome with coffee?

Like stealing a car, it's a decidedly inferior option.

But as soon as "Rome without coffee" joined

"Rome with coffee" is going up in popularity.

Rome without coffee makes Rome with coffee more attractive, and not just Rome without coffee, but more attractive than Paris.

(Laughter) Here are two examples of this principle.

Here's an ad from The Economist a few years ago, and you have three options: an online subscription, $59, a magazine subscription, $125, or both, $125.

(Laughter) When I saw this, I called The Economist, wanting to know what it was all about.

I got tossed around and finally got to the guy who was in charge of the website and they said they'd call them and they'd check.

The ad disappeared after that, but no explanation was given.

So I decided to do the experiment I wanted The Economist to do with me.

100 students at MIT

"Which one would you choose?" I asked.

Here are their shares Most people chose "both"

Thankfully there was no middle

students seem to be able to read

(Laughter) But there's an option that no one wants, so you can get rid of it, right?

So I printed another version, minus the middle option.

I let another 100 students choose, and here's the result: The most popular choices became the least popular, and the least popular became the most popular.

What this means is that the middle useless option is useless in that no one wants it.

It wasn't useless in getting people to know what they wanted.

In fact, $125 for both the magazine and the web feels like a great deal compared to the middle option at $125 for the magazine only.

And as a result, people choose it

The basic idea here is that we don't really know what we like.

And because we don't know much about our own preferences, we are susceptible to outside influences: defaults, special options presented to us, etc.

Another example is

When it comes to physical attraction, we assume that as soon as we meet someone, we know if we like them.

This is the reason why things like coupling parties exist.

So I decided to experiment with this

Here's an image of a person. It's not a real person. The subject of this experiment is a person.

I showed some people a picture of Tom and a picture of Jerry.

I asked, "Who would you rather date, Tom or Jerry?"

But half the people added an ugly version of Jerry

I used Photoshop to make Jerry a little less attractive.

(Laughter) For others, I added an ugly version of Tom.

And the question is, can Ugly Jerry and Ugly Tom help their charming siblings?

The answer is of course yes

Ugly Jerry makes Jerry popular

Having an ugly Tom makes him popular

(Laughter) Of course, this has two distinct implications for life in general.

If you were to go drinking, who would you take with you?

(Laughter) I'd like to bring a slightly uglier version of myself.

(Laughter) It's very similar, but a little ugly.

(Laughter) The other thing, of course, is that when someone asks you out for a drink, you know what they think of you.

(Laughter) Okay, I see.

What do they have in common?

It touches on this beautiful facet of humanity when you think about economics.

"What a masterpiece man is! The nobleness of reason!"

This is how we view ourselves and others

The behavioral economics view is not very tolerant of people. Behavioral economists look at people medically. (Laughter)

but there is a silver lining

The silver lining, I think, is also why behavioral economics is so interesting and exciting.

Are we Superman or Homer Simpson?

When we create something material, we understand our limits.

build a staircase and like this

We make things that no one can use

(Laughter) We know our limits, and we build with those limits in mind.

But when it comes to the spiritual world, when we design things like health insurance, pensions, the stock market, we somehow forget the limits.

I believe that if we understand our cognitive limits as much as we understand our physical limits, we can design a better world, even if we don't all see us the same. And that's the hope that behavioral economics offers.

Thank you very much

(applause)

At Aunt Anmei's house, Jinmei reluctantly takes a seat to the east of the mahjong table.

The north, south and west seats are occupied by long-time members of the Joy Luck Club.

At this weekly gathering of immigrant families, they gossip, eat wontons and sweet roast pork, and play mahjong.

Jinmei's mother Suyuan, who started this club, recently passed away.

Although Jinmei finds it difficult at first to take the place of her mother,

After hearing the secrets of her mother's life from her aunts, Jinmei realizes that there are things she still doesn't know about her and about herself.

In Amy Tan's 1989 breakthrough film The Joy Luck Club, this gathering around a mahjong table becomes the starting point for a series of intertwined pieces.

The structure of the book itself imitates this Chinese-born game.

As Mahjong is played in four fields with at least four games, this book is divided into four parts with four chapters.

Set in alternating China and San Francisco, each chapter tells the story of one of the four women of the Joy Luck Club or their American-born daughters.

These stories take readers to the battlefields and rural villages of China, to modern marriages and tense gatherings around the dinner table.

The stories are about survival and loss, love and lack thereof, dreams and unfulfilled realities.

In one story, Aunt Lynn plots to escape from her fiancée's cold family and ends up in America.

In another story, an American day at the Xu family's beach takes a dark turn to tragedy when Rose fails to take on the responsibilities imposed on her by her mother.

family will suffer for a long time

These stories illustrate the generational and cultural divisions that are so common in immigrant families.

Mothers who have had a hard time in China work tirelessly to give their children better opportunities in America.

But daughters feel burdened by their parents' unfulfilled wishes and high expectations.

While playing mahjong with her mother's friends, Jinmei feels the pressure and worries.

"Aunts see their daughters in me, ignorant and indifferent to the truth and hope they brought to America." Mothers repeatedly try to remind their daughters of their history and heritage.

Daughters, on the other hand, struggle to reconcile their mother's image of them with who they really are.

One story asks, "Does my daughter know me?"

Another story responds, "Why doesn't your mother know?"

These questions speak to the insecurity that plagues so many immigrants, the feeling of being alienated from their homeland and disconnected from their destinations.

But what the weaving together of the stories of four mothers and their daughters shows is that the values ​​that their mothers conveyed are empowering these daughters to address today's issues.

When "The Joy Luck Club" came out, the author didn't expect much success.

Contrary to expectations, the book was well received by critics and was a commercial success.

The characters in this book continue to capture the hearts of readers around the world.

Not just in the narratives that tell the story of the Chinese-American and immigrant experiences, but in the deep truths they find there, the need to be seen and understood by loved ones.

Now I'm going to show you

This is a file photo of a very interesting paper published in the Journal of Medical Ultrasound Echo.

I dare say that this paper is the most interesting one published in the Journal of Medical Ultrasound Echo.

The title is "Observation of Fetal Intrauterine Masturbation"

(Laughter) The long arrow on the left is pointing to the fetal hand, and to the right of that is the penis, which is still in the air.

And the picture on the right shows what radiologist Israel Meisner calls "a hand that grips the penis in a manner that resembles masturbation."

This is an echo image, so it's originally a video.

Orgasm is a kind of autonomic reflex

So the parts of our nervous system that we can't consciously control, like digestion, heartbeat, and sexual arousal.

(2. No genitals) And surprisingly, orgasms can be triggered by many different kinds of stimuli.

Genital stimulation? …What are you talking about now!?

Kinsey actually interviewed a woman who had an orgasm by having someone stroke her eyebrows.

Patients with spinal cord injuries, such as hemiplegic or paraplegic, often have very sensitive sensations at the site of the injury, which doesn't seem to matter anywhere.

There are also examples in the literature such as knee orgasm

The most interesting case I know is a woman who had an orgasm every time she brushed her teeth.

(Laughter) It turns out that the complex sensations caused by the act of brushing your teeth can lead to an orgasm.

The neurologist who saw her was very interested and looked into it.

At first, I thought it might be the toothpaste, but it had nothing to do with the type of toothpaste.

So this time I tried to poke her gums with a toothpick.

It didn't work. The act of brushing teeth itself was the cause.

But what surprised me more than anything else is that you probably think that this woman's teeth are very clean.

(Laughter) Unfortunately, according to the paper, this woman "believed she was possessed by the devil and started using mouthwash instead of her toothbrush."

It's a waste

(Laughter) I'm writing "The Bad Relationship Between Sex and Science," and I've interviewed a woman who can reach orgasm with just her thoughts.

She also participates in research at Rutgers University

It's the prestigious Rutgers University.

So I interviewed this woman at a sushi restaurant in Oakland.

So I asked, "Can you do it right here and now?"

"Yeah, but if possible, I'd like you to do it after dinner..." (laughs)

But after dinner, she took the trouble to demonstrate on a bench outside the restaurant.

It was great. It took about a minute.

After the demonstration, I asked, "Are you doing it anytime, anywhere?"

(Laughs) "No, by the time I get home after work, I'm too tired to do that."

(Laughter) Last time, they did it on a Disneyland tram.

(Laughter) Orgasmic centers are located in the spinal nerves and the sacral nerve roots, right here in the back.

Orgasm occurs when electrical stimulation is applied here.

(3. You can have an orgasm even if you're dead.) It's also possible to give this kind of spinal cord reflex to a dead person under one special condition: a corpse with a beating heart.

It's a brain-dead state, legally declared dead, but on a ventilator to maintain cardiopulmonary function, and to maintain the donor's organs until the transplant surgery.

When you stimulate the correct part of a corpse in this state, something happens.

a reflex called the Lazarus sign

When I try to show it here...of course it's not dead...

This is how it feels.

The corpse moves like this...

It's scary for people who work in pathology laboratories.

(Laughter) If you can induce the Lazarus sign, then of course you can orgasm, right?

I sent an email to Stephanie Mann, a brain death expert, and she replied to my silly question.

(Laughter) I asked, "Is it possible, by any chance, to induce an orgasm in a dead person?"

"If enough oxygen is sent to the sacral nerve, it may be possible," he said.

Of course, it's nothing interesting to me.

(Laughter) It's still an orgasm.

In fact, I suggested it to an orgasm researcher at the University of Alabama.

"Let's experiment

Universities can use donated bodies

I should do it."

I was told, "Then, please get permission from the body donation review committee."

(Laughter) (4. Orgasms cause bad breath.) According to Theodore van de Velde, who wrote a marriage manual in the 1930s, within an hour after intercourse, a woman's breath could smell faintly of semen.

Can Van de Velde be called the sommelier of semen?

(Laughter) She's the author of "The Perfect Marriage."

I am completely heterosexual

In The Ideal Marriage, it is written that he can smell the semen of young men and old men.

Sometimes it smells like fresh flowers, but sometimes it's very pungent."

(Laughter) (5. Cures hiccups.) On another note, in 1999 in Israel, a man had hiccups.

This is another hiccup that won't stop

All the folk remedies my friends taught me

The hiccups never stopped

One day after a few days

He had sex with his wife while hiccupping.

And to my surprise, the hiccups stopped.

A man told a doctor about this, and the doctor submitted a report to a Canadian medical journal entitled "The Potential Sexual Intercourse as a Treatment for Intractable Hiccups."

I like this article because it suggests masturbation as a treatment for "single hiccups."

(Laughter) That's like a census category for single hiccup patients.

(Laughter) Married people, single people, and single hiccups.

6. Orgasm as a Method of Conception In the early 1900s, most obstetricians believed that when a woman reaches orgasm, the contractions would increase the chances of conception by drawing semen up to the cervix, helping the sperm reach the egg faster.

I called this the "suction theory".

(Laughter) Also, going back to the ancient Greeks, Hippocrates, they believed that the female orgasm wasn't just an aid to conception, it was a necessity.

Doctors back then were telling men how important it was to please their wives.

Theodore van de Velde, the author of the Marriage Manual and semen sommelier, writes (Laughter)

I love this guy and have read a lot of his books.

In it, there was this sentence, which is said to be about the Habsburg dynasty, that there was an empress named Maria Theresia who was unable to conceive.

At that time, the court physician advised me, "I am afraid to tell you that the wisdom of His Majesty the Divine Emperor needs to be tickled before copulation..."

(Laughter) I don't know the original document, but there seems to be a record of that.

Masters and Johnson were researchers in the 1950s

They were both siphoning skeptics, which is also an interesting term.

They didn't believe in the siphoning theory

So, in the name of Masters and Johnson, I decided to do a thorough investigation.

They brought women into the lab, and I think there were five of them, and they put cups of artificial semen in their cervix.

This artificial semen contained substances that reacted with X-rays, making it visible on X-rays.

It's about that conservative 1950s.

Anyway, subject sits in front of the X-ray

to masturbate

We observed whether artificial semen could be sucked up by this method.

No siphoning confirmed

By the way, you may be wondering, "How do you make artificial semen?"

(Laughter) There are two ways to do this.

I use flour and water or cornstarch and water

I found three recipes in the literature

(Laughs) My favorite recipe is when it's a cooking recipe, there's a list of ingredients and how much to make, right? For example, "2 dozen cupcakes"

In that way, there is "one ejaculation"

(Laughter) There are still ways to increase fertility with orgasm.

this time it's about men

If the sperm stays in the body longer than a week after it's made, it becomes abnormal and becomes more difficult to headbang, or penetrate, the egg.

British sexologist Roy Levin speculates that this is why men have evolved to masturbate so eagerly and frequently.

In other words, "if you keep releasing sperm, you can keep the freshness of the sperm".

It's a very interesting hypothesis.

Now you've got a good excuse for the theory of evolution.

(laughs) (6. Orgasm as a method of conception) Well...

(7. Pig farmers still) (Laughter) Now, the siphoning theory has been validated in the animal world, for example in pigs.

The Danish National Pig Board found that during the artificial insemination process of female pigs, if the pigs were sexually stimulated, the farrowing rate, which is the number of piglets born, increased by 6 percent.

The committee created a so-called five-spot stimulation regimen on the pig's body.

Pig farmers were given posters to put up in their stables, and a DVD was made.

i have the dvd too

(Laughter) And I'm going to show you, it's the first time.

(Laughter) Well, here's the video.

Onii-san goes to work while humming la-la-la

it's innocent

Now he's going to do something with his hands, but if it's a pig, he'll do something with his nose... Pigs don't have hands.

(Laughter) That's it. Male pigs have strange courtship behaviors.

(Laughter) This behavior mimics the weight of a male pig.

(Laughter) By the way, a female pig's clitoris is inside the vagina.

That's why you're stimulating her now.

(Laughter) A cute little pig was born.

(Applause) That's a funny video.

At the beginning of this video, when the camera zooms in on your brother's wedding ring, it's almost as if he's saying, "This is just a job, he just likes women."

(8. Female animals are surprisingly enjoying themselves.) (Laughter) A woman named Anne-Marie, who took care of me in Denmark, said, "This is what you mean by stimulating the pig's clitoris, right?

Shouldn't we explain that to the farmers?

It doesn't say that in the video,' he said.

Her answer is interesting, so I'll quote it directly.

"I had a hard time getting the farmer to touch the pig's pussy.

That's why we decided to refrain from talking about the clitoris."

(Laughter) It's a shame, but it was really issued for adventurous pig farmers.

As I said earlier, a pig's clitoris is inside the vagina.

So I think it's a little more exciting than it looks.

And to Anne-Marie, "These pigs, as I'm sure you've already noticed,

It doesn't look like you're feeling ecstasy."

The answer, "Not necessarily," is that animals don't express pain or pleasure in the same way that humans do.

Only the upper half of the face is moved.The ear is very expressive.

so we don't really know

On the other hand, primates, including humans, use their mouths a lot.

This is the facial expression of a stump-tailed macaque when it ejaculates.

(Laughter) Interestingly, this face is also seen in female stump-tailed macaques, but only when they're leaning over another female.

(9. Human orgasm experiments are difficult.) (Laughter) In the 1950s, Masters and Johnson

So I decided to figure out the cycle of the human sexual response, from sexual arousal to orgasm in men and women.

And in the case of women, most of what happens inside the body.

Masters and Johnson aren't giving up

They developed an 'artificial sex machine'

This is a male organ type camera with a motor attached.

So basically, it's a clear acrylic dildo with a camera and a light attached to it, and it's driven by a motor, and that's how it works.

The female subject had sex with this

That's why it's such a great substitute

Unfortunately it is now disassembled and does not exist

I'm so sorry I didn't want to use it, but I wanted to see it at a glance!

(9. Experimenting with human orgasm is difficult.) (Laughter) (10. But it's funny.) One fine day, Alfred Kinsey decided to calculate the average distance traveled by semen during ejaculation.

this is not just a hunch

Dr. Kinsey - and this was a popular theory in the 1940s - that the rate at which semen is ejected toward the cervix during ejaculation is related to fertility.

I thought it was bullshit and wanted to confirm it.

He set up 300 men in his lab with a tape measure and a video camera.

(Laughter) And what we found was that three-quarters of the men's semen just fell to the bottom.

It didn't erupt, pop out, or be ejected with tremendous force.

The record holder, on the other hand, hit just under 2.4 meters, which is great.

(Laughter) (Applause) It's absolutely amazing.

(Laughter) Unfortunately, his name isn't on the record, so I don't know.

Dr. Kinsey wrote about this experiment in his book, "I put two sheets under the Persian rug to protect it."

(Laughter) This is my second favorite quote from Dr.

My favorite is "Rolling a piece of cheese in front of a mating mouse distracts the female but doesn't change the male."

(laughs) Thank you for your attention.

(Applause) Thank you!

(Shah Rukh Khan) Whether it's Mumbai, Delhi, Chennai, Kolkata, all the big cities in India have one wonderful thing in common: they're willing to accept people from small towns looking for work.

The other thing I can say is that this property has a big impact on cities.

There are housing issues, etc.

Today we welcome Dr. Gautam Bahn, a human housing expert and researcher, who is envisioning new solutions to this growing problem.

Tell us about your vision for the new look of Indian cities.

Go to India's TED Talk: New Ideas from India

I'm Dr. Gautam Baan.

(Cheers) (Gautam Baan) In this country, until a few years ago, when you asked someone, "Where are you from?"

The answer was Delhi, Mumbai, Kolkata, etc.

And as soon as I did that, I would ask again, "Where are you from?"

Until recently, people in India weren't from cities, cities were just destinations.

this is changing

Urbanization is changing India, but are the cities ready?

For example, let's say you were born outside a city.

Your parents have worked hard all their lives

Then you, too, would have come to the city for success.

Or maybe you're from the city, as it's happening now.

And one day you're going to be looking for a house in the city, either to buy it or just rent it.

Can you find an affordable home?

According to the government, there is a housing shortage of 20 million units.

20 million houses is for 100 million people

This is not a shortage of 1LDK housing

95% of the shortage is for properties for people with a monthly income of 10,000 to 15,000 rupees.

Can you find an affordable home on this budget?

What would you do if you were in this situation?

A house is not a car or jewelry

home is like clothes and food

can't live without it

If you can't find a house to buy or rent in the city, do what others are doing.

You will try to set up a house anywhere

They will live in "(informal) temporary settlements." The government may continue to call them "slums."

100 million people are not homeless

there is a house

We have a house that we built ourselves

But most of them are in "places of residence"

This is the truth about affordable homes in India.

Settlement homes are cheap, but not sturdy.

Other homes are sturdy, but not cheap.

(Applause) We have to guide new thinking from here.

Where you live is not the problem, it's the solution.

All we have to do is make it safe and sturdy.

We can't and shouldn't build 20 million 25-square-meter homes to solve the 20 million home shortage.

For example, the Karnataka government has

have a very good track record

Karnataka will need 2.6 million homes by 2020

In the last ten years, we've built 350,000 homes.

Even if the government were to do something with real good faith, it's unlikely to be resolved in the next few generations.

If you can't build a new house, what's the next solution?

How to make my place of residence safe?

The first is to stop forced evictions.

Stop destroying it with a bulldozer.

This has never been and never will be an improvement.

(Applause) We need to change the mindset that the workers who build and run cities have the right to live on the land in those cities.

(Applause) You might think that these settlements are illegally occupied land, but land occupations never happen in the middle of the night.

It doesn't happen secretly, whether the land is owned by the government or not.

Move-in progresses over time

The government admits that settlements within Indian cities have been there for 10, 20, 30, sometimes 40 years.

What kind of squattered land is left unattended for 30 years and then suddenly declared illegal the day before it is evicted?

The residential population is a conservative estimate of 15% to 60% of the urban population, and the land used is 1%, 2%, 10% at most.

How could such a large number of people not have the right to live on such a small plot of land?

The growth of a city is often measured by the price of land.

How can you measure the value of the life of the people who live there?

Residential areas don't want fancy homes, they just want the bare essentials: electricity, roads, water, toilets, and drainage.

We call this "high quality." Here's an example of high quality.

In Ahmedabad, in one programme, 44 settlements were promised no eviction for 10 years.

just a promise

no written record

And I was given the necessities of life

Ten years later, that slum has become a community, a place, a world.

The government never had to build a single house.

(Applause) Thailand has launched this program nationwide, benefiting 100,000 people in 137 cities.

And everyone was given the right to live on that land.

however

It's not about the right to sell the land, it's about the right to live there, to use the land, to live there.

Now the whole world realizes that we cannot eliminate habitats if we are to move forward.

We need to spread the idea of ​​making our settlements safe and secure.

A word here

If you know, why isn't it actually happening?

To implement this new idea in our settlements, we, you and I, will need to do some deep self-reflection and let go of our own hatred, contempt, and fear.

I really shouldn't be standing here in front of you today.

The people who should stand here are the people who live in settlements.

But if someone like that came, you wouldn't listen.

Listen to me because you don't think I'm from where you live.

This very thought needs to change

thank you

(Applause) (Khan) Dr. Gautam Baan

thank you

I have a question for you. There was a case in Thailand earlier. The important point is that houses are for people to live in, not for sale.

I was told that I can't sell

Are there similar ideas and programs in our country, India, inspired by the stories of Dr. and others around us?

RB Byrne: I can't say that I was inspired by the movement of people trying to win the rights of cities.

is making a difference

For example, in Odisha, the state premier, Mr. Patnaik, announced a similar initiative, where everyone living in a settlement would have land rights.

(Applause) And I don't think this initiative should be called populism, it should be called an economic development strategy.

The reason is that economic development happens bottom-up, not top-down.

(Applause) (Khan) I will never use the word "slum" again, and I will say "settlement." Absolutely.

(Applause) Doctor, you've come here to tell us a great story.

There is a song I would like to introduce.

(Burn) I'm not good at singing either

Khan: But I can't keep quiet because I'm telling you a great story.

(Laughter) So I'm just going to say

Slowly the heart will find a home

(Burn) Slowly my heart will find a home

(Khan) Only then will life be filled with love and good times.

(Applause) Ladies and gentlemen, Dr. Gautam Bahn, thank you.

(Thank you for applause

(applause)

I remember when I was a child, talking with my friends about what kind of request they would make if the devil would grant their wish.

My request was to "Give me the wisdom to know what I want."

But if that wish comes true, the true wish won't come true This year, it seems that only one wish can come true, so I'll say my wish properly.

I wish for world peace

I think you're mistaking me for a beauty pageant.

you might think

I fully understand the significance of this award.

The first step to world peace is people meeting

I've met and photographed a lot of people, and I've met a tech stalwart in New York who's looking to take over the world, and a Qatari military spokesperson who doesn't really want to be in control.

Watch "Control Room" and you'll understand why.

(Applause) Someone watched

I am very happy

Today I'm going to talk to you about a new way of traveling, a different way of meeting people, because you can't travel the world all at once.

About 40 years ago, my mother accepted an exchange student.

there is a slide

this is donna

Photo in front of the Statue of Liberty

With mothers teaching them how to ride a bicycle

donna eating ice cream

Donna teaches her aunt how to dance the Philippines

As the world becomes closer and closer, if we can learn how to dance and become friends, we will be able to understand each other across national borders and become aware of people's joys and sorrows.

Hosting international students and traveling is not something everyone can do, and as Chris and Amy were talking about, you can't force people.

instead of forcing a trip

I'd like to propose a different journey, one that uses video cameras, projectors and screens instead of boats and planes.

Today I will explain this new journey

I was asked to talk about where I came from, and to be a cultural bridge like Cameron's, the story of where I'm from is very important to me.

My mother is American and my father is Egyptian Lebanese Syrian.

So I myself already have two cultures

inherited

An American with a Persian name, I'm called the "Middle East Peace Crisis."

I started taking pictures as a way to connect my parents' families, to understand the world and to visually tell it.

I was 16 when I went with my mother to a garbage collector village in Egypt.

We met where my community-minded mother took me to collect garbage.

The center there taught them to read and write, and they vaccinated them against diseases that were spread through garbage collection.

i am the center

I was teaching English

Seven people were crammed into one room, and even though they couldn't have dinner properly, they were mentally tough women who couldn't stop smiling.

I was completely fascinated by this village

I started taking commemorative photos of weddings, seniors, etc.

About two years later, at the United Nations Conference on Population and Development in Cairo, I was asked to use my photo.

18 year old me excited

I gave all the photos to my first exhibition, and two days later, only three were shown.

People scolded me, saying that all the pictures were of dirty places, and that the donkey's corpse was bad.

while depressed

I looked at the walls of the venue, and the beautiful photographs left behind made me realize my mistake.

But as I stared at it, I could feel the power of the person.

I was just an 18-year-old little girl, but there was something wrong with my picture on the wall, and it was taken down.

The power of images was beyond my imagination

The significance of that exhibition was that it was attended by people who had never visited a garbage collector's village or lived in difficult circumstances.

This inspired me to use photography and video to connect people from different cultures across borders.

So at MTV, we created Startup.com, and we did some music videos around 2000.

Before the war in Iraq in 2003, I had no idea that the war was going on, and the media war had already begun.

All the TV stations in New York were biased. They were only showing information about the State Department and the soldiers who were deployed.

The casualties of this war are minimal, and the US military is thought to be a liberation force and welcomed by Iraqis.

But in the Middle East, something completely different was happening.

Americans don't know this fact.

I thought it would be impossible to make compromises

i am anyway

went to the scene

I came without thinking

I forgot my camera, so I had it delivered later. Bush's favorite Middle Eastern TV station, Al Jazeera, was hated by Arab governments and called bin Laden's mouthpiece by the United States.

You're hated by a lot of people because you're doing the right thing.

I wanted to make sure

And then we went to the U.S. Central Command, which was a little further away.

I wanted to compare how Arab news traveled to the Arab world and Western news traveled to the United States.

The psychology of frontline workers was so complex that I couldn't comprehend it.

I'll show it to you, but if you turn the camera in front of you, listen to the story, and talk for at least five seconds,

that person's personality comes out

Samir: As usual

Iraq is at war

If it's a job for FOX, I'll take it right away.

succeed in escaping an Arab nightmare

I haven't given up on that dream, but I don't think I can make it happen.

At least the children

I want him to go to a university in the United States. I will pay the tuition.

I want them to settle in the United States

Josh: Al Jazeera has shown us the bodies of prisoners of war and soldiers, too brutal for the US press.

They won't wash it away. Many American soldiers in military uniforms were lying on the cold floor.

in a terrible state

I feel sick

i couldn't watch

Al Jazeera reported on the bombing in Basra the night before.

This also made me want to cover my eyes

The footage shown at Al Jazeera Broadcasting Station

it was cruel

without feeling sick

I immediately went out to eat, probably because I thought Arabs were my enemies.

I hate war

But war cannot be eradicated from the world. I was surprised by the reaction to this work.

In the first place, the budget just to publish

I was lucky that the work was released to the world because there was not

When we screened it in the United States and Arab countries, the response was tremendous.

everyone was impressed

People in Arab countries were interested in the characters, and Josh had a lot on his mind.

When we showed it in the Middle East, he said he wanted to meet Josh.

he changed the image of americans

Even Al Jazeera is interested

recruited him

Samir, on the other hand, is a good example of the feelings of admiration and hatred that people in Arab society feel toward the West.

When it was screened in the United States, I was very impressed by the positive attitude of Americans.

The United States has been criticized by other countries for pretending to be a savior, but when we look at the incidents happening overseas and the responses from other countries, we need the power to bring about change in order to break through the situation.

after the screening

I was told by one of the spectators, "The loading of bombs,

Even if you see American troops deployed, until you see Arab victims, you won't understand their hatred against the United States.

Can you understand other people's feelings? ”

Even if images can't change the world

The power of images can create opportunities for people to think.

I'm not a philosopher, so I can't express myself very well, but by letting the images speak,

You can get a glimpse of the world beyond borders.For a while, I will take you to another world.

Let me show you two deep-rooted conflicts that we face today.

Sacrifice is necessary to correct injustice You're just vengeance If you kill people, you're the same as the occupying forces Over there are planes Over here they're ramming The Israeli army won't flinch We'll go to paradise if we die It's in your head Oh Allah forgive me This girl... If you're going to hell in this world It's better to die It's painful but it's worse What will happen to us who are left Can we win with that? Our lives are going to be a mess and it's going to be an excuse for them to attack me. Caution! My wife called me and said, "Suicide bombing in Tel Aviv." How many victims? There are three girls, I don't know. One of them was injured here. I asked, "That's my daughter. Did she die?" And she said, "Yes." It was about 6:30 that day. It's true that I have assistants, but I'm the one who takes care of them. At first, I thought it was strange to contact them, but I thought it was only natural to meet them and talk about our pain. What moved me was how Palestinians believed in reconciliation, even though they were hurt by the loss of their loved ones.

If I talk too much about politics, they won't understand

But when I finish singing, "I understand your feelings so much that it hurts

Discrimination should disappear."

Fighting for liberation...

The children took to the streets and shouted, "Release Mandela!"

They had no weapons in their hands, just wanted freedom

That's it!

Be free!

It felt like watching an impressive movie with a stranger in a movie theater.

What I'd like to focus on is how we can use this shift in mood to translate video into action.

As Robert Wright said in many stories, if you can thank other people for their kindness, they will thank you.

my goal is

Connecting the world through video and delivering the voices of anonymous people

Josh retired and went to Al Jazeera.

I'm working in the international affairs department to improve the difference in consciousness between the Eastern and Western worlds.

I was shocked by this

What I've been thinking about is how to enable anonymous people, filmmakers and others to do something that makes a difference with images.

Already organizations such as Witness

We are starting these activities

In Just Vision, Palestinians and Israelis worked together for peace and submitted a video to Congress, in which a woman whose daughter was killed believes in a peaceful solution.

Working Films and Current TV feature people from all over the world because they're so amazing.

At first, I was very surprised, because it's democratic, global television that brings together the voices of anonymous people all over the world in one place.

What can we do to bring people from all over the world into the space of these organizations?

I wish you all a day when people from all over the world gather

just imagine

All over the world, in towns and villages and movie theaters, people have the common experience of sitting in the dark and watching a movie together.

The movies are about fighting for life, defying prejudice, laughter and songs.

Various

Through the power of images, we can change people's perceptions, connect people across borders, and give them a shared experience.

This global screening can take place outside the cinema.

For example Times Square or Cairo Square Ramallah or Jerusalem

If we all persuade each other, we can see the side of the pyramids and the Great Wall of China.

Once you start thinking, there will be no end

A day like this would make it easier for everyone to speak up.

Until now, there hasn't been an organization that connects people's voices around the world, and attending this talk made me realize that it's getting harder and harder to understand and respect people from other countries.

It would be great if people all over the world could watch the same video together and understand each other.

I've already asked TED to help me, and I've asked a TED staff member to introduce me to someone who works for a non-profit organization.

If you call around

In the last week alone, there were responses not only from Japan, but also from Mongolia and India.

Because I want to be a part of this International Film Day and make it a voice and a platform for independent cinema.

What's the right name for this movie day?

On this movie day, everyone's opinion will be heard, and I hope you'll think about the implications for the future.

I think it's possible to create a community using IT technology, and we can collaborate on the Internet.

Long ago, the world was one big lump

It was called "Pangea Continent"

So what about "Pangea Cinema Day"?

Because the world can come together to watch films everywhere and take action to better understand others.

It's hard to understand other people, but by showing them images, we can touch hearts and minds all over the world.

There are many such works in the world, so this is my wish.

It is supposed to be expressed in one word

it looks like we're out of time

that's a wonderful wish

The day Pangea cinema that connects the world

more concrete and realistic than world peace

On that day, the world will become one through the power of images.

it was jahani

A mother and son in the endless desert

Wearing tight-fitting bodysuits that dissipate heat and retain moisture—it's not death from thirst that travelers fear.

it's a bigger one

They walk erratically so that the vibrations of their walking get lost in the sand.

The sound of the desert is soon drowned out by a loud rumble

The unnatural steps of the two of them turn into a sprint at the approaching ridge of sand.

As they climb onto a nearby rock, a 400-meter-long sandworm bursts out of the sand—

This is the world of "Dune Sand Planet"

Written by Frank Herbert and published in 1965, Dune: Planet of the Sands is set in the distant future, where humans rule the stars as a giant feudal empire.

This medieval motif isn't limited to political machinery.

Unlike most space science fiction, in this story humans conquer the stars without the use of computers.

Learning from the wars of the ancient robots, they forbade the creation of machines with human-like intelligence. But without stopping progress, humanity has undergone an amazing evolution, with human computers, witches with supernatural powers, and space pilots with precognitive intelligence.

People with such superhuman powers are hired by nobles seeking supremacy and adding new planets to their kingdoms.

Many superhuman abilities rely on a scarce resource called "spice."

Also known as "melange," this wondrous crop is essential to space travel and is the foundation of the galactic economy.

And it grows only on the desert planet of Arrakis, a bleak and dangerous world where the natives have long resisted the empire.

Arakis, also known as the Dune (Sand Planet), is the setting for Herbert's novel, and the story revolves around Paul of the Atreide family, a noble family.

The story begins with Paul's family appointed as custodians of the Dune, but behind the scenes lies an elaborate scheme by their arch-nemesis, the Harkonnen family of brutal slave owners.

A feud between the two families would upset Arrakis' delicate political balance.

Paul is thrown into the throes of a planetary revolution, and he must prove he has the power to lead and survive in this desolate desert world.

Arrakis is more than just an endless sea of ​​sand.

Environmentally savvy, the author spent more than five years crafting Dune's complex ecosystem.

There are different climate zones and wind paths that make up the rocky terrain.

Different climate zones produce different flora

It is only when the various elements of the Dune ecosystem come together that the staple spice is produced.

Herbert's world is also rich in philosophy and religion.

Bowl's mother, Jessica, is a member of the Bene Gesserit, an ancient cult of spice practitioners.

The Bene Gesserit, also known as the "Witches" because of their magical powers, have served as shadow governments and enlightened society for thousands of years.

Mentors, also ancient, are human computers that can process vast amounts of data.

Mentorto is a mass of logic and reason, but what it produces is not just a calculated result, but an ever-changing stream of possibilities.

But Dune's centerpiece is the Fremen.

A native of Arrakis, the keeper of this planet's secrets.

Paul finds himself immersed in the exclusive organization of the Fremen, where he must complete increasingly dangerous tasks to earn his trust.

The stories are interspersed with the rich histories of those races, and the structure of the book also gives a sense of the magnitude of the scale.

Each chapter opens with a quote from a futuristic history book, giving us a glimpse of what's to come.

The book is accompanied by narrative resources that provide insight into the history of the empire, as well as a glossary that explains terms such as "Gum Jabal" and "Shai Khurud."

Dune's epic tale, told across six volumes, spans thousands of years.

All of Arrakis' future stories begin with Paul following a dangerous and arduous path that constantly threatens to overwhelm him in an impending storm.

Two years ago here at TED, I told you what we discovered about Saturn, that the Cassini spacecraft discovered was an unusually warm, geologically active region at the southern tip of one of Saturn's small moons, Enceladus.

This region was first observed in a photograph taken by Cassini in 2005. This is the Antarctic region, where the famous Tiger Strip rift cuts across Antarctica.

And recently, in late 2008, the area was photographed again, half in darkness, because it was winter in the southern hemisphere, around the beginning of August.

I've also told you about an incredible discovery, a truly once-in-a-lifetime discovery. The towering jets that erupt from a fissure in Antarctica are made up of tiny crystals of frozen water that contain water vapour, as well as simple organic compounds like carbon and methane.

Two years ago, we told you that we speculated that this jet could be a geyser, that it erupted from a depression or an underground reservoir of liquid water, but we weren't sure.

On the other hand, our findings suggest that the moon's environment could potentially support prebiotic chemistry, or even life itself, and that's sparked a lot of interest, and over the last two years, we've been looking at Enceladus even more.

The Cassini spacecraft has explored this moon a number of times, closer to the jet, further inside it, even more concentrated, and now we've been able to measure its composition in detail.

As a result, it turns out that the organic compounds emitted from this satellite are more complex than those previously reported.

It wasn't an amino acid, but we found propane, benzene, hydrogen cyanide, and formaldehyde.

And the tiny water crystals looked very much like frozen saltwater droplets. What we can expect from this finding is that not only are the jets erupting out of pockets of liquid water, but that liquid water is in contact with the bedrock.

And in this situation, it is possible that the chemical energy and compounds needed to sustain life are supplied.

I am very pleased with the results

We're even more convinced than we were two years ago that there may be an environment, a region, suitable for organisms, beneath this moon, in Antarctica.

Of course, whether or not the organism actually exists is another matter entirely.

For that matter, we should wait for a rover to approach Enceladus again, and hopefully that's in the near future and the rover is equipped to answer that question.

In the meantime, let's imagine one day traveling to the Saturn system and visiting the planetary geyser park of Enceladus, because it's possible.

thank you

(applause)

In the 4th century BC, in the town of Sinope, a moneylender's son stole money.

When things were settled, the young man named Diogenes was stripped of all his citizenship and property.

at least that's what I'm told

Diogenes' life is shrouded in mystery, but the ideas that emerged from this infamous affair endure to this day.

After being exiled, Diogenes came to believe that rejecting other people's opinions and social measures of success was the only way to be truly free.

To live a self-sufficient life in nature, not to be bound by materialism, vanity and convention.

And for many years he roamed the Greek cities, living in the open all year round with nothing but a cloak, a staff, and a bag, without any civilization, no bath, no cooked food.

And instead of keeping his new life a secret, he made fun of passers-by, mocked those in power, and even ate, urinated, and masturbated in public.

People called him kyôn (barking dog)

It's meant as an insult, but from his point of view, dogs were likable creatures, happy creatures, unconstrained by concepts like wealth and reputation.

A growing number of Diogenes' followers were called kynikoi, which later became the term cynic.

When Diogenes became famous, there were people who wanted to challenge the idea.

Alexander the Great offered him to grant him whatever he wished for.

Instead of asking for things, Diogenes told me to get out of there because it would be in the shade.

After Diogenes' death, followers of his ideas called it Cynic for 900 years, until about 500 AD.

Some Greek philosophers, like the Stoics, thought everyone should follow Diogenes.

He tried to soften his ideas to something more socially acceptable, but of course it went against Diogenes' ideas.

Others had a more negative view of the cynic.

The satirist Lucian, who lived in 2nd-century Roman Syria, characterized the cynic of the time as an unprincipled, materialistic, self-promoting hypocrite, preaching and not practicing what Diogenes was doing.

Centuries later, Renaissance and Reformation writers who read Lucian's writings demeaned their rivals by calling them cynics, which meant "one who criticizes others without saying anything of substance."

This is the origin of the modern usage of cynic, which means a cynic: someone who pretends to have lofty motives but still believes that humans are, after all, selfish.

Still, there were some who were impressed by the idea of ​​cynics, especially those who questioned the current state of society.

The 18th-century French philosopher Jean-Jacques Rousseau was called the "New Diogenes" because he believed that art, science, and technology would corrupt mankind.

In 1882, Friedrich Nietzsche wrote an anecdote about Diogenes, in which he vainly searched the markets of Athens with a lantern in hand to find someone honest.

In Nietzsche's version, the madman runs out into the square and declares, "God is dead." This was a Nietzscheian appeal to "re-examine values," which repudiated the prevailing Christian and Platonist notions of placing the universal and spiritual above the material.

Nietzsche admired Diogenes, who was stubbornly obsessed with "here and now".

More recently, 1960s hippies have been compared to Diogenes in terms of countercultural rebellion.

Although Diogenes' ideas have been repeatedly adopted and revisited,

The original cynics may not approve of such new interpretations, because they believed that their values ​​of rejecting convention and living with nature were the only correct ones.

Whether or not you agree with the cynics and their offshoots, what they have in common is an attitude of questioning the status quo.

I think it's still worth emulating that point: instead of blindly following conventions and the way the majority thinks, it's about really thinking about what's really worth it.

Forrest North (FN): Any collaboration starts with a single conversation.

Here I'm going to tell you all about the first story we did.

I lived in a log cabin in Washington state and had a lot of free time.

Yves Beart (YB): I grew up in scenic Switzerland

FN: I've always had a strong interest in alternative cars.

This is a land yacht crossing the Nevada desert

YB: This is an invention that combines windsurfing and skiing.

FN: I was also interested in inventing dangerous things.

This is a 100,00 Volt Tesla Coil

YB: My mother's "upset" is this crazy teenage fashion

(Laughter) FN: I also had a strong interest in alternative energy, so I raced a solar car across Australia, and I also did it in the United States and Japan.

YB: We talked a lot about wind and solar energy.

We had a lot in common that got us excited.

So we decided to do a special project together.

Combining engineering, design, and...

FN: Really, we decided to create one perfectly integrated and great product.

YB: And so we had our "baby"

(laughs) FN: Can you bring us our "baby"?

(Applause) This "baby" is all electric.

can run 150 miles per hour,

It has about twice the performance of a normal electric bike

What's really exciting about the bike is that it's just such a great marriage of engineering and design.

It has resulted in an amazing user experience

This was a great job with Yves Beart

He came up with our name and logo. "Mission Motors"

We only have three minutes, but we could talk about it in three hours.

YB: Thank you

FN: Thanks to TED. And thanks to Chris for inviting us.

(applause)

This chimpanzee found an overripe plum that had fallen in the wind.

Many of them cracked, and their captivating, fruity aromas attracted chimpanzees.

As he gorges on the fruit, he begins to experience magical effects.

This chimpanzee unwittingly stumbled across a process humans would eventually use to make beer, wine, and other alcohols.

The sugars in overripe fruits attract microbes called yeasts.

When the yeast feeds on the sugars in the fruit, it produces a substance called ethanol, a type of alcohol found in alcoholic beverages.

This process is called fermentation

It's not known exactly when humans started making fermented beverages.

The earliest evidence comes from the remains of a 7000 BC pottery jar found in China, revealing that people fermented rice, millet, grapes and honey to make alcoholic beverages.

Over the course of thousands of years, cultures around the world have created their own unique fermented beverages.

Ancient Mesopotamians and Egyptians stored grain to make beer year-round.

This beer was available to people of all social classes and even became a daily ration for workers.

They also made wine, but the climate wasn't ideal for growing grapes, so it was a rare and expensive delicacy.

In contrast to Egypt and Mesopotamia, where beer was more readily available, wine was more readily available in Greece and Rome, where grapes were easier to grow.

Yeast ferments the sugars in any plant, so they made alcohol from the grains and plants that grew in the regions inhabited by ancient people.

In South America, chicha was made from grains, sometimes with the addition of hallucinogenic herbs.

In what is now Mexico, people preferred pulque made from cactus sap, while people in East Africa made beer from bananas and palms.

In what is now Japan, sake was made from rice.

Most regions of the planet have their own fermented beverages.

As alcohol consumption became a part of everyday life, some experts believed it had a positive effect. Greek physicians believed wine was good for health, and poets proved that wine aroused creativity.

Some thought that the abuse potential of alcohol was more of a problem.

Greek philosophers advocated temperance

In Europe, early Jewish and Christian writers incorporated wine into their rituals, but considered drunkenness a sin.

In the Middle East, Africa, and Spain, Islamic law prohibited prayer while intoxicated, but the ban on alcohol was gradually enforced.

Ancient fermented beverages contained relatively low amounts of alcohol.

At about 13 percent, the by-products that wild yeasts produce during fermentation become poisonous and kill the yeast.

When the yeast dies, fermentation stops and the alcohol content levels off.

So for thousands of years, alcohol content was limited.

That changed with the invention of the process of distillation.

A ninth-century Arabic text describes boiling the fermented liquid to evaporate the alcohol.

Alcohol boils at a lower temperature than water, so the alcohol boils first.

Collecting this vapor and cooling it leaves behind a liquid alcohol with the highest concentration of any fermented beverage.

Initially, these stronger spirits were used for medicinal purposes.

And since spirits, unlike beer and wine, do not spoil, they became an important commodity in trade.

Rum, made from sugar harvested in the European colonies of the Caribbean, was exported to North America as an important seafarer's commodity.

Europeans brought brandy and gin to Africa and traded for slaves, land and commodities like palm oil and rubber.

Distilled spirits served as currency in these regions.

Distilled spirits played an important role in long-distance voyages during the Age of Discovery.

Since voyages from Europe to East Asia and the Americas can take months, it was difficult to keep the water fresh for the sailors.

Alcohol is a preservative that kills harmful microbes, so to keep the water fresher longer, I added a bucket of brandy to the water barrel.

Thus, by the 1600s, alcohol had gone from merely annoying animals to a costly stimulus to international trade and global exploration.

As time went on, the role of alcohol in human society only became more complicated.

I'm here to give you a very important message, because I think you've found the most important thing for success.

And it was found at Stanford University near here.

Psychological researchers put four-year-olds one by one into a room with no adults.

And I would say to the four-year-old, "Johnny, I'm going to leave the marshmallows here, and when you come back in 15 minutes,

If you still have marshmallows, I'll give you one more, so you can eat two."

Telling a four-year-old to wait 15 minutes for something he likes is like being told by an adult, "I'll have your coffee in two hours."

(Laughter) Exactly the same.

So what happened after the professor left the room?

As soon as the door closes...

2 out of 3 people will eat the marshmallow

5 seconds 10 seconds 40 seconds 50 seconds 2 minutes 4 minutes 8 minutes

Some children ate at 14 and a half minutes

(Laughter) I just couldn't wait.

It's funny, one in three people do this when they see a marshmallow...

look at the marshmallows

Undo

Walk around Play in skirts and trousers

At the age of four, they already know the most important thing for success: the ability to save the fun for later.

self-discipline is the most important factor for success

After 14 or 15 years, we did a follow-up study.

What did you find out?

Researchers found the children aged 18 to 19

All the children who didn't eat marshmallows found that life was going well.

good grades very good

be happy have a future

I have good relationships with teachers and friends

was doing well anyway

Many of the children who ate marshmallows had some sort of problem.

couldn't go to college

Some drop out due to poor grades

A handful of people in school have poor grades

Only a few did well

I wondered: do children in Latin America react the same way as children in America?

So I did the same experiment in Colombia.

It was very interesting.It was for 4 to 6 year olds.

let me show you what happened

(Laughter) What were the results in Colombia?

Two out of three Colombian children ate marshmallows, and a third did not.

This girl is interesting This girl ate inside a marshmallow

(Laughter) So she tried to pretend she didn't eat so she could get two.

But I ate

So she'll be successful, but we'll have to keep an eye on her.

(Laughter) For example, she can't work at the bank or at the cash register.

But this kid will make it

And this applies to everything, even sales.

A salesman... handed it to a customer who said, "I want this."

This salesman is the one who ate the marshmallow.

If this person says, 'Can I ask you a question?

There may be something more suitable for you."

This person can increase sales

This applies to people of any profession.

Finally, Koreans did this.

Result is? It was great, so we started talking about making a book out of it.

And then a book for children was made, and now it's spreading all over Korea.

I teach this principle to my children.

We need to teach this principle in the United States, because we have a lot of debt.

we eat more marshmallows than we make

thank you for listening

Let's talk about mania

Beatles mania first

Crazy teens... screaming, screaming, chaos

Sports mania Deafening crowd cheers Everybody's thinking about one thing Putting the ball in the net

And then there's religion maniacs, joys, and tears, worldviews

Mania brings good things,

to incite fear

or it can be fatal

A new mania has emerged in the world

English study maniac

Listen to an English practice by a Chinese student shouting Teacher: "..it will change your life!"

Student: "I will change my life"

Teacher: "I don't want to make my parents sad."

Student: "I don't want to make my parents sad."

Teacher: "I will never disappoint my country."

Student: "I will never disappoint my country."

Teacher: "Above all"... Student: "Above all"...

Teacher: "I don't want to disappoint myself"

Student: "I don't want to disappoint myself."

JW: How many people in the world are learning English?

2 billion people

Student: "T-shirt dress"

JW: In Latin America, in India, in Southeast Asia, and most importantly in China.

If you are a Chinese student, you start learning English in the third grade, by law.

And this year, China has become the most English-speaking country in the world.

(laughter) Why English? In a word, it's an opportunity.

An opportunity to live a better life, a better job, an opportunity to pay for school, an opportunity to eat better.

Imagine a student taking an exam for three full days

The results of this exam literally determine her future.

She studies 12 hours a day and takes three years to prepare.

25% of her grades are in English

It's called Gaokao, and 80 million Chinese students have taken this rigorous test.

It's hard to imagine your enthusiasm for learning English unless you've seen it.

Teacher: "Perfect!" Student: "Perfect!"

Teacher: "Perfect!" Student: "Perfect!"

Teacher: "I want to speak perfect English"

Student: "I want to speak perfect English"

Teacher: "I want to talk.." Student: "I want to talk.."

Teacher: "Perfect English" Student: "Perfect English"

Teacher: "I want to change my life!"

Student: "I want to change my life!"

JW: So are Englishmania good or bad?

Is English a tsunami washing away other languages? I don't think so

English is a foreign language used all over the world

your mother tongue is your life

But English allows us to participate in larger conversations, global conversations about global issues like climate change and poverty, or hunger and disease.

The world has other universal languages

Mathematics is the language of science

music is the language of emotions

And English is about to become a problem-solving language.

Not because America is pushing it, but because the world wants it.

English mania is a turning point

Like getting electricity in our cities, or like the fall of the Berlin Wall, English is a symbol of a better future, a future in which we have a language to solve our common problems.

Thank you very much

(applause)

This is my first trip abroad since becoming First Lady...

can you believe it?

(Applause) It's not my first visit to the UK, but I'm happy that it's my first official visit.

The special relationship between the United States and Great Britain

It's not just because of the relationships between governments, it's because of our common language and values.

It was an honor to meet some of Britain's most incredible women during my stay here, women who pave the way for you.

And it's a pleasure to meet you all, the future leaders of the UK and the world.

You may think that our circumstances are very different. Me standing here as the First Lady of the United States and you, who are still going to school, actually have a lot in common.

Nothing in my life has ever anticipated me standing here, as the first African-American First Lady...

there's no reason why i did

I didn't come from a wealthy family, and I didn't have much of a social standing.

I grew up on the South Side of Chicago

This is what Chicago feels like

I grew up in a working-class community

My father was a city employee all his life, and my mother was a stay-at-home mom.

He always took care of my brother and me at home.

neither of my parents went to college

My father was diagnosed with multiple sclerosis in the prime of his life.

Even though walking and getting dressed in the morning were getting harder and harder - it was getting more and more painful - my father never complained about the pain.

I was just grateful for what I had

got up a little earlier and worked harder

My brother and I grew up with everything we really needed: love, strong values, a belief in a good education, and just hard work.

I'm an example of what a girl who has been loved and nurtured by those around her all her life can do...

My life has been surrounded by amazing women - grandmothers, teachers, aunts, cousins, neighbors - who have taught me inner strength and dignity.

And my mother, the most important role model in my life, who now lives with me in the White House and helps care for our two daughters, Malia and Sasha.

My daughters, and they mean a lot to me. They're instilling the same values ​​that my brother and I were taught -- compassion, honesty, confidence, patience... surrounded by the unconditional love that only a grandmother can give.

Luckily, I was also cherished and encouraged by strong male role models: my father, my brother, my uncle, my grandfather...

They also taught me important things

It taught me about the ideal of respectable relationships between men and women.

You taught me what a tight-knit marriage is, built on trust, commitment and admiration for each other's abilities...

As for what it means to be a father and raise a family...

Don't just invest in your own home, go out into the community and help your child grow up there.

These are of the same nature as I asked my own husband, Barack Obama...

I remember the first time we met and you asked me out on a date.

I was taken to a community meeting.

(Laughter) How romantic.

(Laughter) Barack was a community organizer.

He helped people find jobs and helped those in need.

When I spoke to community center residents, I talked about two concepts.

The "actual world" and the "ideal world"

I told this story all through my campaign.

What he said is that we've always accepted the distance between the two.

And sometimes we are content with the world as it is, even if it doesn't reflect our values ​​and aspirations...

That day, Barack reminded us that all of us in that room knew what an ideal world would look like...

What is fairness, justice and opportunity?

we all know

He called on those in attendance to commit themselves to bridging the gap between the two, to work together to bring the world as it is and the world as it should be...

I want to talk about this today because I believe that everyone in this school is a very important factor in bridging the gap.

You are the women who build the ideal world

You are the ones who will make history

Not just for ourselves, but for everyone in our generation, and for the next generation...

That's why it's so important to get a good education.

That's why what you're experiencing - the good and the bad, the teachers you like and the teachers you don't like - why is it so important?

Because no community, no country, and ultimately the world, can grow stronger than women's health.

It's important, so please keep that in mind.

Health includes outstanding education

The difference between a struggling family and a healthy family is whether or not an independent woman is at the center of the family.

The difference between a declining community and a thriving community is whether there is a healthy amount of respect between men and women, and we should appreciate each other's contributions to society...

The difference between a declining country and a prosperous country is whether they recognize the need for equal educational opportunities for boys and girls.

The school is named after Britain's first female doctor, and the surrounding buildings are named after Mexican artist Frida Kahlo, Jamaican nurse Mary Seacole, known as "The Black Nightingale," and British author Emily Brontë.

defied any obstacle

Like "there are no limits" written on the back

They knew no other way to live except to follow their dreams...

As a result, they removed many obstacles.

And it opened new doors, and millions of female doctors and nurses, artists and writers followed suit.

By getting a good education, you can decide your own destiny.

Please remember

The reason I'm standing here is because of my education.

I never skipped class, I don't know if anyone does

i never skipped

loved to get good grades

liked to be smart

I liked being on time I liked getting things done

I thought becoming smarter would be the coolest thing in the world

If you share the same values, you will be able to decide your own destiny.

will open the way

You can make your dreams come true, and now you can help others do the same.

History proves it doesn't matter if you're from a public housing estate or from the countryside.

Your success depends on your fortitude, your confidence and your hard work.

that's the reality of the world we live in

you decide your destiny

It's not easy, no doubt

but you have everything

you have everything you need to succeed

my husband works in a big office

called oval office

He has a desk in the White House called the Resolute Desk.

It was made from the timber of the ship Resolute and was a gift from Queen Victoria.

A symbol of enduring goodwill between Britain and the United States

And the name Resolute evokes the strength of character needed not only to lead a nation, but also to live a purposeful life...

In chasing your dreams, I want you to have a firm determination, push forward without limits, and make the most of your talents.You have so many talents, you definitely have them.Please use them to create your ideal world.

I have high hopes for you

To each and every one of you, I wish you all the very best...

the world is big

and full of challenges

We need a strong, smart, confident young woman to lead us.

I'm sure you can do it I love you thank you

(applause)

On a cold winter's night in 1916, Felix Yusupov anxiously prepared to receive his guests.

If everything had gone according to plan, the guest would have died by morning, but four other people had already completed an attempted assassination attempt on the guest.

The Russian monarchy was on the verge of collapse, and for Yusupov and his fellow aristocrats, the cleric he invited was the culprit.

But who was he and how could one monk be the root of the fate of an empire?

Grigory Efimovich Rasputin was born in 1869 to a Siberian farmer's family.

If I hadn't converted to Russian Orthodox Christianity in the 1890s, I would have lived a quiet life in my little village.

For years he made pilgrimages throughout Russia, strongly influenced by the humble monks who toured holy sites.

Along the way, people were drawn to the presence of Rasputin.

Some even believed he had prophetic and healing powers.

Despite Rasputin's drunkenness, theft, and promiscuity, his monastic reputation quickly spread beyond Siberia, attracting laymen and high-ranking Russian Orthodox clergy.

When Rasputin finally reached the capital, St. Petersburg, he used his charisma and connections to win the hearts of the imperial family's spiritual advisors.

In November of 1905, Rasputin was finally introduced to Nicholas II.

Tsar Nicholas and his wife Alexandra believed in not only Orthodoxy, but also mysticism and supernatural powers, and this Siberian saint amazed them.

It was a particularly tumultuous time for Russia and the imperial family.

It was after the First Revolution of 1905, and it was barely holding on to the monarchy.

In addition to the political difficulties, there were also deep personal woes: the heir to the throne, Alexei, had a life-threatening disease called hemophilia.

In 1912, when Alexei was suffering from a serious illness, Rasputin advised the Tsar and Duchess to stop treating the doctors.

Alexei's health improved, and Rasputin's mystical healing powers increased the confidence of the imperial family and solidified his position at court.

We now know that this group of doctors was prescribing aspirin, which worsened the hemophilia.

After this incident, Rasputin predicted, "If he dies or if the imperial family abandons him, he will soon lose both the prince and the emperor."

People outside the imperial family saw Rasputin differently.

The peasants saw Rasputin as a companion who could deliver their voiceless voices to their monarch.

But the nobility and the clergy hated his presence.

Because Rasputin never recovered from his misbehavior, they questioned his power and thought he was a bad influence on the imperial family.

By the end of World War I, they were convinced that the only way to restore order was to eliminate this false saint.

With this conviction, Yusupov began plotting to assassinate Rasputin.

The details remain shrouded in mystery, but what we know from Yusupov's memoirs is that

He gave Rasputin a candy he believed contained potassium cyanide.

But unbeknownst to Yusupov, one of his accomplices had a change of heart and replaced the poison with something harmless.

To Yusupov's surprise, Rasputin ate it without any effect.

In desperation, he shot Rasputin at point-blank range.

But Rasputin got up, punched Yusupov, who attacked him, and fled.

Yusupov and his accomplices pursued Rasputin, finally killed him by shooting him in the forehead, and dumped his corpse into the Little Nevka River.

But far from this increasing the authority of the monarchy, Rasputin's death infuriated the peasants.

As Rasputin predicted, the imperial family was murdered not long after he was killed.

Whether the fall of the Russian monarchy was the product of the monk's curse, or the result of decades of political tension, will never be known.

All human life All life depends on plants

I would like to talk a little bit about that

just think about it

Whether you live in a small African village or in a big city, everything ultimately comes from plants -- food, medicine, fuel, construction work, clothing -- all the visible things, or spiritual things that are important to us, recreation, or even soil formation, its impact on the atmosphere, primary production, and so on.

Surprisingly, even the books here are made from plants!

All these things come from plants

If it weren't for the plants, we wouldn't be here either.

plants are in danger

Plants are in danger because of climate change

And plants are also endangered because they coexist with people like us on this planet.

People like us want to do things that destroy plants and their habitats.

Whether it's food production, transplanting alien plants to places that shouldn't be there, or using habitats for other purposes, all of this means that plants either adapt or die or move.

But sometimes it turns out that movement is very difficult for plants, because cities and other things can get in the way of movement.

So if all human life depends on plants, it makes sense that we should try to save them.

I think so

Therefore, I would like to introduce a project to save plants.

The way to save plants is to save the seeds.

Because seeds, among all their virtues, are the future of plants.

All the genetic information for future generations is in the seed.

Now, this building over here doesn't look like much of a building.

But there are many floors underground

This is the world's largest seed bank.

Seed banks are not only distributed in the South of England, but all over the world. I will touch on that later

This building is designed to withstand a nuclear attack.

I hope that doesn't happen

So if you want to set up a seed bank, you have to decide what to store there.

So we decided that the species we wanted to save first and foremost were the most endangered species.

they are arid region species

So first of all, we signed contracts with 50 countries.

That means negotiating deals with heads of state and officials in those 50 countries.

We have 120 partners in these orange countries around the world.

People from all over the world come to the lab to study, and then they go back to their countries and plan exactly how to collect these seeds.

They have thousands of people tagging areas where these plants are said to live.

They look for those plants. And find something blooming,

return to when you set the seed

We collect seeds all over the world.

These seeds - some of them are very non-technical

All of them are packed in a bag with a scoop and dried.

I also do labeling. Some places use high tech, some use low tech.

The main thing is that the seeds must be dried very carefully at low temperatures.

Then you have to store them at minus 20 degrees Celsius -- minus four degrees Fahrenheit, I think -- in very low humidity.

Then these seeds, we think, many of them will be able to germinate after thousands, certainly hundreds of years.

It is not a good idea to store them if you are not sure if their seeds are still viable.

So every ten years we do a germination test on all the seed samples we have.

network, so

People all over the world are doing the same.

So we can develop a germination protocol.

That means we know the exact combination of heat and cold and their cycles to make these seeds germinate.

that's very useful information

We grow these and tell the people where these seeds come from, look, in fact we're not just stockpiling these seeds for later, we can give you information on how to germinate these difficult-to-grow plants.

And that's what's already happening

so how far have we come

I am pleased to announce today that our third billionth seed is now in storage.

10% of all plants on the planet, 24,000 species are now safe 30,000 species by next year if funding is available

Storing 25% of all the world's plants by 2020

These aren't just cereal plants like the ones you might have seen stored in Svalbad, Norway.

This one is at least 100 times the size of the collection

We have thousands of collections sent all over the world. Drought-tolerant forest plant species are sent to Pakistan and Egypt. Photosynthetic plants are sent here to the United States. Salt-tolerant pasture species are sent to Australia.This list goes on and on.

These seeds are used for status recovery

So here in the Tallgrass Prairie National Wildlife Refuge in the United States, or in habitats that have already been damaged, like minefields in several countries, recovery is already happening thanks to this collection of these species.

Some of the plants, like the one on the bottom left of the screen, are the last ones left.

The one this man is loading the seed truck with has only the last 30 trees left.

It's an incredibly useful plant, both for protein and for medicine.

We are training in China, the United States and many other countries.

What is the cost of

$2,800 per serving averages

I think it's cheap considering its value

And you can get the scientific data for that as well.

Future research is: "How can we discover genetic and molecular markers for species viability without planting every decade?"

and we are almost close to the goal

Thank you for your attention

(applause)

about my place in the world

And I thought that if time continues infinitely into the future and the past, then what it means is that time at any point in time is infinitely small and has no meaning.

Therefore, as long as we are on the time axis, we may not have a place in the world.

But like anything else there is no place

So I think every moment is the most important ever, and of course this moment right now.

So the music you're going to listen to right now might just be the most important music in your life.

(Laughter) (Applause) (Applause) Thank you.

(Applause) (Applause) If you ever get the chance to meet any of these people, please don't ask me, "Oh, you're so tiny, when you actually meet him."

(Laughter) The stage is an illusion, so why not?

(Laughter) It's like a distortion of the world.

I don't know, but I get asked a lot "Wow, your guitar is so big!"

(Laughter) "You must have made a special order for a giant guitar!"

(Laughter) (Applause) Thank you very much.

(applause)

How does an alcohol breathalyzer measure blood alcohol levels in just your breath hours after you've finished drinking?

Your breath contains hundreds, even thousands, of trace amounts of volatile organic compounds, which are small molecules that are light and easily transported as gases.

One of them is ethanol, which is found in the alcoholic beverages we consume.

Ethanol travels through the bloodstream to the small alveoli in the lungs, where when exhaled, its concentration is on average 2,000 times lower than in the blood.

When you blow on the breathalyzer, the ethanol in your exhaled breath enters the reaction chamber.

There, it's transformed into another molecule called acetic acid, in a special reactor where an electric current is generated during the chemical reaction.

The strength of the current indicates the amount of ethanol in the air, and thus the blood sample.

In addition to the volatile organic compounds like ethanol that we consume in our food and drink, many others are made during the biochemical processes of our cells.

If that process is disrupted, for example by some disease, the volatile organic compounds in the breath may also change.

So, can we analyze human breath to detect disease without invasive diagnostic methods like biopsies, blood draws and radiation?

In theory it's possible, but testing for disease is much more complicated than testing for alcohol.

To identify a disease, researchers need to look at a series of dozens of compounds in breath.

In a given disease, the concentrations of some of these compounds may fluctuate, some may not, and each disease may have a different profile, and the same disease may have different stages.

Cancer, for example, is one of the most studied diseases diagnosed by breath analysis.

One of the biochemical changes that many tumors cause is an increase in an energy-producing process called glycolysis.

This is known as the Warburg effect, and this increased glycolysis results in an increase in metabolites such as lactate, which in turn affects all metabolic processes, ultimately altering breath composition and potentially increasing concentrations of volatile organic compounds such as dimethyl sulfide.

But the Warburg effect is only one potential indicator of cancer activity and reveals nothing about cancer types.

Diagnosis requires more indicators

To find subtle differences, researchers compare the breaths of healthy people with the breaths of people with specific diseases, using profiles based on hundreds of breath samples.

This complex analysis requires a more versatile type of sensor that is radically different than breathalyzers.

There are several currently in development

Some observe and discern the movement of compounds in an electric field.

Others put a specific combination of volatile organic compounds in contact with an array of resistors made of different materials and look at the change in resistance of each resistor.

there are some other challenges

These substances are present in very low concentrations, usually just a few parts per billion (ppb), much lower than the concentration of ethanol in breath.

Compound levels are also influenced by factors other than disease: age, gender, nutritional status, and lifestyle.

The final problem is distinguishing between compounds in the sample that are produced in the patient's body and those that are inhaled just prior to testing.

These challenges remain, and breath analysis is not yet practical.

But preliminary clinical trials in lung cancer, colon cancer, and other cancers are showing promising results.

Detecting cancer early may one day be as easy as breathing.

College presidents aren't the first people that come to mind when it comes to using a fertile imagination.

So let me tell you how I came to be involved in this effort.

The story goes back to the late 90's

I was given the opportunity to meet with leading educators from newly democratized Russia and Eastern Europe.

They were trying to figure out how to rebuild their country's universities.

Education in the former Soviet Union was effectively propaganda that served the state's ideology, and they understood that without major changes they could not provide an education suitable for free men and women.

Given this rare opportunity to start fresh, they chose the liberal arts as the most compelling model of education, because it has historically maximized the broad intellectual capacity and deep ethical endowment of students.

So they decided, and they came to America, the home of liberal arts education, to meet with some of us, the educators who are most closely associated with the liberal arts.

They spoke with passion and urgency about their intellectual convictions, a strong voice I hadn't heard in decades, a dream long forgotten.

Because, in fact, American college education had long since moved away from the passion that encouraged them.

However, in my case, unlike them, who were trying to reform education from scratch, there was already a lot of writing on the "slate", and the content was not encouraging.

In fact, liberal arts education no longer exists, or at least true liberal arts education does not exist in this country.

We've specialized the liberal arts so much that it can no longer offer the breadth of applicability and high capacity for civic engagement that are its hallmarks.

Over the past 100 years, professionals have abandoned the educated ranks to become the only models of intellectual achievement. (Applause) Yes, expertise does matter.

But that rule comes at a huge cost to universities.

Academic fields are becoming more fragmented, and more emphasis is placed on specialized and obscure knowledge.

We've made even literary studies difficult.

You might think you know Jane Austen's novels, but that's only until you meet postmodernist deconstructivism.

Today's university students abandon all interests other than one specialty as a way forward.

Even within that one specialty, we're constantly narrowing our focus and learning more about less, and this is happening despite the overwhelming evidence that things are interconnected.

If you don't think I'm exaggerating, take a look at the beginning of this introduction to anthropology.

As you move up the ranks of the university system, your values ​​outside of your professional competence become more and more questionable.

For example, as a research question, "What kind of world are we creating?

What kind of world should we create?

What kind of world can we create? ”

Such issues are treated with increasing skepticism and are not brought up.

In doing so, we in defense of secular democracy are effectively ceding the link between education and values ​​to the fundamentalists, who, of course, use education without qualms to propagate their values, the absolute values ​​of the Theocracy.

Meanwhile, democratic values ​​and voices are silent.

Either we've lost touch with those values, or we believe we don't need or can't teach them.

This evasion of social values ​​may seem at odds with the social contribution initiatives that are exploding at universities.

Despite all the attention these initiatives have received, they almost invariably remain extracurricular activities.

Basically, the public mind is treated as being outside the realm of serious thought and mature purpose.

In short, in the face of motivations to change the world, higher education institutions such as universities are probably more likely to create a sense of academic helplessness than they create empowerment.

This mix of simplification of civic engagement, idealization of expertise, fragmentation of knowledge, emphasis on expertise in expertise, and neutrality as a condition of academic norms is very dangerous when it comes to pursuing such important relationships as education and the public good, intellectual norms and human liberty.

The sheer disparity between the reality of higher education institutions and our ability to foresee the future on this topic is enough to prompt a rethink, but perhaps what was happening outside of university education made setbacks inconceivable.

Whether it's about threats to the environment, about inequality in the distribution of wealth, about constant energy use -- the lack of sound or sustainable policies -- we were deeply troubled.

And it was just the beginning

The decadence of our political life has become a real nightmare. Nothing has been spared: the separation of powers, civil liberties, the rule of law, the relationship between church and state.

It also entailed an incredible waste of the nation's material wealth.

A disastrous predilection for the use of force became commonplace, with a similar aversion to other forms of influence.

At the same time, our military forces were utterly powerless, unable to stop, or even resist, the genocide in Rwanda, Darfur, and Myanmar.

Our public education was once the norm of the world, but now its failures are very visible.

The vast majority of our students lack basic skills and even minimal cultural literacy.

More than half of Americans don't believe in evolution, despite the world's envy of research institutes.

And I really wonder how many of the people who believe it actually understand it.

Incredibly, this country, with all its material, intellectual and spiritual resources, seems utterly incapable of reversing a precipitous decline in any of these areas.

What's even more surprising is the fact that, in my opinion, no one has ever seen a connection between what's happening to the nation and what's happening to the leading educational institutions.

We may be at the top of the list when it comes to influence over the use of personal wealth.

But in its responsibility to keep this democracy healthy, it doesn't even make the list.

we are at risk

Our third president, Thomas Jefferson, understood what that meant when he said, "If a nation is ignorant of the state of civilization and does not intend to be caught in it, it is expecting something that could never happen, never before, never before."

(Applause) From a more personal standpoint, this betrayal of our principles, our integrity and our hopes has forced us to ask ourselves the question, "How would you answer, years later, when someone asked you, 'What were you doing?'

So the conversation started at Bennington College.

We knew that if we were to restore the health of a liberal arts education, we would need to fundamentally rethink our basic assumptions, starting with our priorities.

Enhancing the public interest has become a primary objective.

Achieving civic virtues is tied to using our intellect and imagination in the most rewarding ways.

Addressing agency and influence through a liberal arts education flips things around completely, reflecting the reality that no one has the answers to the challenges facing citizens of this century, and that each of us has a responsibility to strive and participate in finding them.

At Bennington College, we will continue to teach the humanities and natural sciences as areas of immersion education that recognize the difference between personal and professional purposes.

But the balance will be restored, and our common purpose will be given equal, if not more, importance.

When the plan came out, it was surprisingly simple and clean.

The idea is to make political and social issues themselves -- from health and education to the use of force -- part of the curriculum.

It will have a commanding role in traditional disciplines.

But rather than splitting them up, we plan to combine them, which means interdependent circles rather than exclusive triangles.

And it's important to treat these items not as research questions, but as frameworks for action.

So the challenge is to think about what it takes to actually do things that make a significant and sustainable difference.

Contrary to popular assumptions, the emphasis on action adds a special sense of urgency to thinking.

The importance of understanding values ​​like justice, fairness, and truth becomes increasingly apparent as students discover that curiosity alone doesn't teach them what they need to know when the issue is rethinking education, addressing health issues, or strategies for achieving fair economics.

The values ​​of the past will be revived, and many friends can be found there.

You're not the first to try to figure this out, and you won't be the last.

Even more preciously, history becomes a laboratory, showing us the intended and actual consequences of an opinion unfolding.

As my students say, "When you're contemplating what to do about something important, it's important to think deeply."

A new liberal arts education is emerging that can underpin this kind of action-oriented curriculum.

Rhetoric is the art of organizing the world of words for maximum effect.

Design is the art of organizing the world of things

Mediation and improvisation also play a special role in this new liberal arts education.

The central quantitative arguments for making changes where measurement matters are also well laid out.

So is the ability to systematically distinguish between what's in the center and what's on the periphery.

And when engagement is critically important, the power of technology is much more pronounced.

But so is what's inside

As our engagement grows stronger, the question of "what about?" becomes increasingly important.

When improvisation, resourcefulness and imagination are key, the artist is finally recognized in the process of planning a strategy of action.

In this dramatically expanded philosophy of liberal arts education, the continuum of thought and action becomes life, where knowledge honed outside the classroom becomes essential.

Social activists, business leaders, lawyers, politicians and professionals will join faculty as active and active participants in the union of liberal arts education and the promotion of the public good.

Students, likewise, continually expand their activities outside the classroom to engage directly with the world.

And, of course, this new wine needs a new container, and if we want to express the vibrancy and power of this idea, we need a new framework.

One of the most important discoveries we've made in public affairs has been to appreciate that the hard choice is not between good and evil, but between competing values.

This discovery is changing consciousness

It reduces self-righteousness, fundamentally changes the tone and character of debate, and dramatically improves the chances of finding common ground.

Ideologies, fanaticism, and unsubstantiated theories will never do that.

This is indeed political education.

But it's the politics of belief, not the politics of factions.

So the challenge at Bennington College is to put that into action.

Bennington College's 2008 greeting card shows an architect's sketch of a building that was completed in 2010 and will be central to improving public affairs.

The institution will embody and sustain this new educational responsibility.

It's like a non-religious church, for example.

The words written on the cards express what is going on inside.

We intend to transform the intelligence and imagination, passion and daring of our students and faculty into growth strategies to tackle the big challenges of our time.

so we are doing our job

The last few weeks have been a blast across the country, but on the other hand, it would be tragic if you thought the job was done.

The cold silence that we've experienced -- and that silence in the face of a broken legal system, a collapse of public institutions, a deteriorating infrastructure -- isn't limited to universities.

We, the American people, have become so accustomed to irrelevance that we can't do anything meaningful about something important about governance other than waiting four more years.

We also continue to be sidelined as the only ones who can find answers, despite overwhelming evidence to the contrary.

The problem is that there is no such thing as a viable democracy made up of experts, enthusiasts, politicians and bystanders.

(Applause) People will and should continue to learn everything that exists in order to know something.

in fact we do it all the time

And, of course, there will be people who spend their entire lives working in very specific fields of study.

But this kind of narrow-mindedness will not create the flexibility of mind, the diversity of perspectives, the capacity for collaboration and innovation that this country needs.

That's where we need you

What's clear is that the individual talents of all of you here need to turn your attention to the collaborative, cumbersome, frustrating, contentious and unruly world of politics and public policy.

President Obama and his team simply can't do that.

Even if the question of where to start seems daunting, you are at the beginning of this adventure, not the end.

Suffering from being overwhelmed is the first step if you really want to get something that really matters.

What do you do when you feel overwhelmed and tormented?

Well you have two

One is the ability to think and the other is others who can cooperate

Let's start there and change the world

(applause)

After centuries of fighting, the kingdoms of the world have finally come to an agreement.

Every five years a national team of elves, goblins and treefolk hold a grand tournament of dragon-riding jousting.

Each team will play each other once

The team with the most wins will rule the central zone until the next tournament.

The game will be played completely behind closed doors, with the exception of a group of witches who will keep out magic, curses, spells, and other cheating to prevent outside interference.

You are entrusted with the very important task of recording the score of the tournament's opening game.

But maybe you went too far at the opening ceremony, and when you woke up, you found that the game had already started.

Luckily no one has noticed you're gone

But you have to figure things out quickly, and if your boss, who is also the head of the tournament, finds out that you've overslept, he'll bounce your head off.

Thinking of what I could do, I decided to exchange my savings for information from one of the watchdog wizards, and had them fill out a blank scorecard.

But before he could finish writing, the boss entered the tent.

Somehow I managed to hide the scorecard and the wizard disappeared.

Boss giggle

"I bet you didn't believe what Goback said. Because of his curse, he can only lie. Even writing is a lie.

By the way, tournament scores are incredibly low.

Every team has played at least one match and none of them have scored more than 5 points!

Anyway, I'll be right back to see the scorecards." You laughed too, and when the boss left, you now knew all the numbers were wrong - you stared at the card with the numbers partially written on it.

You only have one chance to save yourself What was the real score in each match?

Let's stop the video here and think about it.

The great thing about this riddle is that you can solve it even if you lack almost all the correct information.

That's possible because the very fact that it's misinformation is meaningful information.

The first key is that there are only two opponents, so no team should play at most two games.

If the elves didn't actually play one game, and the goblins didn't play two, then the truth is that the elves finished two games and the goblins one.

The Elves have played two games, which means they've faced each team once.

The goblins only have one match against the elves, so the goblin against treefolk match hasn't happened yet.

It is wrong to say that the Treefolk tied in 0 matches, so the match against the Elves was a draw.

I also know that the elves won at least one game, tied with the treefolk, so they should have beaten the goblins.

But do we know the actual score?

Let's start with Elves vs. Treefolk

No match scored more than 5 points, so the final tally should be 0-0, 1-1 or 2-2.

But the treefolk should have scored, and it's wrong to say they only scored one point.

so there's only two to two

In an elf vs. goblin match, the goblin should have scored at least one point.

The elves should have won by scoring at least 2 points.

This narrows down the options for 5 points or less.

Elves can't score three points, so we can exclude those two (3-1 and 3-2).

This (4 vs. 1) also doesn't apply, because the total points scored by the elves in the two matches is 6.

So the score should have been 2 to 1.

With one game left, I managed to save my job and my neck.

Even if the wizard Gobach lied, you were able to quickly find out the score thanks to your deductive reasoning skills.

For four months, walk around thinking about three wishes, and the ideas will gradually seep out.

I think everyone should think about it. If only I had three wishes.

And it's a good mental exercise to dig into what we're going to do and figure out what's important and reflect on the world around us.

And by thinking, can we get people's attention and take action or propose ideas that change the world?

Inspired by nature -- this is the theme

And frankly, I think this was also my starting point.

As a Canadian, I became very interested in landscapes.

Northern Canada is vast and sparsely populated, and my father was an avid outdoor enthusiast.

I have experienced the outdoors a lot

I didn't really know what nature was or how it was affecting me.

And what it taught me now is that we're only temporary, and nature far out in the distance -- visible pristine coastlines and forests -- has taught me that geochronological time has flown so long, and that humans experience time in different ways.

And that, for me, became the reference point I needed to make my work.

I took this photo of grass growing by the roadside in spring.

This is grass regeneration, and for many years after that, I tried to capture a pristine landscape.

However, I realized that I couldn't make a living from fine art photography, and I vaguely felt that even if I continued to aim for fine art photography, there would be a problem.

I was stuck in the genre of calendar photography and similar photography, and couldn't get out of it.

It's for this reason that I started thinking about how we could rethink the landscape.

And what we decided was to look at the landscape as a landscape that we humans have changed.

The epiphany came when I got lost in Pennsylvania when I turned left to get back on the freeway.

I ended up in a town called Frackville

When I got out of the car and got up, it was a coal mining town, and a 360-degree view of it was one of the most surreal sights I'd ever seen.

A landscape completely changed by humans

Then I looked at similar mines, and then I looked at the scars of large-scale industry in the landscape.

Eventually it becomes the basic line of the work

It was a theme that I felt that I could continue to shoot without changing myself. This theme is so big that I feel deeply involved in it as my life's work.

In saying thank you, but I forgot to mention, I also want to thank the companies that allowed us to enter the site.

In order to take most of the photographs I'm going to show you, I had to negotiate permission to enter, and if it weren't for the corporate executives who were willing to give me the permission, these works wouldn't exist.

I'm not against corporations in that regard.

I have my own company. I work with companies. I also feel that companies are necessary and important.

But I think sustainability is also important.

So I feel like I'm being pulled from both sides.

I'm not going to accuse you of what's going on, but progress is slow.

I started thinking, we live in different human ages: the Stone Age, the Iron Age, the Copper Age.

These times still exist

But we are completely cut off from these times.

there seems to be something we don't see

It's also scary, because when you think about the lifestyles and landscape behaviors that we collectively pursue, it's time for me to reflect and be pulled back to reality.

Through the photographs I take, I hope to draw the viewer in, take a closer look, and not immediately reject the work.

Instead of making you say, "What the hell is this?", get inspired and make you say, "Wow, that's beautiful" on the one hand, and say, "Horrible, you shouldn't enjoy watching it" on the other.

Like the forbidden pleasure, and that forbidden pleasure, I think, is what resonates with the world.

I want a house, I want a car

But then it pays off

How do we develop feelings of attraction and repulsion?

Even within my own conscience, I'm always fighting, and I want to express these polarities in my work.

This pile of tires in this picture had 45 million tires, the largest pile of tires.

It used to be an hour and a half away from my house, but about four years ago it caught fire in Westley, near Modesto, California.

After that, I decided to look for new themes. If my early landscape work was a lament for what humans are doing to nature, the work you're seeing now, about recycling, points in that direction.

In this piece about recycling, I looked for sustainable human activities.

If we continue to return things to the system through industry and urban life, if we continue to do so, we will be able to stay the same.

Of course, there are many new technologies that were introduced at this conference, such as biomimicry, and there are many more that are being introduced to the market, and nanotechnology may also help prevent landscape destruction.

We have high hopes for this new technology.

But in the meantime things are escalating.

and it keeps happening

What you're looking at is Bangladesh, and we're moving away from North America and starting to see the world on a global scale.

The footage of Bangladesh was inspired by a radio program I was listening to at the time.

The show was talking about the Exxon Valdez (the oil spill), and the news was that insurance issues would lead to an oversupply of oil tankers.

Oil tankers had to be decommissioned, and in 2004 they had the largest number of tankers.

I thought, "That's great."

To see the largest tanker being dismantled by hand in a developing country

I originally wanted to go to India.

I was unable to enter the country because of Greenpeace, so I ended up in Bangladesh.

There were 130 million people living in an area the size of Wisconsin, and people everywhere were crowded, polluted, and working conditions were terrible.

This is a picture of an oil field in California. It's the largest oil field in the world. And I began to think again, and I had an epiphany, that the world I live in is all about the abundance of oil.

I thought that this was also the foundation on which my work was built up, and I continued to shoot.

I'm hoping to complete this series in a couple of years, and the title is "Oil Party."

Because everything we do, our clothes, our cars, our roads, everything is made of petroleum.

Now I want to show you a picture of China.

China, which I started shooting about four years ago, is a focal point for me when it comes to sustainability issues, not to mention China also has a huge impact on the industries around which I grew up.

I grew up in a worker's town, in a GM town, and my father worked for GM.

This is the Three Gorges Dam, the largest dam in the world, 50 percent larger than the largest dam ever built.

Most of the engineers we recruited from all over the world quit halfway through the project, saying it was too big.

A year and a half ago, when the water was actually stored, we were able to observe the shaking of the Earth as it rotated.

It took 15 days to store water

At 600 kilometers long, it's one of the largest reservoirs in the world.

One of the big dam projects was to lift 13 cities off the dam and demolish all the buildings to make way for ships.

Here are the "Before and After" photos The previous photo is the before

And here's a photo about 10 weeks later, after it was demolished by humans.

I think about 11 buildings were dynamite-powered, but the rest were all human-powered, just 10 weeks later.

This way you will understand

People who used to live in houses actually demolished their own houses, paid per brick, and demolished cities.

What I'm showing you is a picture of that situation.

I have visited the Three Gorges Dam about three times, and the scenery has changed tremendously during that time.

It looks like a bombed-out landscape, but it's not.

It's an intended landscape.

It's because of the thirst for energy, and we've made these big changes to get the energy.

But this is small compared to what's going on in China right now, and what's being discussed in China right now is the construction of 27 nuclear power plants.

North America hasn't built a single nuclear power plant in 20 years because of "NIMBY, don't come to my backyard."

But in China, they say, "We're going to build 27 reactors in the next 10 years."

And literally every week, coal-fired furnaces are being installed in place of hydroelectric power.

So coal is probably one of the biggest problems.

Another problem that happened with the Three Gorges Dam, as you can see on the left of the picture, is that a lot of farmland has been lost, very fertile farmland has been lost.

And between 1.2 million and 2 million people were displaced, depending on the statistics.

And this is the city that was newly built

Wushan, one of the largest relocated cities.

This is the city hall

What I found disappointing during the rebuilding was the lack of so-called urban planning.

No parks, no greenery

There are just too many people living on the slopes of the hills

We had the opportunity to build a city from scratch, but we just couldn't get it to work together.

The sign reads, "Follow the Birth Control Act.

Let us establish a civilized and progressive science of marriage and childbirth."

When you look at this poster, it's like looking at Western culture.

A tuxedo and a bouquet are drawn

But what scares me about this painting is the oil refinery in the background.

It's an amalgamation of everything that Westerners have, a blind adaptation to our way of life.

And when you see this kind of acceptance, it makes you think about reality when you see them being led from a very small "(energy) footprint" rural life to a much larger "footprint" urban life.

This is one of the big squares in Guangdong, where many migrant workers come from the countryside.

Some 130 million people are constantly trying to move to urban centers, and another 400 to 500 million people are expected to move to cities like Shanghai and industrial centers in the next 10 to 15 years.

The factory workers... boarding workers usually wear uniforms of the same color, so you can tell.

This factory has pink uniforms. It's a shoe factory.

And there are dormitories for employees

Bring them from the countryside and put them in the dormitory

This shoe factory is one of the big ones, the Yuyuan Shoe Factory near Shenzhen, with 90,000 employees making shoes.

This photo is one of the three shift times

There are two factories of similar size in this town.

This factory has about 45,000 people, so 12,000 people come here for lunch.

There is a break time of about 20 minutes after sitting

And then comes the next group, the amazing working population, Shanghai... following the urban renewal in Shanghai, the whole area in this picture is going to be demolished and in five years it's going to be skyscrapers.

What's happening in Shanghai represents a change in China, because five years ago, for example, nothing like this could have happened.

It's called a nail house, and it looks like a thumbtack sticking into the ground.

refuse to relocate, do not negotiate

They don't relocate because they don't have enough compensation.

I'm waiting until I get a good deal

And we're seeing more successful deals, because most people are being treated unfairly.

Communities that are destroyed in a couple of hours can be over 100 years old, or even 1,000 years old.

I think this is probably the biggest urban renewal project in the world.

This is the surrounding area being rebuilt for redevelopment. I just wished for it, but I couldn't do it.

The clash of styles, etc. is a big one. This is called suburban housing.

And now they keep moving

The scaffolding is still there. This is the e-waste yard. If you zoom in on this picture and look at the foreground, you can see that it's all a recycling industry.

Industry is already booming around the new construction sites.

This is a five-tiered bridge in Shanghai

Shanghai has been a very interesting city, and it's growing at a rate that no other city has ever experienced.

So is Shenzhen, a special economic zone, one of the first places to become a special economic zone, and 15 years ago it had about 100,000 people.

You can see the scale and speed of migration, this is a Volkswagen taxi.

We have 9,000 here, and they're being built for big cities like Beijing, Shanghai, and Shenzhen.

Not the domestic car market, just taxis.

You see suburban development here, but it's also all skyscrapers.

20 to 40 buildings will be built at once, and skyscrapers will be built in the area in the same way single-family homes are built.

Its density is incredible

One of the things I want to show you in this picture is that when I saw a building like this one, I was surprised to see that there was no central air conditioning.

I'm sure there are people in this room who know more about efficiency than I do, but I don't think air conditioning in every room is very efficient in a building of this size.

When you look at these things and think of a city the size of Shanghai, Shanghai is literally a forest of skyscrapers.

It takes your breath away, cities are changing so fast.

The foreground of this photograph was the last place left behind.

Now it's all demolished, and this picture was taken about eight months ago, and now a skyscraper is being built in the center of the picture.

In Shanghai, skyscrapers are being built literally overnight.

In my latest project, I've started photographing a large factory in China.

This photo is Baosteel Group just outside Shanghai

This is a coal yard for a steel mill, 18 square kilometers.

It's a huge company, about 15,000 employees, five furnaces, and a sixth one is being built here.

They're building giant furnaces to meet China's domestic demand for steel.

This photo shows three furnaces.

And as you can see in the pictures, it seems to be in a constant haze.

This video shows the assembler in real time, assembling the breaker.

10 hours a day at this speed

About China, I think the problem we're facing is that China uses a lot of modern manufacturing technology.

400 people work on this floor

I had the director show me the five fastest workers, 15 to 20 minutes, I had them watch what they were doing, and I chose this woman to shoot.

As fast as lightning, I couldn't believe how it worked.

That's the secret of modern manufacturing in China. It's winning. It's the assembly part that uses the latest technology and extruders to put all the pieces together.

A lot of people are looking for jobs like this

It's going to be like this for the next 10, 15 years. If migrants get their desire to move to cities, 400 to 500 million people will move to cities.

In this case, it's a picture of the assembly line.

You have to use a small aperture to get depth of field.

I had to stand still for 10 seconds

I had to spoof it five times, because it was nearly impossible to stop people from moving.

We were supposed to do this all day long, and the director had to say in a very firm voice, "Everyone, don't move."

The shoot was okay, and it's driven to produce like crazy.

This is a textile factory that uses rayon, a by-product of petroleum.

What you see here is a state-of-the-art textile factory.

There are 500 of these machines, each costing about $200,000.

There are about a dozen employees doing inspections and walking around and operating machines.

All this machinery is in motion, and the scale of the factory is absolutely astounding.

And then I started looking deeper into factories like this.

This is a double-page spread. I often combine photos to convey the scale of a place like this.

This is where the yarn is produced, where the yarn is wound before going to the loom.

This is more labor intensive, shoe manufacturing.

About 1500 employees are on this floor

The company as a whole has about 10,000 employees, and they make shoes for the domestic market.

It was very difficult to get into foreign companies, because you had to get permission from Nike and Adidas, which is very difficult to get.

No entry allowed

Domestic companies were easier by comparison

You can really see the scale here. It was here that jobs and shoe factories moved to China. Nike was one of the first to move factories to China.

It's very labor intensive, so it made sense to move to a place with a labor supply.

This is a high-tech mobile phone factory, it's called Bird mobile phone, and it's one of the largest mobile phone factories in China.

Mobile phone makers are popping up literally every week, and they're experiencing explosive growth.

This is a textile factory that makes shirts. It's called Youngor, and it's one of the largest shirt and clothing factories in China.

This photo is one of the dining halls.

everything is efficient

On average, I finished lunch in eight to 10 minutes while preparing for a shoot.

This is the largest factory I have ever seen.

It's the largest producer of coffee makers, and it's also the largest producer of irons, making 20 million units worldwide.

It has 21,000 employees, and among several factories, this one is 500 meters long.

This is the most recent picture, taken about a month ago.

It took about a year to get permission to enter the factory.

Another aspect of what's happening in China right now is that the demand for raw materials is very high.

Much of the recycled material collected here in North America is shipped to China.

This is a solid square of metal, an armature, and we collect and recycle copper and high-grade steel from motors.

This has to do with California and Silicon Valley.

Most computers are like this

Half of the world's personal computers are collected for recycling in China.

In China it is called e-waste

There's a bit of a problem, and they use briquettes to recycle electronic circuit boards, which is used all over China, but they heat the boards and they take all the pieces apart with pliers.

They're trying to extract all the valuable metals out of the parts.

But there's a toxic smell, and when you come into town, you're burning boards, and you can smell it from five or ten kilometers away.

This is another workshop. It's all cottage industry. It doesn't have a lot of space. It's all in the porch, in the backyard, and even in the house if you're worried about people coming.

This portrait -- I don't do a lot of portraits, but I couldn't help but take it. She survived the Mao era, the Great Leap Forward, the Cultural Revolution, and now she's sitting on her porch with her electronic trash. It's incredible.

A road paved with computer boards in a big recycling town.

This is the photo I wanted to show you

(Applause) I would like to dedicate a wish to my two daughters.

All the time I was thinking, I was always thinking of these two.

Megan on the right and Katya on the other.

For me, the whole idea is... my subjects capture the scale of our progress and the great concern about what we call progress.

You can feel it in this room, but something great is just around the corner, and all kinds of things are about to happen that will solve a lot of problems.

There are things that are not only affecting our world, they are growing. I believe that we can rethink and shrink our "energy footprint," but it is also true that the "energy footprint" is growing in Asia, and it is growing very quickly.

Part of my thinking, and part of my wish, is to keep this in mind and think, "What is life like for my daughters when they want to have children?" "In 20 years, when they're going to get married?"

For me, this is central to my thinking, and also for my work and this wonderful opportunity to think about my wishes.

My first wish is to change the world. Through my work, I want to inspire millions of people to join the global conversation about sustainability.

I don't think it's an unrealistic idea with today's communication technology.

Oh, and then I did some research, because I wanted to connect what I had in my head with something, because I didn't want to start from scratch.

One of my wishes was that I started with nothing, but now I'm trying to find out what's working.

worldchanging.com is a great blog with nearly 500,000 visitors a month

it just started about 14 months ago

The great thing about this blog is that the tone of the conversation is my favorite.

What they're trying to do is... I think the environmental movement did a bad job of using the whip too much. It used too much end-of-the-world tone.

On the other hand, the dialogue that leans on this blog is about constructive activism, about how to change the world for the better, as quickly as possible.

We're thinking about technology, we're thinking about new energy-saving devices, we're rethinking the sustainability movement, we're trying to come up with new strategies.

So one of my thoughts was that if I could use my work to promote the worldchanging.com website.

As some of you may know, I'm working on a layout with Stefan Sagmeister. It's still a work in progress, it's not finished, but these images can be used in any medium as long as they're accompanied by the words worldchanging.com.

You can put it on your website, you can use it on billboards, you can use it on bus stop ads, and the like.

So this is for a lot of people to see.

And then it came up that in most media, images have a lot of text on them, and it's just text.

According to Stefan, what's unusual is that less than 5 percent of ads feature images.

So this time around, it's about the work and what it stands for and the issues it poses, so I'm going to put the picture in the foreground and let people say, "What does this picture have to do with worldchanging.com?"

I hope that it will inspire you to take a look at our website.

I don't want worldchanging.com to be a blog that everyone has to check all the time, and I don't think it is.

I think this blog will spread and reach a lot of people, because it's actually being talked about in India, China, South America, and so on, and people are writing from all over the world.

I think there is potential to have dialogues and conversations about sustainability at worldchanging.com

Anything that can support this would be great

My second wish is something I'm trying to design from scratch.

I want to start a contest that has never existed before, to inspire children to come up with ideas for sustainability and to act on them.

And one of the things that's been born out of this is that, during a brainstorming session, Alison, who recommended me, told me that recycling in Canada is having a positive impact on the nation, thanks to children in grades four to six.

Think about it: 4th grade... my wife and I think 7 years old is sensible, so 4th grade is sensible, and it's also pre-puberty.

So this is a good age. It's an age of influence. You know what happens in adolescence?

There was a presentation like that before.

So my idea here is to get kids at this age to come up with ideas, to understand what sustainability is, to understand that sustainability is about them.

And one way to do this is to use the prize money that I was given. I'm going to use the $30,000 or 40,000 from the prize money, and the rest will go to run this project, and I'll give it to the kids as prizes.

Another thing I thought would be nice is to create something called an award target.

Category: Sustainability idea grand prize School project grand prize Family project grand prize Community project grand prize

And I think we should also award the prizes to the artwork for "In My World." It could be more or less, or more or less, equipment like a media lab, or money to increase the prize pool, and make it an open contest for all public schools, all schools with children of that age, and have them apply for the prize.

The prize must be real, not just an idea

A work of art is an idea, how it's expressed and what creates it, but it has to be something that can actually be realized.

And in doing so, what's happening is that we're giving a certain age group something to think about.

And you're going to push it up from the bottom up, and your family and parents will respond, and they'll help you with your project.

I think it helps people think about sustainability, in a constructive way, and it also educates them. You know about recycling, but you don't think about sustainability in all things 'energy footprint' and why it matters.

It's a great desire for me to teach something like this, and I'd love to be a part of it.

It's the "In My World" contest, which also uses contest submissions for promotion.

I like the phrase, In My World, because it gives the person ownership of the world.

I think this is a great opportunity to spark imaginations, because it means that I want to help out with something in my world that doesn't belong to anyone else, and I want to do something with it. And I think the best ideas come from kids.

I don't think any school could afford more equipment or more money, and that should be the motivation.

And here's an idea of ​​where you could promote "In My World."

And my third wish was an IMAX movie.

The scale of my work and the kind of ideas I have in mind... When I first saw the IMAX film, I immediately thought, "There's something that resonates with the scale of what I'm trying to do, what I'm trying to do as a photographer."

And if we can do this, I think it opens up the possibility of reaching new audiences.

So I'm looking for a mentor, my birthday just passed.

I'm 50, and I don't have time to go to school.

It would be great if I could do this These are my three wishes

(applause)

IT technology evolves exponentially

Not linear, it's exponential And our senses are linear

Thousands of years ago, when we walked the savannah, we made linear predictions about where animals were.

However, IT technology really evolves exponentially.

It's not just about computers

There is a really big difference between linear and exponential

Let's say you go 30 times in a straight line. Now 1, 2, 3, 4, 5, 30

If you go exponentially 30 times, you get 2,4,8,16 billion

really big difference

This is what IT technology is about

When I was a student at MIT, we all shared a computer the size of a building.

Now you have a computer that's the same size in your phone, million times less expensive, million times smaller, and thousands of times more powerful processing power.

There's a billion-fold potential for every dollar, and that's what I've experienced since I was a student.

And it will be so for the next 25 years.

IT technology advances through the iteration of S-curves, each one by a different paradigm.

People say, "What happens when Moore's Law ends?"

This will happen around 2020

Then move on to the next paradigm

Moore's Law wasn't the first paradigm to bring about exponential growth in computing.

The exponential growth of computer technology dates back decades before Gordon Moore was born.

And that growth isn't just about computers

It applies to any technology that can measure the properties of the underlying information.

Here are 49 famous computers, represented by logarithmic graphs.

Taking the logarithm makes it easier to see the rate of increase, because it's trillions of times more than the 1890 survey.

In the 1950s, they used tubes, and they got smaller and smaller. Eventually we hit a limit, and we couldn't make the tubes any smaller.

And the end of the tube era is coming, but it's not the end of the exponential growth of computer technology.

It becomes the fourth paradigm, the transistor, and then the IC (integrated circuit).

Now on to the sixth paradigm, three-dimensional self-evolving molecular circuits.

But what's really interesting is that the rate of evolution is more predictable than the rate of evolution.

So this evolution applies all the way through, war or peace, boom or bust...

The Great Depression had no effect on this exponential growth.

The same thing will happen with the recent economic downturn.

At least the exponential growth of information technology will continue unabated.

These graphs have just been updated

This is the graph I used in my book "The Signality is Near" written in 2002.

So I updated, and now it's here in 2007

I am often asked, "Are you worried?

We may be a little off from exponential growth."

In fact, I was a little apprehensive because maybe the data wasn't right, but I've been doing this for 30 years, and I've been doing this exponential growth for 30 years.

Look at this graph. In 1968 you could buy a transistor for a dollar.

Now you can buy 500 million for a dollar, and you can buy faster, much better ones.

But see how predictable this is

This hypothesis agrees well with historical data

I've been predicting the future like this for 30 years.

And then the price cycle of transistors, which is the price base for electronic products, is going down every year.

50% price reduction rate

And it applies to other examples, such as DNA and information in the brain.

It's not just about lowering prices to meet demand

In fact, by using IT technology, the shipment volume has more than doubled.

We've had 18 percent growth in inflation-adjusted prices, even though we've been able to get a doubling of growth each year in the IT sector over the last half century.

Here is a completely different example

This is not in line with Moore's Law

The analysis of DNA information is doubling every year.

The cost is halved each year

This is a very smooth progression from the beginning of the genome analysis project.

Halfway through the project, a skeptic said, "Well, it's not working. We're halfway through the project, and we're only about 1% done."

But it was really on schedule

What would happen if we repeated doubling 1% seven times? It reaches 100%. The project was completed on time.

And then we're talking about communication technology, and this is about 50 different metrics, like the number of bits you use, the size of the internet, and so on.

But it too has grown at an exponential pace

very democratic

Over 20 years ago, I wrote a book called "The Age of Intelligent Machines," when the Soviet Union was becoming powerful, and that the Soviet Union would be wiped out by advances in communications technology.

And we will have enough computing power to simulate the human brain in the 21st century.

But how do you get that software?

Critics will say there is no such software

But we continue to do a lot of research into the human brain.

Human brain scan accuracy is getting finer every year

The data about the brain is growing every year.

And we will be able to run models and simulations based on this data.

Among the functions of the brain, there are roughly 20 regions that can be modeled, simulated, and tested.

All of this has spurred a very smooth and predictable increase in productivity.

The human hourly labor cost has risen from 30 dollars to 130 dollars, adjusted for inflation, with the help of this technology.

And we are all concerned about energy and environmental issues

This is also expressed in logarithmic growth

This shows a smooth doubling of the amount of solar energy we create every two years. Solar panels are a particular application of nanotechnology in the field of information technology.

Just eight more doublings would cover 100 percent of our energy needs.

And the sun's energy is 10,000 times more than human needs.

Eventually it will become one with this technology. Almost coming true

When I was a student, it was available from end to end of campus, but now it fits in your pocket.

What once sat in a building is now in your pocket

Something that is the size of your pocket now will be the size of a blood cell in 25 years.

And as we actually get to know these technologies, they're beginning to have a real impact on our health and our intelligence.

Announcement here at TED, Singularity University.

This is a new university, here is Peter Diamandes and I founded it.

Backed by NASA, Google and the rest of the tech and scientific community

Our goal is to bring together leaders, either as students or as teachers, in these areas of exponential technology development and application.

Larry Page gave an impressive speech at our preparatory meeting that we should devote time to this study, indeed, to some of the great problems facing mankind.

And if you do, Google will back it up

we did it

The last third of our nine weeks of intensive summer lessons are devoted to group projects about some of the common human challenges.

For example, the Internet The Internet can be connected anywhere, even in rural China or Africa It can convey health-related information To the developing world of the world

And these projects continue after the lesson is over, using two-way collaboration.

All intellectual property is online, available and facilitated by online collaboration

Here is a photo of the inaugural meeting

But we just announced today

This university is based in Silicon Valley, inside NASA's research center.

We have separate programs for graduate students and executives of various companies.

Here are the first 6 tracks. AI (artificial intelligence) applied computer technology, biotechnology, nanotechnology and other fields of information technology

And we're trying to expand into other areas -- energy, ecology, law, ethics, entrepreneurship -- so that you can bring these new technologies to the world.

We really appreciate all of your support, from leaders in academia and leaders in tech companies, especially Google and NASA.

This is an exciting new challenge

Thank you very much.

(applause)

Flying here has made a big impact on the environment.

It released nine tons of CO2 into the atmosphere, which is the weight of two elephants.

I'm here to talk about ecology, and I've emitted a year's worth of CO2 from one Frenchman.

What should I do?

Shall we kill one when we go back to France?

(Laughter) We have to make up for the carbon offsets, as we always do.

(Laughter) My job is to show the impact that we have on the planet.

Let me show you some of the pictures I took last year.

It's the oil sands of Alberta, Canada, and it's causing a lot of pollution.

You know, you might want to turn away

Alberta is mining as much oil as possible 24 hours a day, 7 days a week.

We know that oil will eventually run out.

Oil sands are not a long-term solution.

We're consuming three times as much oil as we find each year.

everyone is looking away

denial

New Caledonian coral reef

Coral reefs may disappear 100% by 2050 due to global warming

You know how sensitive coral reefs are to temperature, and how important they are in maintaining the diversity of life in the ocean.

It's the North Pole. I took this picture last summer.

15 years ago, I couldn't have taken a picture like this.

Now there's a new route from the Atlantic to the Pacific

Arctic ice thickness has decreased by more than 40 percent since 1960.

This is what Kilimanjaro looks like without snow.

it's a sad picture

80 percent ice lost

Scientists say that in 100 years all glaciers on mountains will be gone.

Glaciers are very important to life on Earth.

As Al Gore put it, two billion people live on water that comes from the Himalayan glaciers.

fishermen returning from fishing

One-fifth of mankind depends on fish to survive.

Over 70% of fish resources are currently being overfished

According to the FAO (Food and Agriculture Organization of the United Nations), if we don't change how we fish, our major fish stocks will disappear by 2015.

we turn a blind eye

This beautiful picture is of a landfill in Africa.

1 in 6 people in the world don't have enough food

1 billion people don't get enough to eat

Maize is a staple food in many parts of Africa.

Here in America, 90 percent of corn is grown for feed and oil.

Borneo palm plantation

50,000 square miles of forest are lost each year

Darfur refugee camp

There are currently 20 million refugees in the world.

According to the United Nations, there will be 250 million refugees by 2050.

I always display my photos on the street

Done in 100 cities around the world

But how can we understand the world without people's voices?

Landscape photography is not enough

It was clear that I had to do other things as well.

So I started a project called The Other 6 Billion People.

We sent six photographers out into the world and asked people the same questions about the important things in life.

5,000 people were interviewed

let me show you

Is it the best thing that happened in my life?

That's when my father said, "This girl is your fiancée."

Love? Love is good if you have it

Romeo and Juliet Sashi and Pano Dodi and Diana Hia and Ranja That's love! / The scariest thing is...

I hear difficult things

I'm living happily What else do you do?

The first thing I remember is... That's how my mother taught me when I was a kid... Respect for others Riding a bike was a fun time... I'll never forget those words We made stories We traveled the world While we were in the attic!

i laughed a lot today

What is family... oh I can't stand it

Honesty opens up life

Who am I? That's the biggest question

If I ever go back to Iraq and talk to people, I have to get down on my knees and kiss their feet.

Like the woman who tried to kiss my feet when we tried to take her child

i feel ashamed

I am in awe of their strength

I feel I must make amends forever to the people of Iraq.

dad mom i grew up

Don't worry anymore, Dad, you don't have to work anymore

my family is like...

I'm very poor, and now I know that I can do more with my current life in Shenzhen. Maybe I can call my parents and live with them

I don't want you to stay poor forever

If I can do something one day, I want to say thank you, Mom and Dad.

thank you

Thank you for raising me I owe my father and mother to who I am today

I've been in a wheelchair for seven years now and I'm leading a more active life than before.

I still surf, sail around the world, and dive.

Everyone told me I couldn't do that

I think it's what you get when you connect with nature, when you connect with the force of life, and on this planet, everyone's a being with some kind of crippled mind, heart, or body.

My inconvenience is rather easy

Suppose you and I like each other

you come from afar

you don't know me i don't know you

talk without lies

If I like you, I'll give you a cow and many other things, and we'll be friends.

No one can do it by themselves

(Applause) You can go to this site and answer the same question.

40 important questions

Now let's talk about my movies

For the last three years, I've been photographing Earth for movies.

The name of the movie is "Home"

It's a movie about the current state of the planet.

There's an amazing story of life on Earth.

I'm proud to show you this trailer

4.5 billion years after the earth was born

Hundreds of millions of years since these plants appeared

Humans appeared less than 200,000 years ago

we adapted and conquered all the earth

It has produced and nurtured offspring for generations in a way that is different from the millions of other species besides us.

For the past 30 years, I've been observing the earth and its inhabitants from high above.

Human life is deeply linked to the health of the planet

We depend on water, on forests, on deserts, on the sea.

Fishing, ranching and farming are still major occupations in the world.

What unites us is far greater than what separates us

We all need the earth's bounty equally We all have the same desire to make life better

yet build walls to separate each other

Our greatest struggle today is to protect nature's bounty

In less than 50 years, we've changed the planet more than all of humanity has before it.

half the forest disappeared

water scarcity is getting worse

Intensive agriculture devastates the soil

Unsustainable energy consumption

the climate keeps changing

we are putting ourselves in danger

just trying to make my life better

Wealth gap widens

ignoring that the earth is moving faster than it can hold

Even today, there are measures that can be taken

We have the power to change this trend for the better

Why are you holding your hand?

(Applause) Luc Besson directed the production of this film.

But this is no ordinary movie

This movie is distributed free of charge

no copyright

On June 5th, on World Environment Day, anyone can download it from the Internet.

It will be made available for free on June 5th for use on TV and in theaters.

This movie has nothing to do with business.

Schools, local governments, NGOs, and you can get it yourself.

we have to face

what i mean is

It's too late to have a sense of urgency. We don't have time.

we all have to be part of the solution

And finally, to the 4,700th child since the beginning of this talk, I'd like to thank you for coming.

thank you so much i love you

(applause)

"excellent person"

I earn and save money better than you

You were better at spending money than I was, I worked harder and saved more money than you, but in the end who was better?

Which one was better my friend?

You dealt with nobles better than I did I plundered Troy better than you You kissed babies better than me I swept down my enemies better than you

Old friend, who was better?

Which one was better?

I was a better improviser than you, you were a better platemaker than me, I was a better procrastinator than you, and you were a better quiet contemplative than I was.

Old friend, who was better?

Which one was better?

You rolled marijuana better than I did I was a Coke with rum better than you Remember that night on the beach in Ibiza?

What about those Maori twins with tattoos on their buttocks?

Old friend, who was better?

Which one was better?

Death Comes to Us Grieving Relatives

Soaring tears at the funeral home Now that you're out of this world and about to leave Now that your buttocks and ear holes are stuffed with stuffing Now that I've been wanting to tell you for years! For years! For years! old friend

That means you were better than me after all You were better than me my friend

(Applause) This next poem was written for my mother.

Everyone, you have a mother, you only have one, you're the only one in your life, if you're lucky enough to know what a mother is.

My mother was irreplaceable to me

my mother is like this

I'm 86 years old and weak and declining.

White hair like platinum

why do women go to the hairdresser when they get older

Do you want your head to look like a helmet? (Laughter) Be smart, be prepared.

So much prettier than Margaret Thatcher.

(Laughter) I wrote this for my mother. This poem is not my belief.

My mother lived by this creed.

"Don't look back"

Don't turn around Don't turn around

I can't go back to my youthful appearance

Keep walking on the beaten path There's the truth you're looking for in your memory

Don't turn around Don't turn around

Unyielding to the Gorgon's Stare

Keep walking the trodden road, for no one is waiting, there's nothing in the past

Don't turn around Don't turn around

Don't hand over the future you've got

Keep walking on the hardened path, there's no turning back

Don't turn around Don't turn around

Don't run away into the glorious past Keep walking the trodden path Live each day like it's your last

Don't turn around Don't turn around

Don't accept the ghost of the stairs

Keep walking the trodden road, for no one is waiting, there's nothing in the past

(Applause) I can say whatever I want.

If a profit-seeking plastic surgeon were chained to the end of a railroad track, I'd be the one to refuel the train without the qualms of a worldly conscience.

ladies please stop

stop

You might think everyone wants plastic surgery, but it's not.

stop

Say, "Plastic surgeon, go to hell"

your body is beautiful just the way it is

leave it alone

"To a beautiful lady with a toe standing"

Lady, don't mourn

There's no way you can get back what you've lost, sleep now

Turn your pillow inside out and dry your tears

count sheep not ages

There's nothing good about counting ages

Lady, in time to rule all

It's foolish to challenge a battle when you're undefeated

Lady, it's all in vain

Youth never comes back I've drunk the summer wine

No one can sew time together

Trying to shape up until the day of judgment

The fate told in the womb cannot be changed by the power of gold nuggets

And you can't buy or sell time

darling if my love diminishes

Even if I avoid your embrace?

do you think i will stop loving you?

no woman is more beautiful than you

Ladies, don't grieve, there's no way you can get back what you've lost Sleep now

Lean on me, calm your fears, count your fortunes, not the years that have passed

(Applause) Ladies and gentlemen, America has made me richer than Britain.

As you can see, I was born in England

Even when America's behavior is at its worst, I reflexively defend this country, wanting to protect it from the distorted EU-friendly cynicism of playing the Greek card in Rome's deck of cards.

America is an empire

I hope you understand that by now...

All empires are inherently stupid, chaotic, tyrannical, and bureaucratic, like whining little children, like squalid clinging to power.

Ladies and gentlemen, I'm not a historian

Compared to empires of the past, America's crimes are cute, even if they're spread all over the world.

outright

If Americans are fat and stupid and ignorant, my friend from Birmingham, why can America rule the world?

"Praise the Gods of America"

Praise the Gods of America!

praise the gods of dreams

America's mightiest

But who is in charge?

Who is the ruler of America?

US congressional elite?

Alchemist of Wall Street?

The eye on the one-dollar bill?

Celebrity status i.e.

Worship for those we hate?

Fanaticism for eternal life? But if you're worried about your weight

What about media tycoons?

What is the voice of Seiren in Hollywood?

What about the Temple of Justice? Its followers enslave us all

What about brands and labels?

What's your favorite sport these days?

And the Constitution of the United States - what about that last brat?

Praise the gods of America The masses extol their power - Convenience rules America Convenience rules our souls too

exactly like that

(Applause) I'm not a father, but I miraculously became a godmother to 22 children, and I wrote this poem to explain why.

"Love came to me"

Love came to me, shy like a fawn

But when I was busy, she ran away at dawn

I kindled the flames of resentment at age 20

Anger at betrayal burns hot as hell

Flowing lava burns everything around

Enemies and allies fled from that wrath

When the freshness wears off Lovers grow cautious Lying with a bloody man is a real horror

At the age of 30, I think my power is mighty

I shook the tree and dropped my rival's fruit

By cunning and bravado I used to kick fools out of my life day and night.

Women pretend and bluff

I spent very little money on cheap jewellery.

From 40 to 50 I slept with everyone I got cunning Like a pig in a barn Served wine Served rice

I ate and drank in dirty things and got in heat Forgetting the sense of danger, forgetting to dodge, forgetting that the arrow of time is sharper than a knife

I felt nauseous and tired of living

Love came to me, shy like a fawn

But when I was busy, she ran away at dawn

(Applause) Now -- I've made a ton of money in business and played around.

Poetry inspired me

It was a real shock, and I was a little sick.

okay i was sick

I understand that it was a life-threatening disease.

The hospital won't even let me make phone calls.

I wasn't allowed to meet anyone — not even someone special.

I asked a nurse there for a pack of sticky notes.

I got a pen from another nurse

I started writing poetry with nothing else to do

It was October 2000.

i'm not evil

Sometimes I dare to stand in the evil person's point of view.

I'm not the kind of beauty that can make a man fall just by walking into a room.

Sometimes I try to be that kind of beauty

(Laughter) It doesn't work very well.

It's interesting to me personally. I love to write epic poems.

I love to think about what people thought and what the past was like.

Because a lot of the speakers, a lot of the listeners can't even go to the moon, and it completely changes everything.

Cloning technology changes everything, so does voice navigation

you can do what you want

Men and women are all smart and can do it!

But human nature doesn't change

My friend, human nature is the same as it was when my ancestors, who I think were my ancestors, strangled the last Neanderthal and beat him to death.

Are we not going to do that?

of course i did

we killed one by one

I killed little by little

hunt wherever they are

Fight for meat Fight for fruit

It continues even now, even if geniuses gather in this room

Our true nature does not change even a speck

will never change

Let's leave this little planet and spread our hopes.

I'm a bad person like you

ran the world's most successful publishing house for eight years

Every night at seven o'clock, call the women who have already fallen

I didn't do anything with uncorrupted humans.

I addicted to crack cocaine every night for seven years.

Like Dante's "Hell"

The days were unbelievable

One of the effects of Crack was an erection that lasted for about four hours.

and stay awake for 12 days

i really couldn't believe it

I named 22 children

what should i say to them?

I was stopped because I thought what would happen to my mother if I was caught.

Please remember women

Love for a son transforms his behavior

"Woman in White"

She's pale and listless and soft to the touch

A generous mistress to whom many pour their love

Every night we slept side by side, but you surrounded her and sold her, lady in white

I lived only to taste her clear caresses

All I wanted was to touch the hem of her dress

We just chatted while denying our cravings

But I always raced to sleep with her

Without her I'm emaciated and weak

Toyed with her sister and threatened the pimp

The Word of Babel has come down The lady is back!

And we took turns holding her on the table

Feeling a power that even dictatorships would envy, at that moment she makes us slaves.

many want her kiss

Driven by shame, I fled hell

just barely

(applause)

I used to be a Malthusian

My mental model for the world was: Small planet, exploding population, it's going to get worse and worse.

But I graduated from Malthus because I think we're entering a new age of Enlightenment in 150 years.

let me explain why

As you may know, this is the United Nations World Population Data.

World population is projected to hit a ceiling near 10 billion in the second half of this century

then the population starts to decline

what does that mean?

Most economic models are built around scarcity and growth

That's why many economists predict stagnation or recession in response to population decline.

But population decline should have at least two positive economic effects.

First point. When the population of a given area of ​​land declines, real estate investing becomes a bad bet.

In urban areas, much of the real estate value is inflated by speculative value.

If land speculation ceases, land prices will fall.

It will take the burden off the world's poor.

Second point. Population decline brings labor shortage

Labor shortage pushes up wages

Wage increases also take the burden off the poor and the working class.

There will not be a rapid population decline like the Black Death.

Think about what happened in Europe after the plague: rising wages, land reform, technological innovation, the birth of the middle class, followed by progressive social movements like the Renaissance and even the Enlightenment.

Our cultural traditions have looked back and romanticized the past.

All Western religions begin with the notion of paradise, go through a present full of immorality, and continue to a very ugly future.

In other words, human history is viewed as a process of degeneration from the good old days.

But I think we're headed for another shift, about two generations after the top of this curve, when the effects of declining population start to show.

We will romanticize the future instead of the filthy and barbaric past.

Why is it important?

Why care about the socio-economy a century ahead?

That's because transitional times are dangerous times.

When landowners start to lose their assets and workers start demanding higher wages, there's something so powerful about the future that they fear it.

And fear of the future leads to hasty decisions.

If we have a constructive view of the future, we will accelerate through the transition rather than jumping off a cliff.

If we've made it through the next 150 years, your grandchildren's grandchildren will never know Malthus.

Instead, they will make plans for the future and build the Enlightenment of the 22nd century.

Thank you for your attention

(applause)

What is happening to the climate?

I can't believe how bad it got.

This is the famous Arctic landscape that will be gone in the next 3-4 years. It's very scary.

What can we do?

Considering the causes of CO2 emissions around the world, about 52% of the emissions are related to building construction.

Interestingly, only 9% are related to passenger cars.

When we went to a sushi restaurant,

I had a good idea.

It's called "EcoRock".

We can change the gypsum process that has been in use for 115 years and emits 20 billion pounds of CO2.

It was a very big plan. We wanted to reduce CO2 emissions by 80%. It succeeded as expected.

We started research and development in 2006.

"EcoRock" is made from recycled materials such as cement and steel.

This is inside the laboratory. I've never seen the inside of that room before.

Researchers have tried different mixtures about 5,000 times to achieve their goals.

they worked hard.

A production line was made in China.

Unfortunately, that industrial equipment is not built in the United States.

We spent the summer working on setting up the production line.

We started with absolutely nothing.

This is a brand new plasterboard production line. Made without any plaster.

This is a complete production line.

The first panel was made on December 3rd.

It's basically a pasty substance running onto the paper. The production line is running.

It's so much fun to see everyone's faces.

They worked on this project for a few years.

Everyone was so excited. This is the first board made by the new production line.

Our Vice President of Operations is kissing the board.

This will have a huge impact on the environment.

A few weeks later we had a signing ceremony and we signed the first panel. We hope that this product will be used all over the world.

This product has been certified "Cradle to Cradle Gold".

"Plasterboard Reconfigure" recently won Popular Science's Best Green Product of the Year.

thank you! thank you!

What we learned is that 8000 gallons of gasoline is equivalent to building a house.

You didn't know. This is equivalent to driving around the world six times.

we all have to change.

Look at this room There are wooden items such as chairs. Changing everything won't solve the problem.

Ignore people who say you can't do that. Anyone can do it.

The unemployment problem can also be solved by green collar industry.

Four more plants were built. We manufacture new drywall all over the country.

I'm doing it as soon as possible.

The CO2 emissions from the gypsum process are equivalent to 250 million cars.

What should I do? Let me explain what I did and why I did it. (Time has come).

are my children. Natalie and David.

Around 2050, their children will look back on me and say, "Grandpa, you did a great job."

I hope that after TED you will think about your carbon footprint and try to reduce it.

If you don't know how, please contact me. I'll help you.

Last but not least. Bill Gates is the inventor of Windows

Please look forward to the windows that our company invents around next year.

thank you very much! ! !

(applause)

By the time Ethic and Hedge reached the forest, the sun was starting to rise and the train was slowing.

These two adventurers have obtained the first item, the Stone of Power, and have come to Forest 198 in search of the second item.

Here they were greeted by Octavia, the leader of the community.

She created this treehouse paradise after robots eliminated the need to work.

It was supposed to be a haven where people could live their passions, dedicate themselves to their craft, and find fulfillment.

at first it was

A few years ago people forgot their purpose

I stopped doing arts and crafts and just started painting self-portraits and exhibiting them, all over again.

The location of the second item is obvious, it's in a tower, but it's well guarded, and I don't know if there's an army of robots, bottomless valleys, or what other traps there are.

People were unable to communicate when towers of items began to rise.

Octavia has been trying to steal items for years, but no matter how hard she tries, her defense system won't stop her.

Even to reach the tower, you have to look away from the guards.

Octavia had an idea: to scribble innocently on her self-portrait and cause a stir in people.

All of the residents' works are squares of various sizes, with an odd number of rows and columns.

A helper robot picks up the finished work and puts it up in a public space for everyone to see.

Hedge only gets close to the work for a short period of time.

If Hedge crosses out and defiles all his work, people will protest the helper robots and conveniently look away.

it's not that easy

Hedges can't just be crossed out, they need very specific instructions for the hedge drawing processor.

Think of the painting as a square, and paint one square at a time.

You can move forward and rotate 90 degrees on the canvas, but you cannot move diagonally.

How would Ethic program Hedge to cross out all self-portraits?

[Pause the video and think for yourself]

give you a hint

Let's draw a square like this to simulate the movement of the hedge.

What kind of pattern should I move to draw a cross mark?

[Pause the video and think for yourself]

The challenge here is to come up with instructions that work for any size grid.

Luckily, the beauty of programming is that you can solve not just one problem, but many problems all at once.

It's a good idea to think about one case first and then generalize.

Suppose the squares were like this

The hedge measures the length of one side and stores that number as a variable.

Now all we need is instructions for Hedge to fill in each square and draw a cross.

There are many ways to do this, but let's consider two.

The first is when the hedge moves like a typewriter, line by line.

In the case of a picture with 9 squares on a side, in the first line, first paint the first square, skip 7 squares, and paint again.

In the second line, skip 1 square, paint another square, skip 5 squares, and paint again.

i will continue this

The pattern we see here is that for each row, the number of squares skipped at the beginning increases by one, and the number of squares skipped in the middle decreases by two.

When the hedge reaches the middle, the story changes.

In this row, only the middle square is colored.

Then the pattern is reversed: the number of squares to be skipped on the left decreases by 1 for each row, and the number of squares to skip in the middle increases by 2 for each row.

If you use a loop to tell the hedge how to do this, it works, and that's perfectly fine.

The problem with this method is that it's a cumbersome procedure, because the central one has to know what to do, when the pattern is going to be reversed, and how to reverse it.

Couldn't we do it one way from start to finish?

The point is to regard the grid as a collection of concentric squares.

This way you can treat each square the same way, just color the squares at the corners and leave the squares in between.

So if you know how to color one square, you can repeat it to color all of them.

Coloring the outermost square is easy.

Start at the corner and color that square

If the length of one side of the picture is n, move forward by n - 1

Turn right after coloring one square

repeat the same two more times

Now move forward one square less, turn right and move forward one square. Now the hedge has moved to the next square, and the process is repeated.

Each square has a side length of two less than the outer square, and we just have to continue this spiral pattern all the way to the center, and we can do that with a loop and a variable that represents the number of squares to skip.

Which is better?

it depends on what you value

The advantage of the spiral method is that the pattern is simple and you can use the same method from start to finish.

The advantage of the typewriter method is that it's a more general solution and can be easily adapted to other designs.

For ethic purposes, either is fine.

well what will happen

Hedge crosses out his self-portrait very quickly.

Soon there was a voice of anger throughout the forest.

The security robots guarding the tower leave their posts and go to calm the people. Ethic, Hedge and Octavia sneak out - nearly falling into the valley that blocks the way to the tower.

This is an invention that will change the world

Smoke detectors save hundreds of thousands of lives around the world.

But smoke detectors don't prevent fires.

Each year, 350,000 home fires occur in the United States, killing and injuring more than 20,000 people.

One of the main causes of fires is electricity.

What if you could prevent electrical fires before they happen?

I found a way with a few friends

How can electricity start a house fire?

In fact, the main cause is faulty or misused wiring and electrical equipment.

It has to be an invention that addresses all those problems.

what about the breaker

1879 Thomas Edison invented the circuit breaker

It's a technology that's been around for 130 years, and that's the problem, because 80 percent of home fires caused by electricity occur below the safety threshold of a breaker.

HM

After looking at all this, we found that the appliance needed to communicate directly with the outlet.

Appliances, electrical cords and other electrical devices should tell the outlet, "There's too much current for me, turn it off now before it starts a fire."

In order to meet that demand, the outlet must also be smart.

So I came up with the idea of ​​putting a 10-cent communicator in the plug of an appliance.

We'll put a cheap radio reader in the outlet so the two can communicate with each other.

Every home electrical system becomes a smart network.

Safe operating limits are embedded in appliance plugs

When too much current flows, a smart outlet shuts itself off to prevent fires.

Named "EFCI" technology It is an abbreviation of "Electrical Fault Circuit Interrupter"

Just two more points: About 2,500 children in the United States each year go to the emergency room for electric shocks and burns caused by electrical outlets.

This is a big deal, because smart outlets prevent injury, because you don't get power until the smart plug is detected, and it's easy.

Besides saving lives, smart power supplies have the biggest benefit of saving energy.

With this invention, we can reduce the world's energy consumption because we can remotely control and automate every outlet in every home and every workplace.

You can choose to reduce your electricity bills by automatically running home appliances that consume a lot of power, such as air conditioners and electric heaters, with timers.

In hotels, offices, etc., it will be possible to turn off the power in empty rooms from the control center or even from a mobile phone.

There are 10 billion electrical outlets in North America alone.

So we have the potential to save a lot of electricity.

We have applied for 414 patents so far.

Of these, 186 have been approved and 228 are in process.

Just three weeks ago we received our first global recognition, the 2009 CES Innovation Award.

Taken together, smart power supplies can save thousands of lives each year, prevent tens of thousands of injuries, reduce property losses from fire damage by hundreds of millions of dollars, and dramatically reduce global energy consumption.

In the spirit of this year's TED conference, we believe this is a powerful invention that will change the world.

Thank you, Chris, for giving me the opportunity to showcase this technology to you and the world.

thank you

(applause)

In June, just after the heavy rains, the sky is filled with creatures that we normally wouldn't expect.

At first glance this may seem a disturbing sight

But for the lucky males and females of Solenopsis invicta, aka fire ants, it's a day of romance.

This is a mating flight, called a winged ant, where a fertile male and female ant make the first and last flight.

But even males who manage to evade flying predators die after this mating frenzy.

And for a successfully mated female, it's just the beginning of the job.

Having secured a lifetime's worth of sperm from a deceased mate, the new queen must build a colony all by herself.

When they land on the ground, they search for suitable places to build their nests.

Ideally, look for soil that's soft and easy to dig, like farmland that's already been disturbed by humans.

Once she finds the perfect spot, she rips off her feathers and builds a mound to show off her queenly status.

And she digs a tunnel down that leads to a small room.

Here the queen ant starts laying about 10 eggs a day and within a week the first larvae hatch.

For the next three weeks, the new queen relies on another batch of unfertilized eggs to feed herself and the hatched larvae, losing half of her body weight in the process.

Luckily, after about 20 days, the larvae grow up to become primary workers, foraging for food and feeding the languid queen.

The female ants have to work fast, and getting their mother back on track is an urgent matter.

Around here, dozens of neighboring queens raise colonies of their own.

So far, these colonies have coexisted peacefully, but once worker ants appear, a phenomenon known as larval predation occurs.

Within a few meters, nest workers start stealing larvae from our queens.

Our colony retaliates, but a wave of raiders from farther afield overwhelms the worker ants.

Within hours, the raiding party will take all the larvae laid by the queen and carry them to the largest nearby nest, where the surviving females will abandon the queen.

Seeking one last chance to survive, the queen ant follows a trail that leads to the winner's nest, where the raiders passed.

It fights its way past other underdog queens and worker ants guarding the nest to the top of the pile of larvae.

While other queens fail, female ants rescue their queen, overthrow the ruling monarch, and recapture the pile of larvae.

And so on until all the other challengers have been defeated, and in the end there is only one queen and one pile of larvae.

Overseeing the largest nest around here, with hundreds of worker ants, our victorious queen begins the primary purpose of the colony: reproduction.

Over the next few years, the colony produces only infertile worker ants.

But once the population exceeds roughly 23,000, things change.

From now on, the colony will produce fertile winged males and females each spring.

The colony produces large numbers of these larger ants all through early summer, and then resumes worker reproduction in the fall.

After heavy rains, these winged ants take to the skies, spreading the queen's genes downwind for up to hundreds of meters.

But in order to contribute to this yearly mating ruckus, this colony must continue to thrive as a giant organism.

Every day, young ants offer food to the queen to feed her larvae, while older worker ants forage for food and protect the nest.

When attacked by intruders, these older soldier ants expel their foes with a toxic liquid.

After it rains, the colonies congregate and spread their nests in moist soil.

And when a catastrophic flood floods the nest, the female ants gather together to form a large living raft that carries the queen to safety.

But colonies, no matter how resilient, always come to an end.

After about eight years, our queen will run out of sperm and be unable to produce offspring for the dying worker ants.

The ant population in the nest gradually dwindles until it is eventually taken over by a nearby colony.

Our queen ant's reign is over, but her genetic legacy lives on.

I'm going to talk about three things that I've invented that can impact 10 million to 100 million people, and we hope that will happen.

I've shown in previous videos some of the things we've been doing, like stents and insulin pumps for diabetics.

Today I'm going to talk briefly about three new inventions that will change the lives of many people.

Today, it takes an average of three hours from the time a person experiences the first symptoms of a heart attack to the time they reach the emergency room.

And if you have an asymptomatic ischemic attack, it will take longer to get to the hospital.

AMI, or acute myocardial infarction, which doctors use a difficult word to charge a lot of money for (Laughter), is a heart attack that affects 1.2 million Americans a year.

300,000 people die each year

Approximately half of the 600,000 people will have aftereffects and will be left with major problems later.

That means 900,000 people will either die or suffer severe heart muscle damage.

Patients often deny their symptoms, especially men, because we're so brave that we don't want to admit that we have terrible pain in our chests.

Nearly 25% of patients have no symptoms at all

What should I do in such a case? How can I protect my life?

This is especially true for diabetics and older women.

What would it take to provide early warning of a heart attack?

It's a way to tell if there's a complete blockage in the coronary arteries.

It's a heart attack, folks.

And the way to do that is to look at something a little more technical: look at the ST elevation on the electrocardiogram, or in other words, if the heart's electrical signal -- the part of the electrocardiogram called ST -- is elevated, that's a sure sign of a heart attack.

If you put a computer into the body of a person who is about to have a heart attack, it could predict a heart attack before they even have symptoms, and save lives.

Now, the doctor can program how much ST elevation to trigger an emergency alarm or to vibrate like a cell phone at the collarbone.

And when it beeps, you have to do something, you need therapy if you want to live.

Until we try this device, the Food and Drug Administration won't allow it to be used in humans, and the best model for that was pigs.

I tried putting external electrodes, like those you see in the emergency room, on pig skin, and I'll show you later why that didn't work.

And then we put a wire, a wire, into the heart's right ventricle, and this electrocardiogram is a signal from inside the heart.

In pigs, we simulated a heart attack, and this is the signal before the artery was blocked.

After 43 seconds, even an expert can't tell the difference. After 3 minutes, if you look closely, you can tell the difference.

What happened to the electrocardiogram from inside the pig's heart?

We had a baseline - a bigger, more reliable signal.

Even an untrained person can see the difference. Right after this sharp line, you can see the ST elevation.

Look at this difference. Even laymen can see the difference. You can even build in a program to easily detect the difference.

and look after 3 minutes

It's a signal from inside the heart that you can use to tell someone that you're having a heart attack, even before you're feeling any symptoms, and it could save your life.

I've tried it with my son, Dr. Tim Fishel, and I've tried it on several patients who need stents.

He inflated a balloon to block an artery, simulating a real blockage in a heart attack.

It's not hard to determine the reference line in the first photo, top left.

Next, 30 seconds later, we'll see elevation. This is ST elevation.

If we had a computer that could detect that, we could detect a heart attack very early on and save lives or prevent congestive heart failure.

After a few minutes, he inflated the balloon again. You see, 10 seconds later, you're already seeing a big rise. Like a pacemaker, you can have a computer implanted inside your body.

the computer never sleeps

Small battery works for 5 years without replacement

What kind of device is that?

On the left is the IMD implantable medical device, which will be on display in the tent tonight.

Same size as a pacemaker

it is embedded in the conventional way

And put the EXD external device on the night table

A noise will wake you up and send you to the emergency room or you'll be in great danger.

Ultimately, it's up to the programmer to set the sensitivity for announcing a heart attack.

The Food and Drug Administration ordered an animal test first, and they decided to give pigs a heart attack.

It's not easy to give a pig a heart attack, even on a farm.

You can see some of the stents we invented tonight.

We implant stents, but they are not stents that we implant in humans.

They implanted copper stents, which erode arteries and cause heart attacks.

I'm not feeling well, but I needed an answer.

We implanted two copper stents in the coronary arteries of pigs, and I'm going to show you the results, which were very satisfying, even for people with heart disease.

So here's the result: Thursday morning, the pigs were no longer medicated, and this is an electrocardiogram, a signal from inside the pig's heart.

At 6:43 on Friday, the pigs started showing signs, and then I ran the pigs, but I won't go into detail about this early stage.

Stop the meds and see what happened at 10:06, the medication was preventing the heart attack.

You're an expert on ST elevation by now, so you know.

Observing the ST elevation after a large QRS waveform

This pig had a heart attack at 10:06

Do you know what happens after a heart attack, an artery blockage?

Your heart rhythm becomes irregular, and that's after 45 minutes.

And then ventricular fibrillation hits, and the heart doesn't beat, it just trembles. And this is just before the pig died, and the EKG flattened out.

But we had more than an hour to save the pig's life.

It's a study for the Food and Drug Administration, so it didn't save pig lives, but we need this kind of research in animals for humans.

But if you're a patient, you can save his life.

can save the lives of people at high risk of heart attack

What is the response to acute myocardial infarction today?

Feeling chest pain or indigestion

But it's not that bad, so I'll leave it alone

After a few hours, it deteriorated to the point where it could not be ignored.

You end up going to the emergency room.

You're waiting for burns and other critically ill patients to get treatment, because 75 percent of people who go to the emergency room with chest pain don't have an acute myocardial infarction, so they're not taken seriously.

And when you finally see a doctor, it takes even longer. It's hard to make a diagnosis because the hospital doesn't have a baseline for taking an ECG or making a diagnosis.

Ultimately, if you're lucky, treatment will come three or four hours after the attack, but the heart muscle is already dead.

This is typical treatment in the developed world, not in Africa. This is typical treatment in the advanced world.

So we developed the AngelMed Guardian system, and we implanted this device into a patient, an implantable AngelMed Guardian.

When there's a blockage in the coronary artery, it starts to ring, and it sends an alarm and an ECG to an external device, which has your baseline ECG from the last 24 hours.

The data also reaches the network operations center, and you can pull your data out of the database, which is stored in, say, a central facility in the United States.

It's also sent to a diagnostic center, and within a minute of your heart attack, your EKG is displayed on a computer screen, and the computer analyzes your problem.

The medical personnel there will call you, and on your cell phone they'll say, "Mr. Smith, you're in critical condition. We have a problem.

I called an ambulance, it's on its way right now.

put you in an ambulance, call your doctor and report

And we'll send a heart attack signal to the doctor, send it to the hospital, and they'll analyze it, and you'll see your doctor there, and you'll get treatment and you won't die from a heart attack."

This is the first invention I wanted to mention

(Applause) Now let me talk about something completely different.

At first, I didn't think migraines were a big problem, because I had never had migraines myself, and then I talked to people who had migraines three or four times a week, and their lives were completely ruined.

Our company has made the following statement about its work on migraine headaches: "Preventing and ameliorating migraine headaches with safe, controlled magnetic pulses based on the patient's needs."

There are probably very few physicists here.

If you're a physicist, you're familiar with Faraday's Law, which says that when you give a magnetic pulse to a saline solution -- the saline equivalent of the brain -- it creates an electrical current that drives away migraine headaches.

we discovered that

this is what we are currently doing

In patients with aura and then migraines, there is a band of active neurons -- the red ones -- that migrate to the midbrain at a rate of three to five millimeters per minute.

When it reaches the midbrain, the headache begins.

This migraine has a visual aura, and I'll show you the visual aura, but at first it's like a little dancing light, and then it gets bigger and bigger until it's all over your field of vision.

And what we tried was this device called the Cadwell MES10.

It weighs about 32kg and has a wire about 2.5cm in diameter.

Here's one patient with aura. Always after aura. Headache. What do you do with a patient with a severe headache?

This is what an omen looks like

It's a strange dancing light, both left and right

And this is the omen of full growth, as you can see

Halfway through, a neuroscientist experimenter said, "I'm going to move this around a little bit to eliminate half the aura."

Amazingly, the neurologists erased it, in the middle photo, where half the aura was erased by the magnetic pulse.

what does that mean

In other words, magnetic pulses generate currents that interfere with erroneous electrical activity in the brain.

Finally, he says, "Okay, now let's erase all the remaining omens with magnetic pulses."

What was the result? We designed a magnetic depolarizer, something like this, if you're a woman, put it in your handbag, and when the harbingers start, try this and see what happens.

The next thing I want to show you is ABC News, which was on Channel 7 in New York last week on the 11 o'clock news.

(Anchor) Thirty million Americans suffer because of migraine headaches, and we're likely to find a solution tonight.

Eyewitness reporter Stacey Sager has a tiny handheld device that literally erases your migraines.

(Sidebottom) My first impression was that it looked like a gun and it looked weird.

SAGER: But for Mr. Sidebottom, anything is worth a try, if it stops migraines.

It might look silly and scary to carry around in your bag, but Ohio researchers who are clinically testing this migraine reliever say it's scientifically proven. In fact, the average person's migraines are triggered by something like an electrical shock.

The eliminator creates a magnetic field to counteract this.

(Youssef Mohammed) In other words, you're controlling electricity with electricity, not controlling electricity with chemicals.

(Sager) But is it safe for daily use?

Experts say the research has actually been going on for more than a decade, and that more long-term studies are needed, and Christina now fully believes.

(Sidebottom) It's the best for my migraines

SAGER: The researchers hope to submit their findings to the Food and Drug Administration this summer.

was invented to treat migraines

(Applause) The problem is that 30 million Americans have migraine headaches.

This is the first device we built. I'm going to tell you about my second wish, which has to do with this device.

So far, three research centers have concluded that after using it even just once, there was a significant improvement in pain levels.

Even the most severe headaches responded well after a few trials, and unexpectedly, it turned out to be effective and relieving not just for headaches with aura, but for stubborn headaches as well.

And when the aura disappears, migraines don't occur.

So that's the migraine invention we're working on right now.

(Applause) The third invention started with an idea.

Epilepsy works best with responsive electrical stimulation

Why do we use it in epileptic foci?

Unfortunately, unlike Mr. Bono, we techies end up using these jargons.

By "responsive electrical stimulation," I mean a place in the brain called the epileptic foci, the place where epileptic seizures start, and that's where we think epilepsy starts.

Uses cardiac pacemaker/defibrillator technology

we thought we could adapt it to the brain

The device can be implanted under the scalp so that it's completely hidden and avoids disconnection.

I've started a company to develop neural pacemakers for epilepsy, but also other diseases of the brain. All brain diseases are the result of some electrical malfunction.

We started a company called Neuropace, and we started working on responsive neurostimulation, and it's a device that's going to be implanted in your skull.

You can understand this better

Install the device in the frame

An incision is made in the scalp, and the neurosurgeon has a template, marks around it, and uses a dental drill to remove the same amount of skull as the device.

You can see the device in the tent tonight.

Four screws attach the frame, and then you snap the device in, you put the wires in place, and the green one has the electrodes and attaches to the surface of the brain, which means that the epileptic foci -- where epilepsy originates -- you can pick up the electrical signals, and let the computer analyze them and decide when to apply the current, so that you don't have seizures.

You can also see what's called a deep brain electrode in the blue line.

Even if the epileptic lesion is deep, it can also be attacked.

All in all, this device is about two and a half centimeters by five centimeters, just as thick as the skull.

The advantage of responsive neurostimulation is that it can detect and suppress seizures before symptoms occur. It can also be applied only when needed or turned off once seizures have subsided. Side effects are minimal, and in fact, in every clinical trial to date, we've had no side effects in the 40 or so patients who have had the device implanted.

This shows an EEG, on the left is the patient's spontaneous seizure signal.

So we added a stimulus. Look at the thick black line, and you can see the EEG signals becoming normal, indicating that the epileptic seizure did not occur.

So that's the story about epilepsy. That's the third invention I wanted to talk to you about today.

(Applause) I have three wishes, although I can't do much about Africa.

I'm an engineer, I specialize in medical devices, and as Bono said, mostly high-tech stuff.

My number one wish is to use epileptic-responsive neurostimulators, or responsive neurostimulators, or RNS for short.

If you can use this for epilepsy, it should work for other diseases.

You've seen what that device looks like, a device that a woman used to treat her migraine headaches.

It's a product that was forced by a research engineer like me, and it's a good product, but the design isn't very good.

(Laughter) We need people who can design well, who can develop optimal designs, who can practice ergonomics, for portable devices that cure migraine headaches.

It seems that there is such a company among the sponsors of this TED conference.

I challenge you to come up with a way to improve health care in the United States. We have a problem that Africa doesn't have.

Reducing medical malpractice lawsuits, which is not in Africa, it's exactly the problem in the United States.

(Applause) To summarize my first wish, the brain is powered by electrical signals.

If electrical signals produce brain damage, we can overcome that damage by applying electrical stimulation to the nerves.

In other words, if an electrical signal causes a problem, the computer can send other electrical signals to the brain to correct it.

Signals in the brain that cause brain dysfunction may be sensed as triggers for electrical stimulation, similar to the response to epilepsy.

Even if there is no signal, electrical stimulation in the right place can erase brain damage.

Think about the treatment of psychotic disorders, the issues that I would like people in the TED group to be involved with, like obsessive-compulsive disorder, which currently has no drug treatment, and five million Americans are suffering from it.

Mr. Fisher, the staff at Neuropace, and I believe that we can make a dramatic impact on the treatment of obsessive-compulsive disorder in the United States and around the world.

That's my first wish

(Applause) My second wish, right now, is a clinical trial of a transcranial magnetic stimulator, called TMS, a migraine treatment device that looks like it's going to work very well.

it's good news

Today's mobile devices are far from well-designed, both ergonomically and aesthetically.

She said it's like a gun, but you don't like guns, do you?

(Laughter) Working with a company with a proven track record in ergonomics and industrial design, to refine the design of the first TMS handset, which will be marketed to migraine sufferers.

That's my second wish

(Applause) Of the $100,000 that TED has so generously awarded me, I would like to donate $50,000 to the staff at Neuropace to advance treatments for obsessive-compulsive disorder, and the remaining $50,000 to a company that designs migraine devices.

Let me use the $100,000 prize money like that.

(Applause) Now, my third and final wish, unfortunately, is much more complicated, because it involves lawyers.

(Laughter) In the United States, malpractice lawsuits are driving up the cost of malpractice insurance, and as a result, talented doctors are leaving their jobs.

Lawyers take the defense on a contingency fee basis, because the patient suffered a lot in the hope of getting a lot of money from a big settlement by a sympathetic jury.

Litigation and insurance costs contribute to high U.S. health care costs

There was a graph in USA Today today, the cost of which is skyrocketing uncontrollably, and that's one factor.

So what can the TED community do in this situation?

I have a few ideas to get you started

As a starting point for our discussion with the TED group, the big question is what the informed consent document looks like for the patient and the spouse to read and sign.

For example, I ask people with epilepsy, what forms do they use for informed consent?

Can you believe it? It's a 12-page long document with plenty of space between the lines that patients must read before they seek epilepsy treatment.

What did that person understand at the end of the 12 closely spaced pages?

I didn't understand

(Laughter) That's how we do it now. So what if we make a video?

We have entertainment people here, they know how to work with video, they can give animated presentations about anatomy and procedures.

As you know, interactive video can also work well. Show the video to the patient and record it. Do you get it? and if the answer is "no"

move on to a simpler explanation

After a brief explanation, when the "I understand" button is pressed

So they recorded the moment they pressed that button, and they understood it.

this is also one of the ideas

Video can also be used between patients, spouses, and medical presenters, where the patient agrees that they understand the treatment, including any potential for failure.

I also agree that the patient or spouse will not sue, even if the treatment doesn't work.

This is not a waiver of the right to a jury trial in the United States.

But if there's a video that explains everything, if it's all in a video file, the best lawyers won't be able to defend it, because it's not going to be a very lucrative lawsuit, even on a contingency basis.

Even with medical malpractice, patients and spouses will agree to settle without going to court, with fair mediation compensation.

Hundreds of millions of dollars in legal costs would be saved in the United States, and health care costs for the nation would decrease.

These are just starting points

and this is my last wish

I wish I had more wishes, but for now, the three I have are

(applause)

Talk about Emotional Captivity: The Pursuit of Happiness and Human Anatomy Talk about Emotional Captivity: The Pursuit of Happiness and Human Anatomy

This is Darwin with a slightly grumpy face and a very happy chimpanzee.

The first point is that the pursuit of happiness is inevitable.

People want to be happy, they just want to be happy, they can't wish not to be.

We are made to seek happiness, and when we are happy, we want more.

If that's true, how does it work to be happier?

Of course everyone is trying

If you search for books to be happy on Amazon, you will find more than 2,000 books such as "7 Habits", "9 Choices", "10 Secrets", "1400 Ideas", etc.

And some people turn to drugs to be happy.

There are currently more than 120 million prescriptions for antidepressants in the United States.

Among them, Prozac was the first big hit product.

It's a drug with few interactions, it's effective, it's not high, it's not particularly dangerous, it's not worth it on the black market.

In 1995, illegal drugs were a $400 billion business, representing 8 percent of world trade, roughly the same as gas and oil combined.

I can't say that these methods have made us happier.

One of the problems we're seeing now is that depression and anxiety are on the rise, while happiness is flat and flat like the surface of the moon.

Some say that the number of patients increased because of advances in diagnostic methods.

I can't say for certain, this trend is global.

Suicides now outnumber homicides in America.

Suicide continues in China

The WHO estimates that depression will become the second leading cause of disability by 2020.

Fortunately, three-quarters of people surveyed around the world say they're reasonably happy.

But this is not what we usually see

For example, in these two graphs, income is growing, but happiness is flat.

My specialty, psychology, hasn't done much to understand happiness.

Part of that is a view inherited from the pessimistic Freud that the pursuit of happiness is a futile, childish personal dream that never comes true.

He also said, "It's fair to say that the idea that humans should be happy was not part of the plan of creation."

So the very purpose of psychoanalytic psychotherapy was what Freud called "everyday unhappiness."

(Laughter) Freud's thinking, in a way, reflects the structure of the human emotional system. Humans have positive and negative systems, and the negative system is very sensitive.

We are naturally fond of sweets and reflexively avoid bitter foods.

The hatred of losing something is stronger than the happiness of gaining it.

The formula for a happy marriage is said to be 1 for every 5 for positive words and relationships.

That's how big the impact of one negative thing is.

It takes a lot of positivity, especially to offset expressions of contempt and disgust.

This includes the stress response as well.

We're wired to react violently to impending and inevitable physical danger, and this involves endogenous opioids.

This system is built in to protect us from physical danger.

Now this is a stress response that has a huge impact on the body.

Adrenal hormones flood the brain, destroying cells in the hippocampus and memory, causing a host of health problems.

Unfortunately, we can't live without this system.

You can't survive if you're ruled only by pleasant things.

we have two control towers

Emotions are strong, transient responses to challenges and opportunities.

Each emotion switches us into a different version of ourselves, manipulating our thoughts, our perceptions, our senses, our memories.

Emotions are often thought of as mere sensations.

It's actually a system-wide alarm that influences what we remember, how we make decisions, and how we perceive things.

Now about the modern science of happiness.

There's a lot of research going on outside the brooding Freudian world.

A key point of the science of happiness is that happiness and unhappiness are not the ends of a continuum.

Freud's model was that the two are connected, and that when you stop being unhappy, you become happy.

This is a mistake. When you stop being unhappy, you just stop being unhappy.

Happiness and unhappiness are like opposite sides of the equation

Because this idea was lacking in psychotherapy

Even after symptoms had resolved, they often recurred because they lacked awareness of the other side, which is positive emotions such as joy, happiness, and gratitude.

Of course, I understand intuitively that being happy is not just not being unhappy.

But until recently, it wasn't proposed that these were two parallel systems.

So the body is able to both pursue unknown possibilities and protect itself from danger.

These are two contradictory yet dynamically interacting systems.

The analysis of happiness has also progressed

The word "happiness" can mean many things.

Happiness also has three emotions that don't exist in the English vocabulary: fiero -- pride in overcoming adversity; schadenfreude -- happiness in the misfortunes of others; poor quality joy;

And there's another, less controversial, happiness that rejoices in "other people's happiness."

There seems to be no words to express this

Humans are very sensitive to negativity, but they're well balanced by their tendency to be positive.

We are also naturally attracted to pleasant things.

Babies like sweet tastes and dislike bitter foods

Prefers smooth things over rough things

I'd rather look at a pretty face than a dull face

I listen to harmonious melodies rather than discordant melodies.

Children are born with an innate knowledge of pleasant things.

According to one psychologist, 80 percent of our pursuit of happiness is genetic, and happiness, like height, is hard to get for more than what you're given.

it can't be

Even if there is a significant genetic influence on happiness, it's about 50 percent, and the other 50 percent we don't really understand.

Let's look inside the brain and find out where happiness came from during evolution.

There are basically at least two systems, both very old.

One is the reward system, which is governed by the chemical dopamine.

Begins in the ventral tegmental area

The nucleus accumbens, the prefrontal cortex, the orbitofrontal cortex, etc. Leads to high-level judgment areas.

This nervous system was originally thought to be the pleasure system in the brain.

In 1950, Ozul and Milner inserted electrodes into the brain of a mouse and pressed a bar.

When you turned on the current, the rats kept pushing the bar over and over and over again.

No eating, no sleeping, no sex.

I didn't do anything except push the bar

From the results, I predicted that this was the "orgasm machine" in the brain.

I later found out that it wasn't really, it was a system of motivation, a system of desire.

It is a system that gives an attribute called "attractive feature" to what you feel "want"

Items with this attribute are classified as "things you really want to get"

This is a little bit different than the simple "I like you" pleasure system.

The pleasure system is associated with the endogenous opiate, oxytocin, and spreads throughout the brain.

The dopamine or desire system is much more centralized.

Positive emotions have common human signals to express them.

here is the smile

This signal isn't just pulling the sides of the lips up to the major cheekbones.

At the same time, it narrows the outer corner of the eye, or the eye ring.

Even a 10-month-old baby has this unique smile when he sees his mother's face.

Extroverts use smiles more than introverts

People who come out of depression smile more often

To discern the true expression of happiness, just look at this expression.

our joy is a very old feeling

In life, we learn many joys, and one of them is the love of life, which is a reaction to the natural world around us, a very basic emotion.

There's an interesting study that looked at post-surgery patients and compared those whose hospital room windows faced a brick wall to those who had a view of trees and nature, and found that those who spent their time looking at the brick wall spent more time in the hospital, needed more medication, and had more postoperative complications.

There's something powerful in nature that's healing, and we're designed to respond to it.

Humans are animals that love to imitate.

Begins to imitate as soon as they are born

This is a 3 week old baby

If you stick your tongue out, babies will do the same.

we are naturally social animals

Studies on cooperation show that when people are doing something together, the brain's reward system is activated.

One of the problems with psychology is that it has downplayed how important the idea of ​​intersubjectivity and the social brain is to a human being born into the world helpless and unable to live on his or her own, and instead revolves around self and self-esteem.

Say "I" instead of "We"

I think that thinking that goes against the human body and nature is a big factor in people's inability to be happy.

When you think about it, people are happiest when they're with their peers, when they're immersed in something in the outside world, when they're interacting with other people, when they're active, when they play sports, when they think of their loved ones, when they learn, when they have sex.

It's not the time to sit in front of the mirror and wonder who you are.

You wouldn't feel the happiest at a time like this

There's another piece of evidence that I can think of. Computer analysis of the writings of people who have attempted suicide has shown, interestingly, that they often use the first person singular. They use "I," "me," and "mine," but not "we."

Loneliness is a very unnatural state for humans.

Humans have a natural need for belonging.

But sometimes evolutionary history can get you down.

One example is that the purpose of genes is not to pursue happiness, but to make copies of genes and pass them on to the next generation.

So we have three reproductive systems, and the reason we have three is because reproduction itself is very important.

They are lust, the desire to have sex

This is governed by sex hormones

romantic love this is ruled by dopamine

It is a desire system that makes you think, "I definitely want to be with this person."

And then there are the opiates like oxytocin that create attachment, the deep bond.

The problem is that sometimes these three things don't go well together.

Even if you've been dating someone for a long time, you can still find yourself romantically attracted to another person and want to have sex with another person.

Another example of how genes can lead us astray is social status.

Humans are very sensitive to social status, and they're always trying to move up.

In the animal world, the only way to rise in rank is to dominate others.

If you become physically strong and take the lead, and defend your position with a bang, the people around you will behave in a submissive manner.

But humans gain status in a very different way, not through threats, but through the trust of those around them.

We give status to those who have special knowledge and skills.

It's different from the animal world in that you don't have to be at the bottom of the hierarchy because you can create positions for different talents.

There is no evidence that money can buy happiness.

can't say it doesn't matter

If you take a survey about life satisfaction, you'll find that as income increases, so does satisfaction.

People with lower incomes have more mental distress

So it certainly affects

The degree is rather small

One of the problems with money is materialism

When you're obsessed with money, you forget the basic joys of life.

Like the couple and children in this cartoon

"Do poorer people enjoy sex more than us?"

"I'm playing with toys, so don't disturb me."

Emotions are hijacked

Dopamine - the demand system takes over the brain and derails the pleasure system.

In the 1950s, Maslow's idea was that when the world was at peace, when our basic needs were met -- when our physiological systems and motivations were met -- we began to think outside ourselves and overcome self-actualization, self-transcendence, and materialism.

Finally, let's look at a little data that suggests this may be true.

First, people who are enlightened feel that their lives and values ​​have changed.

As I expected, the values ​​that I thought were important before the change, such as wealth, adventure, achievement, pleasure, enjoyment, and honor, have changed to values ​​that transcend materialism after the change.

Women's values ​​are completely different from men's.

The shift in values ​​is very similar. Only happiness survives.

As opposed to beauty, happiness, wealth, and self-control, after the change, they value generosity and forgiveness.

I'll end with a few quotes

"The only question is: How do you love the world?"

Rilke: "If you think your daily life is poor, blame yourself, not your daily life.

It is to tell you that you are not blessed with everyday wealth because you are not a good poet. ”

“First tell yourself what you want to be.

Then do what you ought to do. ”

thank you

(applause)

Today I would like to talk about a new discovery

But I'm going to tell you how it actually happened, and it's not the way I present it at conferences or the way you read it in academic papers.

This goes beyond biomimicry, and I personally call it "biomutualism."

I define it as "biology and another field collaborating, each advancing the other's field reciprocally, and the resulting joint discoveries surpassing any one field."

In terms of biomimetics, nature becomes an even more beneficial teacher as more of nature's properties are incorporated into human technology.

When biological principles and analogies are useful, engineering can take advantage of them to get ideas, and then integrate them into the best ergonomics to ultimately create something actually better than nature.

As a biologist, I was very interested in this

It is the toe part of the gecko

I wondered how those strange toes could be used to quickly climb walls.

What we found was that gecko toes have leaf-like structures on their toes, with millions of tiny, rug-like hairs.

There are 2 billion such nano-sized split ends per animal.

Velcro, suction cups,

It doesn't stick with glue, it actually sticks only with the forces acting between the molecules.

And today, I'm excited to announce to you that we've created the first synthetic self-cleaning dry adhesive material.

One of nature's simplest forms was turned into the world's first synthetic version by Berkeley collaborator Ron Fearing.

Another great collaborator, Mark Kakkoski at Stanford, used the same principle to create a version that's thicker than gecko hair.

this is the first test

(Laughter) This is my student, Keller Autumn, who is now a professor at Lewis and Clark College, literally devoting his first child to the test.

(Laughter) I've had this happen recently.

Man: This is the first time a person has actually climbed using this.

-Professional climber Lynn Warinski seems to be full of confidence-

Rin: Seriously, it's totally fine. It's totally safe.

Man: How do you know?

Lynn: Because we have liability insurance - we lay out the mattress and attach the leash, and Lynn starts climbing 60 feet -

―The perfect combination of Hollywood and science, Lynn has reached the top―

Man: You became the first person to imitate a gecko.

Rin: Ha! It was a great honor

Robert: This was a rough surface

She actually used two of these to climb on smooth surfaces.

Try it out in the lobby See also gecko-inspired material

Now, the problem with robots using this is that this material cannot be peeled off.

And that's the gecko's solution, because it's going to run up walls by flipping its toes off the surface at high speed.

So today, I'm going to show you the latest version of the Stickybot robot, which uses a new type of layered dry-adhesion material.

this is the robot

it works like this

If you look closely, you'll see that the robot peels off like it's flipping its toes, just like geckos do.

Watch the video climbing the wall

(Applause) I'm climbing.

And by the way, it can climb other types of surfaces, thanks to a group at Stanford that created a new adhesive material in designing this amazing robot.

(Applause) I want to point out one thing, if you look at Stickybot.

What's on it? It's got a tail, not just to make it look like a gecko.

This is what happens when you think you understand nature.

Engineers told me, "Without a tail, a robot would fall off a wall even if it was climbing."

and they asked us important questions

"Just because it looks like a tail, what we put on

It's a stick with no special function

Do animals use tails to climb walls? ”

They gave us back with hypotheses to test in biology that we would never have thought of.

In fact, of course we panicked, and as biologists we should have known.

"What is the role of the tail?"

For example, the tail stores fat,

i knew it was used to hold on to something

Best known for being able to maintain static balance.

(Laughter) It also helps balance.

look at this kangaroo

This tail is great!

Mark Raibert built the Uniroo one-legged robot

It seems that it was not stable without a tail

Normally the tail limits motility, like someone wearing this dinosaur costume.

(Laughter) A colleague of mine has actually tested this limit, and it turns out that if you increase the student's moment of inertia, make them stick their tails, run them on an obstacle course, their times get worse, without even experimenting.

(Laughter) But of course this was a passive tail.

It also has an active tail

As I was researching this, I remembered one of the great TED talks of all time, where Nathan talked about active tails.

Video: Myrvold thinks dinosaurs slap their tails for courtship, not for battle.

Robert: You said the tail was a stick for communication.

You can also use it to protect yourself

It's impressive

There I saw a gecko again

I made you climb the wall

This time, I added a slippery part, which is the yellow part.

Look to the right to see what the gecko does with its tail when it slides, 10x slow motion.

this is normal speed

Now watch it slide and see what it does with the tail.

It is an active tail that functions as a fifth leg and maintains a sense of stability.

If you slide it as hard as you can, it will look like this

I'm surprised

The engineers had a very good idea.

And of course we thought afterwards, because they have active tails.

as climbing walls and trees

When you reach the top, for example, if there is a leaf

And what happens if you're climbing on the underside of a leaf and the wind blows or shakes the leaf?

This is the experiment

(Applause) This is the result.

I don't know anything in real time

It's like this in slow motion

What we saw was the world's fastest mid-air righting response

In physics terms, it's a righting reaction with zero angular momentum.

Just like cats, cats twist when they fall.

But geckos do better

I'll do it with my tail

It uses an active tail when it spins around

And Superman always lands in a skydiving posture

I figured if this was true, I should be able to test it on a physical model robot.

So, for TED, we built a prototype robot over there with a tail.

For the first time, I'm going to use a robot to do an aerial righting reaction using the tail.

please turn on the lights

okay, let's go

show me the video

Did it

Shows effects similar to those of geckos

In other words, to fix the regime, all you have to do is wag your tail.

(Applause) But of course I was worried about whether it was normal, because geckos don't have a gliding adaptation, so I thought, "Well, put it in a vertical wind tunnel.

Just blow air from below, place a landing tree trunk just outside the plexiglass enclosure, and see what the geckos do."

(Laughter) And that's what happened.

The wind is blowing from below, 10x slow motion.

Geckos have a highly controlled equilibrium glide

Surprisingly, when you take a picture of it, it's actually quite graceful.

And that's not all.

The way you do it is by wagging your tail one way to go left, and wagging it to the other side to go right.

It works fine like this

And I can't believe I filmed this so many times -- I also do things like this.

Moves its tail up and down like a dolphin

You can actually swim through the air

But look at your paws, do you know what you're doing?

Could it be related to the origin of flapping flight?

It may have evolved from jumping from trees to control descents.

Stay tuned for more

(Laughter) And I thought, "Can I really do downhill maneuvers with this?"

Can you use this function to go in the direction of the landing target? I flew through the wind tunnel

it seems like you can

You can see it better if you look down from above

look at the gecko

clearly moving towards the target

Notice the tail wagging as you do it Look!

i can't believe

I'm really confused because there are no reports of geckos downhill.

"I have to check on the spot whether the gecko really slides down."

It's the complete opposite of nature movies.

``Do natural geckos really glide downhill?''

I went to the forest in Singapore

The following video is published for the first time

It's not a hoax, it's a real, serious research video of a gecko gliding downhill, marked in red with its trajectory.

gecko looks last

But when you get close to the tree, look at the closeup and see if you can see the landing.

I came down, there is a gecko at the end of the trajectory

can you see it? coming down

Now look at the landing above. Did you succeed?

I actually use a tail, as I saw in the lab.

So we can continue this mutualism by suggesting to our engineers that they create an active tail.

And this is the first robot with an active tail, built by Boston Dynamics.

So in conclusion, I think we need to build biomutualism that speeds up fundamental discoveries in applications like the ones I've shown you.

But to do that, we need to make big changes to the education system, to adjust the horizons of interdisciplinary information exchange, and to teach people clearly how to contribute and benefit from other fields.

Of course you also need an organism and an environment to do this.

So if you're concerned about security, or search, or health, then you have to protect the patterns of nature, or you'll lose the key to understanding it forever.

From what our new president says, I'm optimistic. Thank you.

(applause)

Why do so many people fail after achieving success?

The main reason is that we see success as a one-way street.

We do whatever it takes to succeed, but once we succeed, we think we've done it.

Then the downhill comes

This is real, it's happened to me.

When I was trying to find success, I worked hard and pushed myself.

But then it stopped.

because I thought

When I was trying to be successful, I always tried to improve myself and do a good job.

But then it stopped, saying, "I'm doing a good enough job.

I thought there was nothing better than this

I was very good at coming up with good ideas when I was on the hunt for success.

Because I was doing everything that led to the idea

But then I stopped, because I thought I was a go-getter, so I shouldn't have to work hard to come up with ideas, because ideas would just magically flow out of me.

All that really came out was something that stifled creativity.

I can no longer generate any ideas

When I was trying to be successful, I was always focused on my clients and projects and ignoring the money, but big money started rolling in.

and it got me hooked

All of a sudden, I was dealing with stockbrokers and realtors when I had to talk to clients.

When I was trying to be successful, I was always doing what I loved.

But then I had to do things I didn't like, like management.

Soon a black cloud began to cover my head.On the outside I was a very successful man, but inside I was dark.

But I'm a man, I knew how to fix it

i bought a sports car

(Laughter) It didn't work.

Riding in a faster car was just as depressing

So I went to the doctor and said, "Doctor, I can buy anything I want, but I'm not happy. My heart is depressed.

Everyone said it was true, but I didn't know until it happened to me

"Money can't buy happiness"

The teacher's answer was, "Yes, but you can still buy Prozac."

and prescribed antidepressants

The black cloud disappeared a little bit, but all my work was gone, because I was like a floating cloud, and I didn't care if my customers would call me.

(Laughter) And the customers stopped calling.

(Laughter) Because I knew I wasn't serving them, because I was only thinking about myself.

So customers took their money and projects to other companies that served them better.

It was only a matter of time before the business fell like a rock

My partner Tom and I had to lay off all our employees.

It was just the two of us and was on the verge of sinking

but that was good

No employees, no administration

So I went back to my favorite projects again

I had fun again and worked harder. Simply put - I did everything and was successful again.

it wasn't easy

it took seven years

But in the end, the business grew even more than before.

By following these eight principles, the black cloud on my head has completely disappeared.

One day, I woke up and said, "I don't need Prozac anymore."

I threw the medicine away and have not needed it since

I learned that success is not a one-way street

It's not like this, it's more like this

Success is a never-ending journey

If you want to avoid the "success-to-fail syndrome," stick with these eight principles, because it's not only about how you succeed, but how you keep succeeding.

hope your success continues

thank you

(applause)

I had the rare pleasure of living in two biospheres.

All of us in this room live in Biosphere 1.

I also lived in Biosphere 2

And the great thing is that I can compare those biospheres.

i think i learned something from it

What have we learned? This is me making a pizza in Biosphere 2

Harvesting wheat to make pizza dough

Then we milk goats to make cheese, and of course we raise goats.

It took me 4 months to make a pizza in Biosphere 2

Here in Biosphere 1, it only takes two minutes.

Biosphere 2 is a three-acre miniature world completely cut off from the outside world, where I lived for two years and 20 minutes.

(Laughter) The top was insulated with steel and glass, and the bottom was insulated with a steel base, which was essentially completely sealed.

It has its own miniature rainforest, a private beach with coral reefs,

There were savannas, swamps and deserts

Half an acre of farmland for all cultivation and

There were living quarters for humans to live in

Back in the mid-'80s, when we were designing Biosphere 2, we were asking ourselves some very basic questions.

So what is the biosphere?

At that time, we were thinking about the sphere of life that surrounds the Earth, right?

But if you want to make it, you need to be a little more specific.

So we defined it as a system that is actually completely closed physically, with no matter entering or leaving, and that is energetically open, which is exactly what the Earth is.

This is a 1:400th room in Biosphere 2, which we called a "test module."

And from the first day that this man, John Allen, was going to spend two days in here with the plants, the animals, the bacteria that we brought in to keep him alive, the doctors were terribly afraid that he would be hit by some horrible toxin, or that he would suffocate to death with bacteria or mycelium.

Of course that didn't happen

The years that followed were the great story of Biosphere 2's design.

In 1991, Biosphere 2 was built.

and we got into it

We wanted to know Can life adapt to this?

Can you put this planetary scale biosphere into a tiny bottle and still sustain life?

big question

We will use this answer to see if one can use it to get to some other place in space, say Mars.

The other is that I wanted to get it to know more about the earth we live on.

In 1991, the time finally came, and we went inside to see what would happen.

It's a maiden voyage

will it work? Or will something happen that we can't comprehend or solve that will negate the concept of an artificial biosphere?

4 men and 4 women entered

It increased after that

(Laughter) This is the world we live in.

Above, there was a beautiful rainforest, and below the sea was a "technosphere" of pumps, valves, water tanks, air treatment equipment, and so on.

One of our members called it "The Garden of Eden on an Aircraft Carrier."

And then, of course, there was the living quarters, and the labs.

here is the farm

It's basically an organic farm.

On the day I entered Biosphere 2, for the first time, I breathed an air that was completely different from anyone else in the world, together with the seven members.

In that moment, I became part of that biosphere.

It's literally, not in an abstract sense.

The CO2 from my exhaled breath becomes the sweet potatoes I grow.

we ate a lot of sweet potatoes

(Laughter) And that sweet potato becomes part of me.

I just turned orange from eating too many sweet potatoes.

I was literally eating the same carbon over and over again

In a very strange way I was eating myself

But when it comes to the atmosphere, in the long run, it wasn't a joke, because we were losing so much oxygen.

we were also losing carbon dioxide

So we tried to "sequester" the carbon

Oh, now we can use this term too

we grew plants like crazy

We stored that biomass in the basement and then grew plants on it, over and over again, trying to remove the carbon from the atmosphere.

tried to prevent carbon from being released into the atmosphere

Minimal irrigation of land

We stopped tilling the soil to prevent greenhouse gases from entering the atmosphere.

And yet the oxygen was depleting faster than the carbon dioxide was increasing, which I didn't expect, because they were changing together in the test module.

It was like playing hide-and-seek on an atomic level.

we lost 7 tons of oxygen

i had no idea where i went

And what happens when you lose a lot of oxygen? We went from 21% to 14.2%, and wow, that's scary.

We were dragging our bodies through the biosphere.

Sleep apnea occurs at night

I take a deep breath and wake up, my blood composition has changed.

It really does happen. I hold my breath and I take a deep breath to wake up. It's so frustrating.

Everyone in the outside world thought we were dying

the media reported that

I had to call my mother every other day to say, "Okay, okay."

"I'm not dead, I'm fine"

Actually, the member's doctor was checking whether we were really okay.

But in fact, he himself was the most sensitive to oxygen.

One day he finally lost the ability to do a series of additions.

we introduced oxygen from the outside

You might think, "Your life support is inoperable, and that's a terrible thing."

In some ways it's terrifying

Unless you know you can always walk out of the airlock if things go wrong, but who says, "I can't take it anymore!"?

I'm sure it's not me

But on the other hand, this was the real gem of the project, because I was able to actually run this system as a scientific tool to see if we could find out where those seven tons of oxygen went.

and indeed it was found

it was in the concrete

it was really easy

We put too much carbon in the compost soil,

It decomposed, took oxygen out of the atmosphere, released CO2 into the atmosphere, and then accumulated in the concrete.

it was very simple

So, after two years, we came out with a sense of accomplishment, and yes, we got a very bad result, that we stopped doing experiments on life support because our oxygen kept running low.

I knew the cause and how to fix it.

without any other serious problems

The concept itself somehow proved

On the other hand, our subject was another matter.

We ourselves didn't know if we could fix it

It was as if I had lost my mind

The day I came out of Biosphere 2, I was so excited to see my family and friends.

I had been looking through the glass for the past two years.

everyone ran to me

But I backed away They smelled so bad!

They all stink!

It smells like hairspray and armpit deodorant and stuff like that.

We had cleansing tools in the biosphere, but we didn't have perfumes or anything like that.

But it stinks on this side

Not only that, but I lost track of where my food came from.

I used to grow everything I ate

But now I don't know what's in my food or where it comes from

On the contrary, I only know half the names of the foods I eat.

I spend hours on the store shelves looking at the ingredients of every product.

You think I'm crazy

really amazing

I'm increasingly lost in this big biosphere that we live in.

In Biosphere 2, I knew that I would always have a big influence on the biosphere, and that the biosphere would affect me very physically and literally.

So I started a company called Paragon Space Development, a small company that I started with some friends from my time at Biosphere, because I had nothing else to do.

One of the things we did was try to see how small we could make the biosphere and what we could do with it.

Put the biosphere on the Mir space station

We put it on the Space Shuttle and then on the International Space Station for 16 months. We've successfully created an organism that can go through a complete life cycle in space, over and over again.

And I'm honored to announce to you that I've formed a team to develop a plant system that grows on the moon, which I'm going to reveal on Friday, and it's going to be very interesting.

And it's based on a system that we designed, a completely decoupled system that could grow plants on Mars.

In the process of designing it, we had to design a very fast circulation system for oxygen and carbon dioxide.

As a result of that design, I ended up going to various parts of Eritrea, the tip of Africa.

Eritrea, which was originally part of Ethiopia, is a stunningly beautiful, incredibly desolate place, and I had no idea how people make a living here.

very dry

this is what i saw

but this is also what i saw

I saw a company using seawater and sand to grow plants that were completely untreated and grew in pure seawater.

I make food

In this case it is oilseed

To my surprise, they were also growing mangroves on their plantations.

Mangroves were producing wood, honey, leaves for animals, milk, and other things that we produce in the biosphere.

And they all come from shrimp farms

And frankly from an environmental point of view, shrimp farms are the bane of the planet.

washing large amounts of pollutants into the sea

It also pollutes neighboring ponds, polluting each other.

literally

What this project is trying to do is take this pollution stream and turn it all into food.

They literally make the polluted property of the desert people.

In a way, we've created an industrial ecosystem.

In fact, I am a member of the UN's Kyoto Protocol Carbon Emissions Allowance Program.

I was there for the model design of the mangrove field.

While designing this mangrove swamp, I thought, "How do we make a box around it?"

I literally know where the boundaries should be when designing a box for a plant.

I didn't know what to do in the mangrove forest

Of course, we also have to draw boundaries around the earth.

everything is related to the whole earth

And you have to put the project in that context

Around the world today, we're seeing incredible transformations by "life-killing" races, races that designed their systems to kill too many lives, intentionally or otherwise.

This beautiful picture is actually from above the Amazon.

Large areas of light green deforestation are visible.

These fluffy, beautiful clouds are actually artificial wildfires.

We are in the process of changing from this state to a so-called "bioadaptive" society, where we will learn to nurture society.

It may not seem so, but it is

It's happening all over the world, in every way of life, in every profession, in every industry you can think of.

People often get lost in it

"How am I supposed to find my way in this world?"

It's such a big problem

It's the very little things that count, really

This is the story of the "rake" in my backyard.

This is my backyard Long time ago when I was in Arizona (of course)

When I bought the house, the garden was covered with gravel.

And the garden was beautifully broomed and all fallen leaves removed.

Sunday morning, my neighbor brought out a leaf blowing machine and I wanted to stop it.

it's a kind of aesthetic

You must have hated being scattered

I threw out my broom

And I let the leaves fall from the trees in my land

What happened over time?

I was making topsoil

Then many birds came and falcons came

An oasis was created

This is what happens every spring, and it's a green oasis for six or eight weeks.

This place became the river bank

This could happen anywhere in Tucson (Arizona) If everyone just stopped and dropped their broomsticks

small things matter

The Industrial Revolution and Prometheus (fire) gave us the power to light up the world.

It also gave us the power to see the world from the outside.

All of us may live in a man-made biosphere and never compare that world to this world.

Yet we can look at the world and try to know where we are within that framework and choose how to interact with it.

And if you're lost in your biosphere, or you're having a hard time connecting to where you are in the biosphere, let me tell you, take a deep breath.

yoga guru was right

The breath connects us all, literally.

take a breath

When you breathe think about what's in your breath

there will be CO2 coming from your neighbors

It may also contain some oxygen produced by seaweed on nearby shores.

breath is connected to time

The carbon in your breath may have belonged to a dinosaur.

The carbon in your breath may become the breath of your great-great-great-great-grandchildren.

thank you

Centuries ago, the Incas developed simple armor that could protect their warriors from even the strongest attacks, as the armor would flex under attack from sharp spears and mace.

These sturdy structures weren't made of iron or steel, but of something surprisingly soft: cotton.

Thickly woven from multiple layers of cotton, the quilt's wide surface allowed it to disperse the force of the attack, protecting the warriors without hindering their mobility.

These seemingly incompatible traits—strength and suppleness, softness and durability—are derived from the nearly invisible complex botanical properties of cotton fibers.

These fibers are born on some kind of surface deep inside the cotton.

As many as 16,000 fibers cover a single seed in a peduncle, which expands from the seed surface like a small water balloon.

Each cotton fiber, no matter how large it grows, is made up of just one cell.

This cell has a cell wall made up of multiple layers.

After a few days, the sides of the first layer, called the primary cell wall, harden, pushing the growth of the cell in one direction, allowing the fibers to elongate.

For about 16 days, the fibers grow rapidly.

And then we move on to the next step, which is strengthening the cell wall.

Fortification is done by making more cellulose, a carbohydrate.

Cellulose makes up 34 percent of the cell wall at this stage, and the percentage increases rapidly.

This new growth also strengthens the existing cell walls by defying their eyes.

Reinforced walls become harder and restrain further growth.

So if the fibers rebuild the walls too quickly, they'll shorten, and you'll end up with a rough, weak fabric.

But if the cell walls are strengthened too late, the walls aren't strong enough and the fibers are too weak to make a firm fabric.

In ideal growing conditions -- with proper temperature, water, fertilizer, pest control and light management -- cotton fibers can grow up to 3.6 centimeters long but only 25 micrometers wide.

Long, thin fibers tend to wrap around each other more easily than shorter, thicker fibers, so long, thin fibers make stronger threads and can be used to create stronger fabrics.

With these properties, cotton has a wide variety of uses, from soft fabrics to 75 percent cotton US dollar bills.

The next critical moment in the cotton fiber growth process begins when the secondary cell wall thickens due to heavy deposition of cellulose in the second layer.

Cellulose accounts for up to 90 percent of the weight of the fiber

The more cellulose deposited, the denser the second layer, which determines the final strength of the fiber.

This step is essential to develop long-lasting materials for things like T-shirts.

The durability of a garment that can withstand years of washing and wearing is largely determined by the density of its secondary cell walls.

Softness, on the other hand, is strongly influenced by fiber length, resulting from remodeling of the primary cell wall.

Ultimately, after about 50 days, the fibers are fully grown.

The biological material inside the cell dies, leaving only cellulose.

The dry cotton seed pods that cover the fibers, also known as round pods, crack open and reveal thousands of fiber cells as fluffy clumps all at once.

The thread-like fibers we see, thinner than a human hair, are the remnants of a dense wall of desiccated cellulose.

These tens of thousands of fibers are spun into yarn to make everything from textiles to coffee filters to diapers to fishing nets.

And with the help of modern science, researchers may soon be able to create softer, stronger and more durable cotton than ever before by studying how to optimize growth based on nutrients, weather conditions and genetics.

Four years ago, my life changed completely after a conversation with a teenage girl.

She was 13 years old, and she was a friend's younger cousin.

So I said, "Hey, tell me about that person."

He told me the man's name, Harry Styles.

(Laughter) I laughed a little like you did, and he said, "You think I'm joking, but you're really going to marry him.

I love him so much that I would even stab people for him."

(Laughter) That was the moment I fell in love with "fangirl."

What I didn't know was that in that moment, my life changed forever. It changed the things I thought I knew: being an adult, being a woman, being truly happy.

But before we get to the point, what is a fangirl? Who is Harry Styles?

According to Merriam-Webster's English-English Dictionary, a fangirl is "a girl or woman who is an avid or obsessed fan of something or someone."

There are many different types of girls who are fanatics, but I'm interested in the girls who follow boy bands.

It was known to be very dangerous.

I remember my dad telling me about the Beatles chase in the '60s, where he literally ripped apart a parked BMW, because they were just there.

The Beatles were the biggest boy band in the '60s, but when I met that girl in 2015, the biggest boy band in the world was, of course, One Direction.

Harry Styles was a member of that

Harry Styles was known for his caring demeanor and perfect hairdo.

I found out while reading thousands of tweets about him.

He said, "It's like a sweet cupcake"

"perfect angel"

One time, he vomited on a California highway, and within two hours, the point of vomiting was transformed into a sacred place.

(Laughter) I was scrolling -- (Laughter) scrolling through fan caricatures of Harry, pictures of him as a baby, paintings of him as a baby.

There were also videos on how to make tokens of love for Harry, such as how to make a lampshade full of his headshots, and how to make a key ring with the date and time of his birth.

I also read a lot of secondary works, but I was especially hooked on the ones where the reader himself becomes the main character and falls in love with him in various ways.

In one story, the main character said she was pregnant with his child.

In another story, they met each other in the hospital while battling cancer, and in another, they loved each other so much that they both became wanted killers.

(laughs) But...

the unthinkable happens

One person has left the world's biggest boy band, One Direction.

When Zayn Malik left the band, there was an outpouring of fan emotion online.

There were girls tweeting that it hurt so much that they couldn't go down their throats, they couldn't sleep, they couldn't walk.

I read what you wrote about how important Zayn was to you.

I also saw a video of a 10-year-old girl crying.

I mourn from the bottom of my heart

Some people reposted this video with a new title, using words like "funny," "disgusting," and "crazy."

All of a sudden, on my YouTube page, there was this: "Compilation Video: Fan Reactions to Zayn Leaving.

Crazy attention! ”

Then I saw this in the news

Described as "girls crying"

As one journalist put it, "It's been known since the Beatles days, but there's nothing more terrifying in the world than a group of excited teenage girls."

(Laughter) And then a question popped into my head that I hadn't thought of before.

Why is it that the appearance of girls screaming out of their overabundance of feelings for a pop star is strange, crazy, scary, or causes rejection?

In contrast, the sight of boys screaming in excitement at soccer players is perfectly normal?

The boy who cries at a soccer game is nothing but love for soccer

A girl crying at Justin Bieber's show?

Impossible

As soon as I became aware of this double standard, I realized that my curiosity about chasing girls was born from the very same critique.

I used to think they were kind of funny.

When I saw girls yelling at The Beatles, The Backstreet Boys, One Direction, the word that came to mind was not "excitement," but "hysteria."

But I didn't know the origin of the word.

In the 19th century, hysteria was considered a female-specific mental illness, diagnosed by doctors when women were overly emotional or unruly.

The word "hysteria" comes from the Latin word "hystericus," which means "of the uterus," because it was thought to be a condition resulting from a malfunction of the uterus.

So the treatment for hysteria was hysterectomy.

hysterectomy is still called

When I found out about this, I fell in love with this topic all over again.

I'm no longer just obsessed with crazy fan girls

I'm obsessed with the world's narratives about fan girls, about the views the world holds about young women's frenzy.

Because I want to know, if the world that girls grow up in is one in which "funny," "crazy," and "hysterical" are commonly used terms to describe female frenzy, how are they going to shape the way they see themselves?

When girls grow up and the world tells them that they're just a little bit crazier than boys, isn't it like saying they're intellectually inferior to men?

On a different note, I also fell in love with women screaming.

not a disgusting scream

It's the kind of yellow cheers that an enthusiastic fan gives off at a concert.

It's strange that some people flinch just by describing a little bit of what it sounds like.

Then I met Amy Hume.

voice coach

she was amazed

She told me that 11- to 13-year-old female voices were the most interesting subjects to study.

Why you ask?

A study by Carol Gilligan found that around this age, women begin to change their voices and dress themselves.

For example, try breathing like an adult (in a low squeaky voice) or squeaking your voice to express apathy.

(Laughter) According to this study, when do men start to change their voices and dress themselves?

I thought I was 18, they say men mature late, right?

wrong

the answer is 4 years old

Because that's when boys are taught not to cry or scream.

Because it's not a manly expression.

That's when I realized that the yelling of chasing girls is like a superpower.

(Laughter) Because it's a fearless, honest expression of pure joy and enjoyment, and women still remember how to express it.

I think fanatic girls have another superpower, because they know things that my adult female friends don't.

The chasing girl knows how to love something without fear or excuses.

After years of researching fan girls, I decided that I wanted to write something that celebrates fan girls and recognizes their existence.

So I decided to make a thriller-comedy-musical that's like a Beyoncé concert with a rave and a mass.

The title is "Fangirls" I made it look like a Trojan horse

The audience can't help but love it by pretending to tease the chasing girls.

(laughs) Thank you.

(Applause) On one occasion -- thank you.

In one scene, a girl sings, "Why should I hide my feelings?

Is it because it bothers people?

Or is it because boys don't do that? ”

I used to sneer at chasing girls, so here's the homework I want you to think about.

Why should they be modest?

Are you crazy?

Or is it because the definition of "reasonable" behavior is based on what is acceptable to men?

Why don't you revisit the critical thinking you've had when you see a young woman screaming with excitement?

Why don't you reconsider the words you use to express that joy? Why don't we stop demeaning girls? Stop using words that underestimate their intelligence, their interests, their abilities.

Because, according to my research, in just two hours you can build a sanctuary where Harry Styles vomited!

(Laughter) It takes a lot of planning and communication.

(Laughter) If that's not competent, what is it?

(Applause) Instead of making fun of these girls, we can learn from them.

If you could die tomorrow, shouldn't you love while you're still alive?

So I'd like to ask you to try a little bit with me.

Can you all stand up?

Those who stand, please stand

Now let me explain

I'm going to count to three, so when you're done counting, go after every single person here and let out a girly scream.

(laughs) Okay?

I'm asking you to do this

Because if you, about 5,000 people, really do it, you can actually hear the screams and understand that they're not insane.

It's a sound full of hope

Why don't you try it?

Why don't you try it?

(Audience: Of course!) Okay, I'm not screaming with all my might. I'm on the mic.

But you all give 110%

Are you ready? take a deep breath

Think of something you love 1, 2, 3

(audience shouts) (Laughter) (Applause) It sounded great, and it sounded just as decent and intelligent and dignified as when I got here.

(laughs) Thank you very much.

(applause)

I'm going to talk about the changing media landscape, and what does that mean for people who have a message to share with the world?

I will illustrate this change through a few examples.

The first is the presidential election last November.

you've probably seen it in the newspaper

In some areas, there were concerns about voter interference.

We talked about videotaping the vote.

People with cellphones that can take pictures and videos record the polling places they go to and watch for any form of voter sabotage.

This works as a kind of citizen oversight, where they don't just cast their votes, they act to ensure that the sanctity of the entire vote is not violated.

This is a pattern that assumes that everyone is connected.

It's not about technical capital, it's about social capital.

Tools become socially interesting when they become technically mediocre.

A shiny new tool doesn't just come out and infiltrate society.

It's about time everyone took it for granted

Media is becoming more and more social, and innovation can happen anywhere, anywhere we take it for granted that we're all connected.

And I started to see innovation happening everywhere, and in one place, it happened --

It's happening elsewhere, and this is a very big change.

And frankly, we're in a time -- our generation in history -- a time of greater expressiveness than ever before in human history.

Let's prove this claim

In the last 500 years, there have been only four media revolutions worthy of the name revolution.

The first is the printing press, as you know it, and various inventions like the letterpress and oil-based ink made it possible to print, and it turned Europe upside down in the mid-1400s.

And about 200 years ago, two-way communication was invented, the conversational media telegraph and telephone.

slow text-based conversations and real-time voice-based conversations.

About 150 years ago, there was a revolution in recording media other than print, first with photography, then with phonographs, then with movies, all encoded on top of physical objects.

Finally, about 100 years ago, we had radio and television, which used electromagnetic waves to send sound and images over the air.

This is the state of media in the 20th century as we know it.

Those of us older than a certain age have grown up in it and become familiar with it.

But there's a strange asymmetry here.

A medium that's good for conversation isn't good for groups.

And media that are good for groups are bad for conversations.

If you want to have a conversation in the world, you have to deal with one person

If you try to deal with a group, you're sending the same message to everyone, whether it's a broadcast tower or a printing press.

That was the state of media in the 20th century.

but that changed

What looks like this peacock smashed into a windshield is Bill Cheswick's map of the Internet.

It tracks and color-codes the spread of individual networks.

The Internet is the first medium in history to support both conversations and groups at the same time.

Telephony was a one-to-one pattern. Television, radio, magazines, and books were a one-to-many pattern. The Internet is a many-to-many pattern.

It's the first time in history that the media has successfully supported such a form of conversation.

this is the first big change

The second big change is that all media has gone digital, and the Internet has become the carrier of all media. Telephones have moved to the Internet, magazines and movies have moved to the Internet.

So all media became side by side with other media.

In other words, the media is becoming less of a mere source of information.

The third big change is that Dan Gilmore's "ex-spectator" is now not just a consumer, but also a producer.

In this media landscape, when you add consumers, you also add producers, because you can both consume and produce with the same device, whether it's a phone or a computer.

It's like when you buy a book, you get a printing press as a bonus, like a phone that turns into a radio when you press the right button.

This is a big change - for our familiar media landscape.

It's not just about the internet or not

It's been almost 20 years since the Internet has been used by ordinary people, but it's still changing as a medium and becoming more social.

The patterns keep changing, even for those who know the internet well.

let's move on to the next story

Last May, there was a huge earthquake in Sichuan, China, with a magnitude of 7.9, and extensive damage.

This quake was reported while it was happening, people were on their cell phones --

I sent a text message and took a picture of the building.

I took a video of the shaking building

I uploaded it to China's largest Internet service QQ

posted on Twitter

So the news was delivered while the earthquake was happening.

And then there's the social connection -- for example, Chinese students in other schools, global companies with offices in China -- there are people all over the world listening to this news.

BBC got first news of China earthquake from Twitter

Minutes before the U.S. Geological Survey made its first report, Twitter announced the earthquake.

The last time there was a big earthquake in China, it took them three months to admit it.

(Laughter) I think the government would have liked to do what they always do, instead of watching these photos come up.

But they didn't have a choice, because the people were ahead of the government.

The government itself was told about the earthquake by the general public, not by the Xinhua News Agency.

this spread like wildfire

For a while, nine of the top 10 most clicked links on Twitter were about earthquakes.

People compared information, gave news sources, linked to the US Geological Survey.

By the way, the other one was a kitten on a treadmill.

(Laughter) But nine out of ten were earthquakes.

And within half a day, the fundraising site was up, and donations were pouring in from all over the world.

This is an amazing global coordinated response.

The Chinese government, in this period of media liberation, decided to leave it alone, and let the citizens report.

and things happened

In Sichuan province, we began to understand why so many school buildings collapsed. Tragically, the earthquake happened during school hours, and the reason so many school buildings collapsed was because corrupt officials accepted bribes and tolerated substandard construction.

And then citizen journalism started, reporting on those things, and then this picture came up.

You may have seen it on the front page of the New York Times

Here's a picture of a local official kneeling on the ground in front of protesters in the street, so that they can please take over.

He's saying, "I'll do anything to appease you -- just don't protest publicly."

But they're radical, because they've lost an entire next generation to the one-child policy.

A man who lost his only child has nothing left to lose.

So the protest continued

And finally the Chinese government cracked down

I've crossed the limit of my patience

Protesters began to be arrested

One after another, the media outlets that happened to have protesters were also shut down.

China is the world's most successful internet censor, it's called the Great Firewall

The Great Firewall of China surveillance assumes that media is professionally produced, mostly coming in from the outside, relatively sparse and relatively slow.

These four characteristics allow us to filter as they enter the country.

But like the Maginot Line, this "Great Firewall" was heading in the wrong direction this time.

Media inside walls, by amateurs

It was produced so quickly and in such vast quantities that it was impossible to filter it as soon as it appeared.

So the Chinese government, which has been so adept at censoring the web for more than a decade, now has to choose between opening or closing an entire service, because the conversion to amateur media is too massive to deal with in any other way.

and it actually happened this week

Just two days before the 20th anniversary of the Tiananmen Square massacre, we announced the shutdown of Twitter, and there was no other way to filter it.

I had no choice but to close the tap completely.

This change in circumstances is not only for people who want to censor their messages,

It also affects the people you want to message because it's a change in the whole ecosystem, not a change in a specific strategy.

The problem with traditional media in the 20th century was how organizations got their message across to people dispersed at the fringes of the network.

The 20th century answer to

It means bundling your messages and sending everyone the same.

National message to target individuals

limited number of producers

Sending messages is expensive and there's not much competition.

that was the way to reach people

Those days are over

Today's media landscape is becoming increasingly global, socially ubiquitous, and cheap.

Many of the organizations trying to get their message across to a distributed audience in the outside world are adapting to this change.

Spectators can now reply

It's a little bit strange, but you'll get used to it, just like everyone else.

But there's another really crazy change that we're in the middle of.

The really crazy change is this. People are no longer isolated from each other. Former consumers are becoming new producers. Audiences can talk directly to each other.

Until just a decade ago, most of the media we consumed was professional.

Those days are over, there's no going back

Right now it's the green line [in the diagram], which is the source of the free content.

The most creative use of social media was seen in Obama's campaign.

It's not about being the most creative in politics, it's about being the most creative in history.

One of the things that Obama did, in the famous Obama campaign, was create My Barack Obama.com (myBO.com), and millions of Americans got involved and tried to help.

Eye-opening dialogue overflowed

And then this time last year, Obama announced that he was changing his vote on FISA, the Foreign Intelligence Activities Reconnaissance Act.

In January, he said he would not sign a bill that would allow telecommunications companies to spy on Americans without a warrant.

In the summer, during the campaign, I said, "I've given this issue a lot of thought, and I've changed my mind.

I will vote in favor of the bill."

Advocates went on a public outcry on the site.

This was originally "Senator Obama", but that changed later.

Please Get FISA Right

Within days of being created, this group was the fastest growing group on myBO.com, and within a few weeks, it was the largest group.

Obama now has to issue a press release

had to answer something

"I have considered this matter

I understand what you are saying

But all things considered, I vote as I see fit.

But I want to say to you, I understand that you disagree, and I am open to criticism on this point."

No one was happy, but something strange happened in this conversation.

People realized that Obama never shut down the group.

None of the Obama campaigners tried to hide the existence of this group, make it difficult to join, deny its existence, remove it, remove it from the site.

He understood myBO.com's role: to gather followers -- not to control them.

It's this kind of behavior that's required to truly use this medium.

The media landscape as we know it, that familiar, conceptually naive way of broadcasting messages to amateurs -- is quietly disappearing.

In a world where media is global, social, ubiquitous and cheap, in a world of media where former audiences are full participants, there are fewer and fewer opportunities for media to produce a single message that is only consumed.

Bringing the group together and creating an environment that supports the group is going to be a major way.

I want someone in the world to listen to me, and the choice facing those with a message isn't whether this is the media environment they want to be in.

That's the media environment we're in.

The question we are all facing now is, "What is the best use of this medium?

Even if it means changing the way we've always done it?"

thank you very much

(applause)

At any given moment, there are trillions of cells flowing through our blood vessels, which can make one circuit in just one minute.

Each of these cells originates deep within bone.

Bones look solid like rocks, but they're actually full of holes.

Small and large blood vessels pass through these holes.

Most large bones are hollow inside and filled with soft bone marrow.

Bone marrow contains fat and other supporting tissues, but its most important component is hematopoietic stem cells.

These stem cells are constantly dividing

They then differentiate into red blood cells, white blood cells, and platelets, and they differentiate into red blood cells, white blood cells, and platelets, pumping hundreds of billions of new blood cells into the (peripheral) circulation each day.

These new cells enter the bloodstream through tiny capillary holes in the bone marrow.

It then travels through capillaries to larger blood vessels and out of the bone.

If you have a blood problem, it's often in your bone marrow.

Blood cancers often start with genetic mutations in stem cells.

Stem cells themselves are not cancer, but these mutations can cause abnormalities in the process of cell differentiation, resulting in malignant blood cells.

So for patients with advanced blood cancers, such as leukemia or malignant lymphoma, allogeneic hematopoietic stem cell transplantation often offers the best chance of a complete cure, replacing the patient's bone marrow with donor bone marrow.

Here's how

First, we take hematopoietic stem cells from a donor.

Normally, hematopoietic stem cells circulate through machinery that separates the blood into its components and are separated from the donor's bloodstream.

Another method is to take the bone marrow directly by puncturing the iliac crest, the bone around the hip.

Meanwhile, the recipient (patient) prepares for the transplant.

High-dose chemotherapy or radiation kills the patient's existing bone marrow, destroying both malignant cells and hematopoietic stem cells.

This also has the effect of weakening the immune system, making the transplanted cells less likely to be attacked.

The donor cells are then infused into the patient's body through a central venous catheter.

At first, the donor cells circulate in the recipient's peripheral blood, but stem cell molecules called chemokines are responsible for homing them back to the bone marrow.

Over several weeks, the donor's cells multiply and begin to produce new, healthy blood cells.

A few hematopoietic stem cells can regenerate whole body's worth of healthy bone marrow.

Bone marrow transplantation can also exhibit graft-versus-tumor activity, where new immune cells produced by the donor's bone marrow allow the recipient's original immune system to clear away cancer cells.

This phenomenon could help eradicate stubborn blood cancers.

But bone marrow transplants also come with risks, like graft-versus-host disease.

This happens when the immune system built by the donor's cells attacks the patient's organs.

This life-threatening condition occurs in about 30% to 50% of patients who receive cells from non-identical twin donors, especially when the stem cells are harvested from peripheral blood rather than bone marrow.

Patients are given immunosuppressive drugs or have certain immune cells removed from the samples provided to reduce the risk of graft-versus-host disease.

But even if you avoid graft-versus-host disease, your immune system can still reject the donor's cells.

That's why it's so important to find the most compatible donor in the first place.

Major regions of the genetic code determine how the immune system recognizes foreign cells.

If these regions are similar in the donor and recipient, the recipient's immune system is more likely to accept the donor's cells.

These genes are inherited genetically, so the best match is often a relative.

But many patients who need bone marrow transplants have no family match.

In that case, the patient turns to the Volunteer Donor Register for bone marrow donation.

All that's required for donor registration is an oral mucosa sample for matching testing.

And in many cases, bone marrow donation itself isn't much more complicated than donating blood.

Bone marrow donation is a completely renewable resource that can save lives.

When the spring sun poked its head out over the piles of firewood, something noble was wriggling.

This wasp queen is one of thousands who have mated and hibernated in late autumn.

Now she has emerged into the spring skies to begin her reign

Most of her sisters weren't so lucky.

Many queens have been eaten by spiders while hibernating in compost piles or underground burrows.

A warm winter due to climate change brought the other queens out early, but unfortunately food was not always available.

Even queens who survived the winter became victims of spring threats such as carnivorous plants, birds and artificial pesticides.

Our Queen is the only survivor from the nest where she was born, and now she must become the founder of a new flock.

but first breakfast

The Queen heads for a citrus orchard full of bee hives.

Provoked bees are dangerous, but right now they're stuck in the cold early winter mornings.

Its furry body is soaked with the sugary water it ate earlier, and the brilliant queen licks it for her morning snack.

The revitalized queen searches for a safe place to nest.

This tree hollow is ideal for protection from rain, wind and predators.

She chews the fibers of the trees and plants around her to create a paper-like fibrous material.

Then they build a nascent nest with about 50 hatching chambers.

Using sperm stored since last fall, the queen lays a fertilized egg in each chamber, and within 20 minutes she can produce as many as 12 eggs.

Eggs hatch into female larvae within a week

But before they hatch, they must hunt down the tiny bugs that feed their larvae, while at the same time enlarging the nest, laying eggs, and defending it from intruders.

Luckily the Queen is ready

Unlike bees, hornets can sting as many times as needed.

With such a busy schedule, there's little time for the Queen's own meals.

luckily she doesn't have to

When she feeds the larvae insects, they digest the insects and turn them into sugar-like substances that the mother eats to sustain her body.

By the end of July, these first larvae are ready to become worker bees, foraging, nest building and defense.

The queen can now concentrate on laying eggs and sustain herself with worker bee spoils and unfertilized eggs.

Worker bees only live for about three weeks, but the queen continues to lay eggs and the colony grows.

In just one summer, the hive grows to the size of a basketball and supports thousands of worker bees.

You have to feed such a large population, but the neighborhood gardens are a true buffet feeding area.

When the herd descends, the startled humans try to scare them away.

Humans deliberately spray pesticides that poison wasps, but inadvertently affect a wide range of wildlife.

But wasps are essential to the ecosystem.

At the top of the local invertebrate food chain, wasps keep the population of spider mites and centipedes constant.

Wasps are especially useful in farms and gardens because they prey on crop-eating insects.

They even pollinate fruits and vegetables, and chew grapes to speed up fermentation, helping winemakers.

This banquet continues until autumn, when the queen bee changes her behavior patterns.

While she begins to nurture some eggs into a new generation of queens, she also lays unfertilized eggs that develop into fertile drones.

These new generations of queens and drones need more food.

But when summer ends and normal food becomes scarce, the foraging wasps take on more risky and aggressive behaviors.

By September the nest population begins to decline

Hungry worker bees no longer clean their hives, so large numbers of scavengers enter.

When the nest can no longer be maintained, the fertile queen and male bees depart in large swarms.

As the days get colder, the worker bees starve, and our queen's life ends.

But when you look up at the sky, fertile wasps have successfully mated.

The males die out shortly after, but the newly fertilized queens are ready to find a long resting home.

And piles of timber look like the perfect place to spend the winter.

Lord Shiva, the primordial god, the destroyer of evil, the slayer of demons, the protector, the seer of all things in this world, was testing his wife's patience.

Historically, the union of Lord Shiva and Parvati was spectacular.

They maintained the balance of thought and action upon which happiness in the world rests.

Without Parvati, who governs the energy, growth and transformation of this world, Lord Shiva would simply watch from the outside and the world would have stood still.

But the two of them merged into the god Ardhanarishvara, and they achieved a divine union, which brought fertility and connection to all living beings.

For these reasons, Parvati was widely revered as the Mother of Nature and as an indispensable complement to Shiva's power to create matter.

She oversaw the physical comforts of man and ensured the physical, emotional and spiritual connections of those who inhabit this world.

Yet there was a rift between these two formidable forces.

While Parvati was taking care of and managing her daily life, Lord Shiva began to underestimate her wife's very important task and became stubbornly critical of their role in this world.

He believed that Brahma, the creator of the world, created material things only for Shiva.

Therefore, all material things are mere distractions, maya, cosmic illusions.

For thousands of years when Lord Shiva ended what Parvati had nurtured, she just smiled knowingly.

But as soon as she was finally reprimanded by Lord Shiva, she felt the need to show the importance of her work once and for all.

She escaped from that world and cut in half her cosmic energy that kept the world going.

Her disappearance plunged the world into an eerie silence as everything suddenly became terribly scarce.

Without Parvati, the land became dry and barren.

When the river flows thin and the crops wither in the fields,

Hunger swept over the human world

Parents struggled to comfort their starving children, even though they were hungry themselves.

With nothing to eat People didn't sit around a bowlful of white rice As the world grew darker they withdrew and hunkered down

The deep emptiness brought about by his wife's absence struck Lord Shiva as well, and he was shocked and feared.

Realizing that even with the great power of God, there was still something absolutely necessary to sustain life, his longing became abysmal and unbearable.

As Lord Shiva felt despair in this desolate world, he realized that he should not abandon the material world so easily.

As her husband realized, compassionate Parvati could not stand by and watch her followers languish any further.

He walked among the people and assumed a new avatar to restore his health, carrying porridge in golden bowls and a ladle set with jewels.

As rumors of her encouraging appearance spread, she was worshiped as the goddess of food, Annapurna.

With the appearance of Annapurna, the world prospered again.

People gathered to rejoice in abundance and food and express their gratitude

Some believe that the holy city of Kasi, the "Land of Freedom" on the banks of the Ganges, was where Annapurna first appeared, where she opened a kitchen and people would fill their bellies until they burst.

But humans weren't the only ones who enjoyed her feast.

Seeing the pleasures of this world blooming, Lord Shiva, humbled, approached the goddess with an empty vessel and begged for food and forgiveness.

For this reason, the supreme deity Shiva is sometimes depicted as a pitiful beggar - at the mercy of Annapurna. She holds a golden vessel in her left hand, while her right hand indicates security and commitment - in the "Abhaya Mudra" gesture.

With this symbolic gesture, the avatar of immense power makes it clear that the physical world is no illusion.

Rather, it's the cycle of life that must be maintained, from feeding the noisy, hungry, open-mouthed people to keeping the world in balance.

The journey that got me here today began in 1974.

I'm the one with the weird gloves

At the age of 17, I was involved in the peace movement.

I didn't realize that most of the people around me were Unification Church members.

(Laughter) Within a week, I came to believe that a second Christ named Sun Myung Moon had appeared, and that I was specially prepared by God to be his minister.

It sounds good, but my family didn't like it.

(Laughter) I've tried my best to persuade

Some of you may remember a mysterious secret organization operating underground at the time.

they were called deprogrammers

After about five long years, my family asked me to de-brainwash them.

After that, I myself became a deprogrammer.

over 5 years

I was deprogrammed, but I was arrested on suspicion of abduction.

Most of the cases I was involved in were considered unwanted behavior.

Provide a safe place for the subject's family to talk for about a week

I was begging you, but this is semi-compulsory

seems to have been judged

I thought being arrested was the perfect time to quit this job.

And after about 20 years

A question was running through my head

"Why did this happen to me?"

"What actually happened to my brain?"

something was obviously going on

I decided to write an autobiography about the last ten years.

Towards the end of his writing career On Jonestown

I came across a documentary

A gruesome sight was spreading

This is a resident of Jonestown

About 900 people died that day, most of them committed suicide.

The woman poisoned the baby and blew bubbles to see it die.

Above is a picture of the Unification Church members who received purification from Moon Myung.

their comrades were the chosen ones

Below is a photo of the Hitler Youth

This is the leg of a child who committed a suicide bombing.

I had to admit that, with my own deep disgust, I could understand this scene.

i knew why this happened

I knew that when the human brain and mind rectified these things, it created the idea that it was wrong to leave the world alone instead of committing genocide.

How does this all work?

Why did you think what happened to me was viral memetic transmission?

If you're unfamiliar with memeology, think of it as the definition of an idea that replicates in the human brain and moves from brain to brain like a virus.

In 1974 I was young and innocent and drowned in my own world

was a true idealist

At times of emotional weakness, accessible solutions to difficult problems are attractive.

And then circular reasoning comes into play.

"The sentence is God's messenger"

"God will solve all the world's problems"

"I just obey"

"God will fix all wars and starvation as I wish." "I will only obey humbly."

"In the end, God will correct the world through messengers."

This thought is absolute

The most dangerous part of this ideology is that it creates polarities like "us" and "others", "right" and "wrong", "good" and "bad".

It makes everything possible. Everything becomes streamlined.

If you looked at my brain when I was in the Unification Church, what would it look like? Neuroscience is expanding, just as Ray Kurzweil said yesterday, "Science expands."

The scope of that research reached inside the brain

If you take a look at my brain, or a meme-infected brain like this, and compare it to someone else's brain in the room, or someone who thinks critically on a daily basis, it's going to look very different.

As strange as it sounds, this gives me hope.

The reason we find hope is because recognizing the problem is the first step.

This is a human problem, but it can also be a scientific problem.

It's a problem in the brain, no evil can come from outside.

So I believe that this is a problem that can be solved through research and education.

So the first step is to realize that there's no such thing as "us" and "others" polarities, and that we're all working together.

Thank you for your attention. (Applause)

Palaeontology—Science for Kids, Excavating Dinosaurs and Showing Off Jurassic Park Costumes

There's a skull lying on the ground for everyone to see

Aside from the fishing titles, the only things I can relate to are coloring pages and monster movies.

wait a minute...

that's not paleontology

Paleontology is the study of all life in the past

From ancestors to mysterious things

“Who are we?” “How did we get to where we are?”

It tries to answer a fundamental question, and that "we" in the broadest sense is life itself.

Dinosaurs are only a small group of birds, but

(Laughter) It's monopolizing the media attention.

Paleontology... (right) Dinosaurs (left) The amazing diversity of life in the past.

it's true

Paleontologists see dinosaurs as entry-level drugs.

There's a lot more cool stuff in the fossil record, and it's well-studied.

Let me take you on a dinosaur-free tour of the last 4 billion years.

(Laughter) First is the genetic material.

It's basically a virus, and it started making proteins that devoured the environment.

the earth is infected with life

Some of the new bacteria were able to eat sunlight, creating oxygen and capturing carbon from the air, destroying the iron in the food of other microbes and causing them to rust.

And it lasted for billions of years

Some bacteria gained strength by eating other bacteria and converting oxygen into energy, pioneering animals and plants.

But as a result, the climate changed, getting colder and hotter, and eventually the Earth became a snowball covered in glaciers.

This time of year is technically called "Snowball Earth."

(Laughter) 700-800 million years ago.

That being said, microbes clustered together to create multicellular organisms.

600 million years ago, geometric colonies appeared and took in the water's microbes.

It will soon be superseded by the ancestors of modern animals.

Cambrian explosion

Lobster relatives used to catch and eat other animals with their tentacles.

Armored polychaete wriggled across the ocean floor, creating new ecosystems.

Our tadpole-like ancestors roamed the ancient coastlines, and their relatives with gnashing teeth like eels swam over the first reefs like ice-cream cones and dodged squid monsters and hungry sea scorpions the size of school buses.

fungi invaded the land

But the glacier spread again and killed most of everything.

But the mass extinction created new opportunities.

Jawless fish dominated the oceans, sporting tips, spines and fins.

Things like spiders, scorpions, snails and worms appeared on earth.

Somewhere in China, a fish emerged with developed jaws that drove jawless fish, sea scorpions, and branching plankton to extinction.

Some fish that have arm bones in their fins have each grown seven or eight fingers.

Trees appeared on the ground, grew tall, and released spores once before they died.

But glaciers will grow again, and a second mass extinction will occur.

It's time for strange fish and armored crinoids.

shark with wings

A shark with jaws that look like electric circular saws

shark with fins covered with small teeth

shark with chewing teeth

It was the first time that bony fishes like modern angelfish and eels appeared.

Wetlands developed, millipedes three meters long crawled, giant dragonflies flew about.

It spread across the supercontinent of Pangea, died and produced coal, leading to a 100-million-year ice age.

Vertebrates finally appeared on land, leading to the ancestors of crocodile-like amphibians and saber-toothed mammals.

But there were volcanic eruptions all over Siberia that killed most of them, the third mass extinction.

(Laughter) It was a time when life was almost lost.

Solitary, lonely, fanged mammals survived and thrived, but were quickly replaced by running crocodiles.

In the ocean, there were marine reptiles, giant rafts made of live sea urchin relatives, armored squid, and ammonites of all shapes.

But then the continent of Pangea began to break apart, creating a sea of ​​lava that would eventually become the Atlantic Ocean, spewing toxic gases into the atmosphere and a fourth mass extinction.

(Laughter) There have been many more extinctions than these five, but they're big ones.

(Laughter) Finally, we have whale-sized fish and modern fish that use sun-eating algae to colonize giant corals.

Crabs, rays, and other fish with teeth appeared, chewing up their shells, and it became an arms race between eaters and eaters.

Marine biodiversity has exploded

Mammals started climbing trees and flying and doing all sorts of modern things.

It ate the first flower pollinated by the first bee.

There was an evolution of ecosystems on land and in the sea that led to the modern world.

But an asteroid fell in Mexico and triggered a volcanic eruption in India on the other side, killing most of them again.

(Laughter) But -- there's always a "but," because we're here -- mammals rose from the ashes, shrunk in extreme heat, and then grew.

The North Pole also had palm trees and snakes.

A carnivorous deer-like dog prancing along the banks of ancient rivers, and its relatives returned to the sea to become the first otter-like whales.

Hyenodons and other carnivores were chased away by giant long-necked rhinos.

At this point, everyone seems familiar, but it's a little different.

An ice age began in Antarctica, and the poles were covered with ice for the first time in two million years.

This dried up the rest of the world, which allowed grasses, rodents and cats to thrive.

Somewhere in Africa, monkeys are roaming the new savannah.

I should also mention that there were salmon with giant saber-like tusks.

(Laughter) We know that that happened and a lot more.

How?

why?

Paleontology is a thriving scientific field at the intersection of many disciplines and technologies.

There's no other data as big as the fossil record, and we're scrutinizing it.

CT scan, isotope, genome, robot, mathematical simulation, various analysis methods, etc.

By making the most of it, we can unravel the mechanisms of the past and evolution.

It also allows us to predict the future

What will happen after the next mass extinction?

What strange things will appear?

Will mammals get smaller again?

Will mammals survive at all?

In short, we learned a lot about dinosaurs.

There is so much to learn about the other 99.9% of creatures that have ever lived.

that's what paleontology is

thank you

(applause and cheers)

food is design

Design is what makes food presentation, but even more wonderful and joyful design is in the ingredients.

Big Ideas for Small Things The word "pasta" comes from Latin and means "dough".

You can make a shape by mixing water and powder.

Some places in the world use rice flour, while others use soy flour.

Durum wheat is often used in Italy.

Pasta has been around for a long time, but it really flourished during the Renaissance.

It wasn't until the 17th century that they began to be mass produced.

When we design things, we think about how we want them to work.

so is pasta

Do you want it to be ridged or smooth?

Ridges are more entwined with the sauce

Do you want it round or do you want it square

Mouthfeel changes

there's a reason for everything

There are many terms and many classifications of types of pasta, and one of the basic classifications is whether it's fresh or dried.

Dry pasta is made from durum wheat and water.

Fresh pasta is wheat and water or wheat and eggs

Imagine having a fabric that can be shaped in any way you want.

you'll want to do something fun

Besides whether it's fresh or dried, there's also the difference between long and short.

There are many variations of each

Here are some basic types of short pasta.

We all know penne, right?

It's cut diagonally and mixes well with the sauce.

A farfalle (butterfly) is a bow tie in English, but it's plucked in the middle.

Orecchiette means little ear and is a specialty of Puglia and delicious.

The conchiglie (shell) is of course shaped like a shell.

It's ridged, the outside is covered with sauce, and the inside is smooth.

Pasta is beautiful, but shape affects its mouthfeel and texture, and it's not just about looks.

If you polish one thing for hundreds of years, the standard becomes extremely high.

So many so-called great designers have tried to design the shape of pasta and failed spectacularly.

The mandala was invented by Philippe Starck.

Some parts are very thick and other parts are thin, and when you boil them, some of them will fall apart and some of them will be undercooked.

Not at all. Bolognese women, Neapolitan chefs and home grandmothers have been improving the thickness of pasta for hundreds of years.

Pasta isn't the product of one designer or inventor, and that's the beauty of it.

it belongs to the people

Think about it, this simple mixture of carbohydrates and water is the foundation of a culture.

i am the luckiest in the world

Witness the moment the deadly smallpox disappears from the world

In India, where I spent the past year, I met what I believe to be the last polio patient in the world.

One of the happiest and most proud things about being involved in these activities is knowing that the fear will never be repeated.

(Applause) Here are a few gory pictures.

It's an eye-dazzling picture, but let's be optimistic. The horror it brings is eventually offset by a hopeful ending that will never happen again.

Let me tell you a little bit about my experience

My experience is different from the general medical education of the world.

When I was working as an intern in San Francisco, I heard about the Native American occupation of Alcatraz, where a woman wanted to give birth on the island, but no doctor was available to assist her.

So I went to Alcatraz and lived there for a few weeks.

I assisted in the delivery, retrieved the baby, and left the island.When I returned to San Francisco, I was surrounded by a large group of reporters.Three weeks of stay turned me into an expert on Indigenous affairs.

Appeared on every TV show

I got a call from someone who had seen TV and asked me if I wanted to be in the movie. I was playing a doctor who had to deal with a bunch of rock stars traveling by bus from San Francisco to England.

And that's why I was cast as a doctor in a terrible movie called "Medicine Ball Caravan."

When you think of the 1960s, you either get on the bus or you don't.

I used to be the bus ride type, so at 37 I got on the bus with my wife.

I traveled from San Francisco to London changing buses three times

Turkey, Iran, Afghanistan, crossed the Khyber Pass, and entered Pakistan like any other young doctor.

This is a picture taken with the bus on the back at Khyber Pass

Crossing the Khyber Pass was difficult.

Finally reached its end in India

Like everyone in our generation, we moved to a Himalayan monastery.

(Laughter) It's a lot like the residency system that medical students go through.

I was training under a guru named Karori Baba, but eventually I was told to take off my monk's robe, put on a three-piece suit, and was encouraged to join the United Nations as a diplomat -- to work for the WHO.

Guru made an outrageous prophecy that smallpox would be eradicated, and preached that it would be bestowed by God through the dedication of researchers.

The prophecy came true, this girl named Rahima Bhanu

The world's last smallpox patient

Here is a document signed by an international committee -- proof that for the first time in history the disease has been eradicated.

The key to eradicating smallpox was early detection and early response.

Please tell everyone too Early detection Early response

please repeat

Early detection Early response

Smallpox is the worst disease ever

killed more people than any war in history

killed 500 million people in the 20th century

You must have laughed when you read about Larry Page.

Some people read fast (laughs).

Larry Page and Sergey Brin have a crush on us, and we're forming a new partnership, even though smallpox killed two million people in the year they were born.

In 1980, smallpox was declared eradicated.

This is the most important slide in public health, as you can see, not even the richest and most powerful people in the world, but even the world's most ruling kings and queens, can still die from smallpox.

I have no doubt that we are one of them.

It's not a good idea to sit on a ledge and watch smallpox.

There is no choice but to helplessly watch the child being attacked by the disease -- see from the mother's point of view

Day 1 Day 2 Day 3 Day 4 Day 5 Day 6

You are mothers, please watch over your children. Day 6 pimples harden.

By the seventh day, typical smallpox pits appear.

and the eighth day

Al Gore said that the world's most photographed -- the most printed planet in the world -- is the Earth.

In 1974, the year this was taken, this was the most printed photo. Two billion copies were printed, hand-to-hand, house-to-house.

There was no web crawling, there were no computers.

It's the ninth day. I know you're all scared, but I think I'm lucky because I know it's just plain smallpox and I can live with it.

By the 13th day, the wound has crusted and the eyelids are swollen, but there is no secondary infection.

I'm on day 20. I'll have permanent scars, but I can live.

There is also a different form of smallpox

It's confluent smallpox. The body is covered in spots that don't even cover a finger's width.

100 percent of flat smallpox patients died

Hemorrhagic smallpox is the most brutal and most common among pregnant women.

About 50 women I examined died of hemorrhagic pox

As far as I know, there have been no deaths outside of pregnancy.

In 1967, the WHO embarked on an extraordinary program to eradicate the disease.

34 countries had smallpox that year

By 1970 there were 18 countries

By 1974, it was down to five countries.

That year smallpox spread all over India.

India was the last country smallpox fought.

In 1974 India had 600 million people

It was linguistically divided into 21 states, so it was like having 21 countries.

There were 20 million people on the roads who were always riding or walking on buses and trains, 120 million households in 500,000 villages.

India is not the only smallpox god there are smallpox gods all over the world

Perfect vaccination to eradicate smallpox is useless.

Even if we could vaccinate all Indians, there would still be 21 million babies born in the next year, which is the equivalent of Canada's population.

So we don't take the approach of immunizing everyone.

We have to find smallpox patients all over the world at the same time, one by one, and surround them with a ring of immunity.

we did it

In India alone, with 150,000 of us, we went door-to-door across India with that picture in hand, and we've visited over a billion.

I learned something very important in the process.

Every time I do a door-to-door survey, smallpox reports jump.

When I don't do research, I get the illusion that there are no patients.

Doing research will increase

That's why we needed a monitoring system, because early detection and early response are important.

We've done research and research, and we've tracked down all the smallpox cases in India, and we've given them a bounty.

Keep increasing the bounty

I scored each family

Then the number of reports from all over the world dropped to zero, so in 1980, smallpox was declared eradicated.

It was the largest operation ever undertaken by the United Nations before the Iraq War, involving 150,000 doctors from around the world.

People of all races, religions, cultures, and nations did not come together and fight each other, but like brothers and sisters, they came together and fought for the common cause of making the world a better place.

In fact, smallpox is the fourth disease to be eradicated.

the other 3 were unsuccessful

I failed with malaria, yellow fever and strawberry

Polio will soon be eradicated

The key to polio eradication is early detection and early response.

We may be able to declare polio eradicated this year

That would be the second time in history.

David Heyman is watching it live on the web.

(Applause) I feel like Hank Aaron getting his home run record broken by Barry Bonds.

Let's eradicate another devastating disease that causes anxiety.

I was running a polio surveillance program in India.

Polio monitoring program involves 4 million people going door-to-door

that's the surveillance plan

Early detection Early response is important

Blindness is the same. The key to finding a blind person is

Epidemiological research to find out what causes blindness, so we can take appropriate action.

The Seva Foundation came together to start the smallpox eradication program, the people who faced the toughest mountain in the world, and the great joy of successfully eradicating the disease, and they're back on their feet.

Over the last 27 years, the Seva Foundation in 15 countries has restored sight to over 2 million blind people.

We started the Seva Foundation because we wanted to apply the lessons we've learned from surveillance and epidemiology to blindness, which hadn't been the focus of attention as a public health problem, until then, blindness had only been considered as a clinical disease.

Apple number 12, a computer given to me by Steve Jobs in 1980, is still in use in Kathmandu.

Nepal conducted its first ever public health survey, the first national survey on blindness, with surprising results.

Contrary to expectations, glaucoma and trachoma were the main causes of blindness, and I was surprised to find that cataracts were not the cause.

If you don't know what's there, you can't cure or prevent it.

In the TED DVD I gave you, there's a story about Dr. V and the Irvine Eye Hospital called "Infinite Vision."

Please take a look

What started as a Seva movement -- Arvined is now the world's largest and best eye hospital.

This year, this hospital alone has restored the sight of 300,000 people in Tamil Nadu, India.

(Applause) I'm responsible for all the serious illnesses.

bird flu is the worst

Early detection and emergency response are critical to preventing and controlling avian influenza pandemics.

We don't have enough antiviral drugs to deal with a bird flu epidemic in the next three years.

WHO stages pandemic progress

We're currently at Alert Level 3. There's very little human-to-human transmission, but we don't see any transmission from person-to-person.

When the WHO announces it's moved to Alert Level 4, unlike a hurricane, the whole world stops.

the plane does not fly

Can I board with 250 strangers coughing and sneezing? Could you go on board knowing that there might be people with potentially deadly illnesses in the mix, and that antivirals and vaccines weren't available?

In October, we held a research meeting with world-class epidemiologists.

I asked the academics and experts who work with influenza a question that you all want to ask: How likely is it that a pandemic will occur?

How bad would the damage be if it happened?

15 percent said it would happen within three years.

Worse yet, 90 percent of people expected a pandemic for your children and grandchildren --

A billion people will get sick in a pandemic

165 million people will die

A global recession and recession will occur because the Kanban system of production will collapse and the rubber bands that hold the world together will collapse. A $1 trillion to $3 trillion burden on the global economy is much more than just 100 million people dying, because if so many people join the unemployed and miss out on health care benefits, it's almost impossible to see.

Things are getting worse with the development of mobility

Let's see what a pandemic looks like in a simulation

then you will understand

Let's say the first place of origin is South Asia.

spread slowly at first

After spreading to 2 or 3 locations

Secondary epidemics occur and the disease spreads from country to country so fast that you don't know what's going on.

Worldwide within 3 weeks

But what if you could use the undo button to go back and isolate the disease and catch it early on? What if we could detect it early, detect it early, take action early, and seal the virus in each situation? It's the only way to deal with a pandemic

let me explain why

There's a joke that this curve is the pandemic.

Any medical practitioner would know

Epidemiologists are aware of the pandemic at this point and want to go downhill to the laurels.

but usually not

usually noticed early

In fact, I'd like to find it early and prevent a pandemic.

It's not always possible, but --

There's an organization that has found a way to know when the first cases occur, GPHIN -- the Global Public Health Information Network.

The previous simulation was not bird flu

It's SARS. SARS didn't become a pandemic.

GPHIN was able to prevent the pandemic because it detected the early warning signs of SARS three months before the WHO actually announced it.

Thank you GPHIN and Ron Saint John, I hope you're here, but you're over there, the founder of GPHIN.

(Applause) Hi Ron

(Applause) TED called Ron out of Ottawa, where GPHIN is located, not only because GPHIN detected SARS early, but because they detected the bird flu outbreak that was announced last week in Iran last September, not February 14th.

Early warning systems are what we need to protect us from humanity's worst nightmare.

It's the commonality of these experiences that underpins my TED spirit.

Early detection of smallpox Early response

Early detection of blindness and polio Early response

Avian flu pandemic, early detection, early response -- it's the same thing over and over again.

To deal with these new diseases, definitely

We have to find it early and kill it before it spreads.

My TED ethos is to help you create a global early warning system to help protect you from humanity's worst nightmare.

I was thinking of calling it Early Warning (ED), but should I call it Integrated Early Warning (TED)?

(Laughter) (Applause)

No kidding, this idea was born at TED, and I want to make it a legacy of TED, let's call it the Global Early Detection System for All Diseases.

INSTEDD is our slogan from now on

Find out, quickly contain bird flu so it doesn't explode.

Find and contain new viruses before continuous or discontinuous mutations occur due to bioterrorism or bioerror.

Find and respond to industrial disasters like oil spills and Bhopal chemical plant catastrophes

Detect and respond to famine before it's too late

Let's build an early detection system that's free and available to everyone in the world, in their own language, rather than a system owned by the government and hidden behind it.

Transparent, not owned by any government, owned by any country or company, based in a neutral country, redundant to be available on any continent at any time.

Let's make GPHIN like that Let's start with GPHIN

Increase the number of crawling websites from the current 20,000 to 20,000,000

Let's increase the target languages ​​from the current 7 languages ​​to more than 70 languages

Let's be able to send out confirmation messages via text, SMS, instant message, so that we can hear the truth from people within 100 meters of the rumored area.

Let's make it possible to send it by satellite

Present with stunning Gapminder graphics

We will grow into a global moral force, one that will discover and respond to horrific diseases before anyone else, so that in the coming year, instead of gathering here to mourn how many horrific diseases have swept the world, we will be proud to work together, to show our brilliance, and to harness the great power of our society to stop pandemics and catastrophes.

(Applause) It was a great talk.

I'm sure you've all heard that you said you'd create a new web crawler to crawl the Internet looking for signs, and you'd be the first to find suspicious information, even before the WHO.

Can you give me an example of how this can really be done?

Before that, don't you hate piracy?

no i like it

I'd like you to go out to dinner with Ron Saint John later and ask him.

When he launched GPHIN in 1997

At that time, there was a bird flu epidemic in Hong Kong.

A brilliant doctor in Hong Kong stopped the epidemic on the spot by treating 1.5 million chickens.

We found it right away and acted on it right away.

A few years later, there were a lot of rumors about bird flu.

Ron and his friends started surfing the web in Ottawa, just 20,000 sites, mostly regular information sites, but they saw a lot of worrying kids with high fevers and bird flu symptoms.

When I reported it to WHO, it took some time for WHO to act.

Because WHO only receives reports from governments, because WHO is a community of nations.

GPHIN was able to point out to the WHO that an unexpected and unidentified disease, similar to bird flu, is clustering.

that was SARS

This is how we introduced SARS to the world.

That's why we were able to stop SARS.

And here's the thing, before GPHIN, all the bad news in the world, whether it's famine, bird flu, Ebola, or whatever, was being reported by countries.

When the guys in Ottawa got serious with their budget of $800,000 a year, 75 percent of the world's reports came from GPHIN, and 25 percent came from the other 180 countries.

It's interesting, what do you think has happened to these countries after GPHIN has been around for a few years?

I felt embarrassed and started reporting early.

Now GPHIN reporting has dropped to 50 percent because other countries have started reporting.

Can surfing the web catch diseases early?

Of course we can. Can we discover it faster than the current GPHIN?

Of course you can, when SARS is discovered.

They found it six weeks faster when they toured in Chinese than when they toured in English.

Although it only tours in seven languages

A terrible virus would never think to start with English, Spanish, French.

(laughter) So GPHIN

We want to incorporate every language in the world.

If we make it universally available, health officials in Nairobi and Patna and Bihar will have the same information they have in Ottawa and the CDC.

I want to integrate a community of people who are wary of humanity's worst nightmare into our culture and make it accessible to everyone.

The story of surgical robots is also the story of surgery.

I don't want to be too graphic, but remember that surgeons have a different relationship to blood than normal people do, because after all, any medical procedure a surgeon does to a patient is a felony if done without consent.

Surgeons are the tailors, plumbers, carpenters, and even butchers of medicine: they cut, shape, reshape, bypass, and repair.

On the other hand, along with advances in surgical technology, we must also consider advances in surgical instruments.

So to give you a perspective on where we are now with surgical robots, and to give you an idea of ​​where we're going in the future, let's take a look at how we got here.

So let's think for a moment about 10,000 years ago.

This is the skull with the 'trenching'

A trepanation is simply a hole drilled into the skull.

Hundreds of skulls like this have been found in archaeological digs around the world, dating from 5,000 to 10,000 years ago.

5,000 to 10,000 years ago! think about it

Suppose you're a doctor in a stone age village.

You're seeing a patient who doesn't really know what's wrong, because Oliver Sacks is still a long way off.

The patient has a seizure and you don't know the cause.

But you think, "I don't really know what's wrong with this guy.

But if you put a hole in the head, it might heal."

(Laughter) That's what we call surgical thinking.

It's the dawn of invasive surgical treatment.

The amazing thing about this is, I don't know how much of this was actually religious or therapeutic, but the patient survived!

Based on the way the perforation edges healed, the patients lived days, months, and years after the burr surgery.

So what we're seeing now is the sophisticated technology that has been passed down from thousands of years ago all over the world.

This is happening independently and independently of each other all over the world.

We are watching the dawn of surgical treatment.

Let's jump forward thousands of years and look at the Bronze Age and beyond.

You can see the improved equipment there.

But the surgeons of this period were somewhat more modest than their bold burrowing ancestors.

They limited the scope of surgical treatment to fairly superficial trauma.

Surgeons were more craftsmen than doctors.

It was so until the end of the Renaissance.

The Renaissance was good for writers, not so good for surgeons.

was not trusted

There was also the problem of publicity, many of whom were described as "traveling floor and outdoor physicians."

They traveled from village to village, town to town, performing surgeries on display.

In the days before anesthesia, the patient's moans were as much a spectacle as the surgery itself.

The most famous of these people, Frere Jacques, is here doing lithotripsy, the removal of a bladder stone, the most invasive surgery at the time, taking less than two minutes.

It takes talent to perform surgeries in such a dramatic and extremely short time.

His lithotripsy was like this

He's said to have performed more than 4,000 such public surgeries while traveling all over Europe, which is a staggering number, if you consider surgery as a last resort.

Who would want to be in such a position?

Until there is a way to eliminate the feeling of anesthesia

1847 Demonstration of the Morton's ether inhaler at Massachusetts General Hospital ushered in a new era in surgery.

Anesthesia gave the surgeon the freedom to operate.

It gave them the freedom to experiment, and surgery went deeper into the body.

It was truly a revolution in surgery.

But there was a big problem with this.

In a very long and laborious operation to cure a previously incurable disease, the patient died.

died of a severe infection

Surgery was no longer painful, but it easily killed patients.

Infections were the leading cause of surgical death until the next major surgical revolution, which was aseptic.

Joseph Lister was a strong advocate of sterility and sterilization to the most skeptical surgeons.

eventually it started to happen

The Mayo brothers took Lister to Europe.

And he went back to his American clinic and told me that he had learned that washing his hands before surgery was just as important as after surgery. (Laughter) It's that simple.

And that dramatically reduced surgical deaths.

So surgery became a really effective tool.

Keeping the patient pain-free, making the surgical field sterile, success or failure is no longer a gamble, there are no limits.

Now we can operate on any organ: the intestine, the liver, the heart, the brain.

Transplantation — taking an organ from a person, putting it in another person, and it works.

The surgeon no longer cared about reputation and became a god.

It's the era of the "great surgeon, big incision." But it's very expensive, because they save lives, but they don't necessarily save quality of life. Healthy people don't usually need surgery.

So the question arose: Now, can we do this kind of surgery with very little incision? and

Laparoscopic is the way to perform such an operation, using a long instrument through a small incision.

This has truly changed the surgical landscape.

Some of these instruments have been around for 100 years, but they've only been used in diagnostic techniques, and it wasn't until the 1980s that advances in camera technology and other things made it possible to use them for actual surgery.

What you see -- in the first image of the surgery -- it goes through a tube and enters the body from here.

When I say "surgery," it's not exactly what you might think.

The instrument is inserted through two incisions in the flank and the body is treated with it.

Within a decade of the first laparoscopic gallbladder surgery, most gallbladder surgeries were done laparoscopically, which is really a revolution.

But the revolution came at a cost.

This technique is much more difficult to master than I expected.

very long learning curve

Complications during learning are much more common.

Surgeons give up on stereoscopy

I can't even use my wrist

We also had to give up the intuitive use of the equipment.

This surgeon has over 3,000 hours of laparoscopic experience.

have trouble suturing

it is difficult to operate

One of the reasons it's difficult is because it's difficult to manipulate from outside the body.

Operate long instruments away from the body

And the instruments basically move in the opposite direction of what your hands do.

So, in order to bring the function of the human hand to the other side of the small incision, it becomes necessary to attach the wrist to the instrument itself.

So -- and I'm going to talk about robots -- the da Vinci robot put its wrist on the tip of the device.

I can see your wrist

Now, in contrast to the laparoscopy, the needle can be precisely placed and manipulated into the instrument, and the needle can be inserted all the way through and tracked.

The reason this is so easy is because, as you can see in the video below, when the operator moves his hand, the instrument moves with it.

So between the tool and the hand is a big, pretty complicated robot.

The surgeon sits at the console and controls the robot with the controller.

The robot moves the device around in your body.

It has a 3D camera to give you a 3D view.

Since their introduction in 1999, many of these robots have been put into clinical use and used in surgical procedures like prostatectomy, which is the prostate gland deep in the pelvis, where delicate tissue ablation techniques and delicate manipulations can only yield good results.

Here, vascular bypass surgery is being performed on a beating heart without opening the chest.

It's all done between the ribs.

You can even go inside the heart and repair the valve from the inside.

We've got this technology -- thank you -- (Applause) Somebody might say, "Wow!

Then why don't you do all the surgery with this? ”

there are some good reasons

cost is one of them

I'm talking about large, complex robots.

All things considered, a robot like this costs about the price of a solid gold surgeon.

Well, it's probably better than a solid gold surgeon, but it's still a pretty big investment.

But once you invest, your operating costs go down.

there are other barriers

If it's something like a prostatectomy, the prostate is small and there's only one place, so the robot can be set up very precisely and work in one place.

In that case it's perfect

And if any of these guys had surgery to remove their prostate in the last two years or so, it was most likely done with this type of system.

But if we need to reach more than one place, we have to move the robot.

and add a new incision

set up the robot again

Add some more incisions there.

it's time consuming and cumbersome

That's why so many surgeries are done without the da Vinci.

So the question arises, "How do we solve this problem?"

A potential improvement is to be able to move the robot to a different location each time it's needed without having to reset it.

What if we had all the equipment in one place?

How would that change the capabilities of the surgeon?

How would that change the patient's experience?

To do that, I had to put the camera and the instruments together in one little tube, like a laparoscope tube.

It's not a coincidence, it's something like this

Now coming out of the tube is the debut of a new technology, this new robot that can reach anywhere.

May I? let's see

It's got a camera and it's got three instruments.

And when it comes out, you can't do something that's fit for purpose in a group like this.

You have to be able to maneuver from the center of your body outwards and vice versa.

It's a cheeky, disgusting machine

You can use it to apply traction, you can apply reverse traction, you can cut it, you can suture it, you can do all the surgical procedures you need to do.

But because you insert all the instruments through one incision,

it's not that easy

But the freedom that surgeons have to move around is worth it.

But for the patient, it's irrelevant. That's all they see.

I'm very excited to see how this approach will evolve in surgery.

We're writing the scenario for the next surgical revolution.

We're going to use these abilities to define what new surgical treatments look like in new surgical techniques.

To really get to that revolution, you have to not just have new hands, you have to have new eyes.

you need to see beyond the surface

We need a better way to determine what to cut.

this is cancer surgery

The problem in this case is that even surgeons who are used to seeing this kind of thing can't see the cancer itself, especially when it's hidden beneath the surface.

So what we're starting with is that we're injecting a specific marker into the patient's blood and then targeting it to the cancer.

marker binds to cancer

Markers can be illuminated

So we can use a special camera to see it.

Now you know where to cut, even if it's just below the surface.

And then we inject these markers into a part of the cancer.

And we can track which pathway it flows out of the cancer to see where the cancer first spreads.

By injecting these dyes into the bloodstream, we can use them to bypass the clogged arteries of the heart with new blood vessels, allowing us to see how the blood vessels are connected before closing the wound and completing the operation, something we couldn't do before without radiation.

In kidney cancer, if you illuminate the cancer, you can clearly see the boundary between the part of the kidney that you want to keep (normal) and kidney cancer, or the boundary between liver cancer and the liver that you want to keep.

need not be restricted to the naked eye

A bendable microscope probe can be inserted into the body.

So you can see the cells directly.

Here we're looking at a nerve, in the bottom image you can see a nerve, and in the top image a microscope probe is held in a robotic hand.

Although this is still very much at the prototype level,

If you're a surgical patient, you should take care of your nerves.

Because postoperative incontinence, urinary control, and maintenance of sexual function depend on neurological function, and that's pretty important for patients.

So when you combine these technologies, you can reach anywhere in the body and see everything.

cure the disease

It can keep the patient whole and intact and maintain their functions.

So far, I've talked about "patients" as if they were abstract and irrelevant here.

but it's not

Many or all of you may, at some time or in the past, face a diagnosis of cancer, heart disease, or other organ disease.

And when you become a patient, the sick don't care how many books you've written, or how many companies you've started, or how many Nobel Prizes you're supposed to win, or how much time you plan to spend with your kids.

sickness comes to all of us

I told you how to make surgery easier

Will we make cancer diagnoses less scary?

i don't know if i really want it

Because facing your own death is a reassessment of your priorities in life, and most of all, a reassessment of your life goals.

I don't want to deprive you of that spark.

What I want is for you to be whole and intact and fully functioning to do something that will save the world when you feel the need to do it.

That's my vision for your future

Thank you very much

(applause)

You may be familiar with the term "FOMO."

[Creator of FOMO] Stands for "Fear of Missing Out"

It's the phenomenon of feeling that other people are doing things that are more fun than what you're doing right now.

There's one more "FO" you need to know, and it's more dangerous.

It's called FOBO, which stands for "fear of better alternatives."

Series Ways of Working We live in a world of overwhelming choices.

Decisions that were once simple, even choosing a restaurant or making everyday purchases, are now riddled with overanalysis.

Technology has only made things clearer

If you want to buy a pair of white shoelaces online, you have to sort through thousands of items and read hundreds of reviews.

We process a staggering amount of information just to buy two strings that's cheaper than your morning latte.

You'll probably experience FOBO while painstakingly picking just one out of a number of perfectly satisfying results.

It's a symptom of a culture that sees value in collecting and saving as many options as possible.

you may wonder why this is bad

counterintuitive

Shouldn't it be a privilege to choose from so many good options?

The problem is that with FOBO, you can't stop analyzing hard, and it can negatively affect you personally and professionally.

If you can't make decisions with confidence, you're wasting precious time and effort.

Fortunately, there are ways to overcome FOBO.

Here's the trick

To make a decision, first determine the stakes, because this will determine your decision-making strategy.

At the end of the day, there are only three decisions you'll face in life: high stakes, low stakes, and no stakes.

Start with non-interested decisions

It's a trivial matter, and there are almost no wrong answers to it, and hours later, you won't even remember making the decision.

A good example of this is choosing what shows to watch on television.

With thousands of shows, it's easy to get overwhelmed, but whatever show you choose has essentially zero impact.

Yes, spending time on FOBO is a huge waste of effort.

just move forward

For decisions that have no stakes, the key is to leave it to luck.

For example, narrow your options down to two and toss a coin.

My favorite is to let the clock decide

You assign each option to the left and right halves of the clock, and the position of the second hand determines which one.

Today's meal is fish

Then there's the low-stakes decision.

These have implications, but they're not that big, and there are a lot of satisfying results.

A lot of routine work at work, like buying a printer, booking a hotel, choosing a place for a meeting outside the office, is inherently low stakes.

It takes a little thought, but it's not fatal, and you'll probably forget about it in a few weeks.

Again, you can delegate decision-making, but you'll want to let critical thinking get in the way, because there's a bit of a stake here.

Let's leave it to someone else this time

Set a baseline, choose who to recommend, and accept their advice.

Avoid the temptation to investigate in detail

The goal is to get the task done, not to postpone a decision.

We worked on the low-stakes and the non-stakes, which gave us the leeway and time needed to deal with the high-stakes.

Decisions like, "Which house should I buy?" or "Which job should I get?"

The stakes are high and the long-term impact is there, so you absolutely have to pick the right one.

Before we begin, let's establish some basic principles that will guide the decision-making process.

First, think about what's really important to you and set your standards accordingly.

Gather relevant facts

By making sure you collect data on all your options, you can be confident that you're making the right decision with enough information.

And third, remember that FOBO, at its core, happens when you choose just one of a number of perfectly satisfying choices.

Rest assured that no matter what you choose, the downside is limited.

Now that we have the basic principles, let's make a choice.

Start by identifying your first choice based on your intuition, and then carefully compare each option with the first choice.

Each time, based on predetermined criteria, we choose the better of the two and discard the other.

The secret to avoiding FOBO is this

If you've erased your options, don't bring them back

If you keep going back to choices you didn't make, you risk getting stuck.

We repeat this process until we reach the last option.

If you follow this pattern, you will naturally arrive at a decision.

On those rare occasions when you get stuck, let the final decision rest with a small group of people you can trust and are trained to advise on specific topics.

Groups of five or less, ideally an odd number, and if necessary, can be decided by a tiebreaker.

Now that we've made our decision, we're left with the final challenge.

get it done right

I can't promise that we'll ever really know if the decision was perfect, but I can tell you that a good chunk of the world doesn't have to worry about FOBO.

Unlike billions of people who have few options through war, poverty and disease, you have many opportunities to live independently.

The fact that you can make decisions even if you don't have everything you want is powerful.

can be said to be a gift

Make the most of it

I was so frustrated when I was pregnant

Don't eat processed meat, get specific prenatal tests

Why did you choose that and not another?

Even if I was told to do that or do this, I couldn't tell you the reason.

Series How to Work There seems to be no right answer in the modern parenting world.

When you go back to work, you will spend less time with your children.

What if we don't give our children the attention they need to grow to their full potential?

If you go home and give up your source of income, will you regret it later when you look back?

There's so much conflicting advice out there about staying at home or going back to work that choosing between them can be confusing and illogical.

We want to do the best we can for our beloved children, but how do we decide what is "best" when everyone has different opinions?

There are so many ways to be a parent in every household, and I think we should consider whether it makes sense in more households for the male spouse to stay in the home.

But today, most discussions about full-time parents are focused specifically on women.

It's mostly women who think that it's what you do during the day that determines who you are as a mother and who you are on a deep level.

It's a heavy burden as a parent

After telling someone whether or not you're going back to work, the sideways glance from that person can hurt your self-confidence, so I decided to find an answer.

Which is better, staying at home or going back to work?

It's an illogical decision, but what I've learned as an economist is that data can help you navigate emotional decisions and strengthen your conviction that you've made the best decision for your family.

There are three main factors to consider before making a decision.

First, we need to consider the impact of this decision on household finances.

let's do some math

Let's say your total household income is $100,000, and you and your spouse each earn $50,000.

My take home income is about $85,000.

If you both work, and you pay $1,500 a month for childcare, your total disposable income is $67,000 a year.

Is it good so far?

If you stay at home, you'll have less income, but you won't pay for childcare.

In this scenario, disposable income would decrease, but if childcare costs were not factored in, disposable income would not decrease as much.

It gets more complicated if childcare costs are high in your area.

A full-time babysitter costs between $40,000 and $50,000 a year, depending on where you live.

If that's the case in your area, in the scenario so far, the cost of babysitting would completely wipe out one parent's income, so one parent would be better off financially if they stayed home.

Of course, this is only a short-term analysis.

If the child goes to school, the cost of childcare may decrease, and over time the income may increase, which I would like to take into consideration if possible.

And when you can do the math, you know what's possible, and you can make more informed choices, and that's empowering.

Second, what is best for children?

You might think that this should be the crux of your decision, but there's really no right answer.

Studies in the West show that the decision to return to work or stay home does not actually affect a child's future success.

Studies show that both full-time working parents have the same impact on a child's future performance and income as a single parent working.

What seems most important is the environment in which children spend their leisure time.

As long as children are engaged in fulfilling activities—reading, practicing motor skills, socializing with other children—whether or not their parents are home, they will thrive.

There are nuances in the data

For example, studies show that working parents have a positive effect on children from poor families and a negative effect on children from rich families.

Yes, the composition of the family determines whether the impact on the child is marginally positive or detrimental, and the overall impact is negligible.

Now let's talk about the exception: I'm on maternity leave.

There is growing evidence that babies thrive better when mothers take some maternity leave.

The early days you spend with your child affect your child's development, so if you can afford to take paid time off, take it.

Finally ask yourself what you want to do

It seems like a simple thing, but it's something we tend to think we shouldn't be thinking about.

In talking to parents, I've found that when women choose to stay at home, they tend to say they're doing it for the best possible development of their children, driven by a sense of duty.

Sure, that might be part of the reason, but the answers that make perfect sense are, "My lifestyle choice," or, "This is the way my family works."

The same goes for working mothers.

"I'm coming back because I love my job." That's enough.

If you want to go back to work, that's great.

I'm lucky to have a job I love, and I have the right to continue working when I become a parent.

Be honest with yourself what you want

If you're honest with yourself, you'll be happier and you'll be the best parent you could possibly be.

When it comes to parenting, there's no right or wrong answer.

The best decisions are the ones that make you and your family the happiest.

It's up to you to decide the next step

By recognizing that the choice to stay at home is just a choice, with factors that push you in different directions, you can let go of the guilt and enjoy what's best for your family.

Ethic, Hedge and Octavia stand on the edge of the bottomless valley.

Just cross the valley that separates them from the tower and you'll get the second of three powerful items.

We have to cross in a short amount of time before the security robots come back.

Hedge is out of fuel and can't fly with Ethic, so we have to build a bridge.

Luckily, there's a pile of blocks floating nearby that will be part of the bridge, a floating block invented by Octavia.

You can apply energy to activate piles of blocks, and they'll automatically build bridges for Ethics to walk across.

Of course there are problems

Floating blocks are only stable when they are in perfect palindrome.

That is, the order must be the same whether you look at it from the front or the back.

Even though the blocks are initially randomly stacked, they try to form palindromes as much as possible.

If the palindrome cannot be formed, the bridge will collapse, and the people on it will fall into the valley floor.

Let's see an example

This pile of blocks can create a stable structure.

First, A is on both ends

Then came B

Finally C enters between B

But what if there was another A?

First there are two A's, then two B's, but the remaining C's and A's have no place to go, so the whole system collapses.

Using a stone of power, Hedge can activate only one pile of blocks.

What instructions does Ethic give Hedge to efficiently find and activate the palindrome-forming mountains?

[Pause the video and think for yourself]

Examples of palindromes include ANNA, RACECAR, and MADAM IM ADAM.

If you count how many times each letter appears in the palindrome, you'll see a useful regularity.

[Pause the video and think for yourself]

Let's consider the naive solution first.

A naive approach is a non-optimized, brute-force approach that does what it's supposed to do.

A naive approach can help us analyze problems and find better solutions.

In this case, the naive approach is to take each pile of blocks and try all the orderings, reading from the front and back to see if it's a palindrome.

The problem with this method is that it takes a very long time.

If a hedge takes one second to try one sequence, it takes 42 days to examine one pile of 10 different blocks.

because the time it takes is equal to the factorial of the number of blocks

If there are 10 blocks, there are over 3 million permutations.

What this naive method tells us is that we need a faster way to tell if a pile of blocks is palindromic.

First, the intuitive thing is that if all the blocks are different, it's not possible.

Because without overlapping blocks, the blocks on either side cannot be the same.

So when can it be a palindrome?

We can find the answer by analyzing some palindromes.

ANNA has 2 A's and 2 N's

RACECAR has 2 R, 2 A, 2 C, 1 E

MADAM IM ADAM has 4 Ms, 4 A's, 2 D's and 1 I

The pattern we see here is that most of the characters occur an even number of times, and there is only one character that appears only once.

Is that all?

What if RACECAR had 3 E's instead of 1?

If you add the extra E to both ends, it becomes a palindrome again, so it's OK if it appears three times.

But if there are 3 E's and 3 C's, then the last C has nowhere to go.

So the general idea is that there is at most one character that appears an odd number of times, and all the remaining characters have an even number of occurrences.

Hedges can count the number of occurrences of letters in each stack of blocks and organize them into a dictionary, which is a good way to store information.

Now we use a loop to count how many odd numbers occur.

If there are less than 2 letters that occur an odd number of times, the stack of blocks can be palindromic.

This method is much faster than the naive method.

It only takes linear time, not factorial time for the number of characters

That means it only takes time proportional to the number of blocks.

Write a loop that causes Hedge to analyze each pile and stop as soon as it finds a palindrome, and you're good to go.

Well, what happens? Hedging is quick, but there are a lot of mountains, so it's slow.

it took too long

Ethic and Hedge survived

Octavia seems to be out of luck.

At the Temple of the Elements, someone has been caught in a magical alarm system.

When you and the other monks rush there, you find yourself in a catastrophe.

During the night, four young disciples broke into a room inside the temple and tried to steal crystals of the four sacred elements (fire, air, water, and earth).

But the alarm went off, and they panicked, each swallowing a crystal just before they were caught.

They have no way to control the terrifying power of crystals and transform into uncontrollable monsters of the four major elements.

Although unlikely, an old monk next to him says something similar once happened.

He said, "We must determine who has swallowed which gem before they transform, and place each one in the appropriate restraining field.

The element compels its bearer to: Those who swallow the crystals of earth and water must speak the truth, and those who swallow the crystals of fire and air must lie."

Young people are so afraid to confess their sins

Instead, they started blaming each other.

"Riku stole the water crystal!" Sumi blurts out.

Riku angrily interrupts the conversation.

"Bella stole the fire crystal!" And Bella shouts, "I saw Jonah eat the air crystal!"

"Hey... I don't know what happened, but Sumi doesn't have the Earth Crystal." So who ate which crystal?

Pause and think

You can't escape this takes a little trial and error

But it's not complicated

If you guess wrong, you end up finding your conclusions contradicting each other.

You know your first guess is wrong, so you can keep thinking.

This is a method called contradiction

The trick is to think tactically about where to base your predictions.

Some assumptions don't need additional assumptions and are not contradictory.

The preferred assumption is the one that constrains the choices most strongly, and thus is the most informative when it's right or wrong.

Take Sumi's remarks for example.

If Sumi is telling the truth, then we can identify the two people who are telling the truth.

It turns out that Riku has the water crystal, and Sumi isn't lying, so Sumi has the soil crystal.

And as Riku said, Bella has the Fire Crystal.

Bella's statement that Jonah has air crystals is a lie.

But the only option left is air.

It turns out that this is a contradiction and that the original assumption was wrong.

Now, back to where we started, but now with the addition of information that Sumi is lying.

Sumi is lying, so she must have swallowed a fire or air crystal.

So Jonah was telling the truth and he didn't take the fire or air crystals.

So Bella was lying about Jonah, and either Bella has fire or air crystals.

Since Sumi was lying, Riku couldn't have stolen the Fire Crystal, and Yona is the only one left who might have fire.

And now that they've both been found to be liars, Riku must have the soil crystal.

So Bella has the Fire Crystal and Sumi has the Air Crystal.

I was able to trap everyone in a proper confinement field just before the crystal magic hits.

The difficult task of teaching these children how to control their new abilities is much more rudimentary than figuring out who had which crystal.

When I was a kid, I didn't know what I wanted to do when I grew up.

Over the past 15 years, I've been an English teacher, a lawyer, a video game creator, and now a toilet paper salesman, selling millions of rolls a year.

Series How to Work The most important thing in life is to find what you love and are good at.

It sounds simple, but it's not so easy to find.

After teaching English for a while, I went to law school and got a job as a lawyer at a big New York law firm.

For the next two or three years, like most Americans, I stuck to my job, working really late, and I thought I was good at it, but it definitely wasn't my favorite job.

And then I suddenly realized that it takes years, if not tens of thousands of hours, to get good at something.

I don't have that much time to waste

This isn't for people who want to quit their job because they hate their boss or because they've had a long day at work.

It's for those who are ready to take the cowering leap.

Here are some tips and lessons I've learned to consider when thinking about changing careers.

First, there are three things you need to think about before you're ready for a career change.

Part 1: Working life is learning

If you don't feel like learning anymore, that's a big red flag, and you may not have a future in the industry you're in.

Part 2: Changing jobs is intuitive

If you're having sleepless nights and staring at the ceiling and thinking, "Oh, if you don't try to change it, if you don't try to find out if you can't change it, you can't live," trust your intuition.

maybe it's time to change jobs

On the other hand, short-term pain shouldn't be a reason to change jobs.

If you don't like your boss or you're in trouble at work, that's not a good reason to make a career change, because you generally start at the bottom of the ladder and end up with all sorts of short-term pain, like a pay cut or a job title.

Pain in any job

Now let's say you're convinced it's time to change jobs.

I have three things to do right now

The first is the connection between people, both one and two.

You can't build a career without good mentors and connections with people who support you.

What I mean is get as good advice as you can get.

Thanks to technology, it's easy to say to a stranger, "I'm thinking about changing jobs. Can I have five minutes of your time?"

I can now ask

If you have passion, drive and absorption, you'll be willing to devote your time, you'll be a great mentor, and you'll attract people to give you good advice.

go out and meet new people

The second thing you need to do right now is save your money.

The reality is that when you change jobs, you're starting a lower-level job, a lower salary, and possibly no pay, especially if you're starting your own business.

Getting out and being financially sound is really important to ease the pain of changing jobs.

For myself, when I made the transition from lawyer to video creator, I wanted at least six to 12 months of savings.

6-12 months may not be for you. Be honest about how much you need.

Three, if you're not ready to jump right in right now, try a side hustle.

Your side hustle can be anything, whether it's volunteering for an organization in the industry you want to work next, or starting a weekend business.

You can check if you can really like it for free

Are you ready to take action or if you have already taken action

There are three things to think about right now

First, never cut off relationships with those around you.

Why would you break a relationship you've built up over the years now?

It's a small world, and with so many Internet services, you're likely to meet the same people again, and at the wrong times.

Second, make use of what you have learned in your career so far.

I'm sure a lot of these things will come in handy in your new job or career, whether it's how you interact with people, how you work in teams, or how you deal with people you don't like.

Those things are needed everywhere.

In every industry there are nasty people, no one can escape them and they have to deal with them, but you already know how to deal with them.

Finally, when you start a new job, you're going to be nervous.

I want you to know that you are part of a new team and that people around you are rooting for your success, because your success is their success.

Welcome to your new career

I would like to take a very short time to share with you the secrets of time.

Video: Okay, clock starts 30 seconds before the show

be quiet and stay still

"It's about time." Final scene Take 1

15 seconds ago

10, 9, 8, 7 6,5,4,3,2...

Philip Zimbardo: Listen to a conversation on Adam's temptation principle

Eve: What are you doing, Adam?

Snake: Don't eat, will you forsake Adam and Eve?

Adam: I don't know

I don't want trouble

Yves: Hey, it's a bite. What's the matter?

(Laughter) Life is temptation, succumb to temptation or resist it, yes, no, now, later, impulsive, speculative, present-oriented or future-oriented.

Virtue of promise overcome by fleeting passion

Teenagers who have vowed to remain virgin until marriage Thank you, George Bush Most of them, 60%, give themselves up to sexual temptation within a year

Most without birth control measures

Promise goodbye

Well, I'll try to seduce a four-year-old with a feast

They can get one marshmallow now, but if they wait until the experimenter comes back, they get two.

Of course, if you like marshmallows, it's worth the wait

In fact, two-thirds of children give in to temptation

They can't wait.

There are children who can resist temptation They delay the "now" for the "later"

My colleague at Stanford, Walter Michelle, came back 14 years later to try and find out how these kids were different.

In many ways, there was a tremendous difference between the children who won against temptation and those who lost.

Successful children scored as high as 250 points on the college aptitude test

This is huge, about different levels of IQ.

I'm a better student who doesn't get into too much trouble.

They have confidence and determination. My point today, my point to you, is that they are future-oriented, not present-oriented.

What is a "temporal perspective"? that's what i'm talking about today

"Temporal Perspective" is the study of how we, as individuals, carve out the flow of our experiences and put them into time frames.

it happens automatically and unconsciously

There are differences due to culture, national character, individual differences, social strata, and educational levels.

The problem is that it introduces bias, because you overuse some things and underuse others.

What determines your decision?

you make a decision and act on it

For some people, it matters what others are doing and how you are feeling at this moment.

Let's call people who make decisions this way "present-oriented." They're focused on the "now."

For others, it doesn't matter now

It's always important to ask, "What was your state when you experienced something like this in the past?"

their decisions are based on memories of the past

These people are focused on the past, so let's call them "past-oriented."

For others, it's the future that matters, not the present or the past.

They focus on "expected results"

cost-benefit analysis

Let's call them "future-minded." They're focused on the future.

So about the "time paradox," the paradox of time perspective affects all of our decisions, and it's totally unconscious.

So it depends on which of these temporal perspectives you're biased towards.

There are actually six, two in the present orientation.

There are two past-oriented and two future-oriented.

Focus on past positives or negatives

You can be present-hedonistic, focusing on the joys of life, or present-fatalism, and in both cases you're in control of your life.

You can also be future-oriented.

Or think about the future beyond common sense: that is, the world that begins after death

You have to learn to acquire the mental flexibility to freely shift your temporal perspective according to the situation.

So what is the overall picture of just the right temporal perspective?

Past - highly positive, slightly higher in the future

Present - moderate to pleasure

And past-negative and present-fatalism should always be low.

Therefore, in the optimal mix of tenses, from the past, get rooted in the past-positive and connect with family, identity, and yourself.

What we get from the future is "wings" to take off to new destinations and new challenges

Present-pleasure gives you energy to explore yourself, places, people and sensuality

Any excess of time perspective works against you

What will the future sacrifice for success?

Sacrifice time with family, time with friends,

time for fun, one's indulgence,

Sacrificing hobbies, sacrificing sleep, affecting health

And live for work, accomplishment, and control

There must be some TEDsters who resonate with me.

(Laughter) It also resonates with me. I grew up in a Sicilian family in the slums of the South Bronx.

I'm a future-oriented person now, but I sacrificed everything to get to the top, and my teacher stepped in and made me future-oriented.

Until I learned to balance

I added present-pleasure, past-positive and now, at 76, I am more energetic, more productive than ever, and happier than ever.

I want to say that this applies to many issues in the world: reducing the rate of school dropouts, combating drug addiction, improving teen health, treating veterans' PTSD with the metaphor of time -- miraculously recovering -- promoting sustainability and conservation, reducing the 50% dropout rate in physical rehabilitation, making suicide terrorist groups look more present, changing family conflicts in the clash of time horizons. is

So I'd like to conclude by saying that many of life's puzzles can be solved by understanding our own and others' temporal perspectives.

The idea is so simple, so obvious, but the consequences are so profound.

Thank you very much

(applause)

In 2013, a team of researchers did a math test.

It's a study of more than 1,100 American adults, and one of its goals is to test your ability to assess data.

Two nearly identical problems were hidden inside a math problem.

Both problems used equally difficult data, and each had an objective correct answer.

The first question is about the relationship between rough skin and the newly released skin cream.

The second questioned the relationship between crime rates and gun control.

Participants with better mathematical thinking were more likely to get the first question correct.

But even though it was mathematically the same problem, the results of the second question looked completely different.

Here, mathematical ability was not the most important factor in predicting whether a respondent would answer correctly.

Rather, it was influenced by another factor that the researchers were tracking: political identity.

When the participants' political beliefs were consistent with the correct interpretation of the data, they were much more likely to be correct.

Even the top mathematicians in the study were 45 percent more likely to get the second question wrong when the correct answer conflicted with their political beliefs.

What is politics that causes such irrational errors?

Does political identity actually affect a person's ability to process information?

The answer lies in the cognitive phenomenon of partisanship that has become more apparent in social life.

Partisanship is broadly defined as a strong favoritism or prejudice toward a particular group or ideology, although it is often conjured up in the political context.

Our politics, our race, our religion, our national character are all manifestations of partisanship in one form or another.

Of course, empathizing with social groups is an essential and healthy part of human life.

Our identities are defined not only by our individual identities, but also by the groups we belong to.

As a result, we are strongly motivated to protect our collective identity, and to protect both our sense of self and our community.

But this becomes a problem when the group's beliefs are out of sync with reality.

Let's say you watch your favorite sports team commit a serious foul.

You know it's against the rules, but your fellow fans don't think it's illegal at all.

The tension that arises between these conflicting ideas is called cognitive dissonance, and most people try to resolve this uncomfortable, dangling state.

You'll blame the referee, blame the other team for doing it, or even assume that there were no fouls in the first place.

In cases like this, people tend to maintain good relationships with their group rather than to appreciate what's going on in the world.

Such behavior is particularly dangerous in politics.

On a personal scale, party loyalty allows people to create a political identity and support the policies they support.

But the cognitive dissonance of partisanship has led people to reject facts that contradict party lines and discredit party leaders.

And when groups of people wholly partisan twist the facts, it can lead to policies that are not based on truth or evidence.

This issue is not new, and political identity has existed for centuries.

But research shows that partisan polarization has increased dramatically in recent decades.

One theory is that this trend is a tendency for communities of like-minded people to gather geographically.

Another theory is that there is a growing tendency to rely on phantom propaganda in party journals and social media.

This often becomes like an echo chamber phenomenon, where like-minded people share news and opinions.

Thankfully, cognitive scientists have found some ways to resist this distorting filter.

One is to keep in mind that you're more biased than you think.

So when you come across new information, try to trust your intuition and evaluate it analytically.

Try to see fact-checking within the group and questioning assumptions as a value to the culture of the group.

Reminding people that they may have been misinformed can also help.

And when you're trying to persuade others, acknowledging their values ​​and putting their point in their own language makes it easier for people to accept them.

We're still a long way from solving the partisanship problem.

But hopefully, these tools will help us get better information so we can make more informed decisions about the facts we all share.

I'm going to talk about post-conflict recovery, and I'm going to talk about how we can improve it.

Post-conflict recovery so far has been disappointing

40% of all conflicts have returned to conflict within 10 years of their end

In fact, such conflicts account for half of all civil wars.

Why are things so bad?

Because the traditional post-conflict approach has been based on three principles.

The first principle is that everything depends on politics.

Politics comes first

political system is created

The second principle is to say, "Yes, it's a dangerous situation, but it's only for the short term."

I'll call in the peacekeepers and send them home early.

It's a short-term peacekeeping force.

The Third Principle—What Is a Peacekeeper's Exit Strategy?

it's an election

Elections create legitimate and responsible government

That's the traditional approach

I think this approach goes against reality

We know there's no quick fix for recovery

There is no quick fix for security

According to my observations, in the decade after the conflict

Risk of reversion to conflict remains consistently high

remains high regardless of political reforms

Do elections create responsible and legitimate governments?

Elections produce winners and losers

losers get no reward

In reality, the traditional procedure should be reversed.

Don't put politics first, put it into practice last

Once you've established a foundation for security and economic development, politics will become easier over time -- rebuild prosperity first.

Why Politics Can Be Easier

Why is it difficult in the beginning

Because years of economic stagnation and decline have turned political thinking into a zero-sum game.

Under economic stagnation, the only way to raise yourself is to lower the other party.

This is not productive politics.

To have productive politics, you have to shift your thinking from zero-sum to positive-sum.

To be a positive sum, abundance must be created in reality.

Creating wealth requires security

This is reality

But facing reality is to change reality.

Now let me propose two synergistic approaches to change reality.

The first is to recognize the interdependence of the three key stakeholders, who are currently not aligned.

The first stakeholder is the Security Council

The Security Council's distinctive responsibility is to ensure security -- to provide peacekeeping forces.

I want you to remember here that peacekeeping works.

This is a cost effective approach

improve security

but this has to last a long time

It should last 10 years, not 2 or 3 years.

So one of the parties involved is the Security Council.

The second party, which is different from the Security Council, is the funders.

funders provide post-conflict assistance

Until now, funders have typically only shown interest in the first couple of years and quickly got bored.

moved on to other issues

But post-conflict economic recovery is a slow process.

There are no fast processes in the economy, except for decline.

can be realized immediately

(Audience laughter) So funders have to be involved in recovery efforts for at least 10 years.

The third actor is post-conflict governments.

There are two main things the government should do.

The first is economic reform, not fighting over the political system.

economic policy needs to be reformed

Because economic policy usually gets worse during conflicts.

During conflict, governments pursue short-term gains, and are rewarded when the conflict ends.

The legacy of conflict is very bad economic policy.

This requires a reform plan and a consolidation plan.

Consolidation Plans Can't Be Done by Elections

Elections produce losers and they are eliminated.

What the integration plan needs is to genuinely include everyone on the governing team.

These are the three parties involved

they will be interdependent in the long run

Unless the Security Council continues to work on security for 10 years, we won't feel safe enough to invest in the private sector.

Without policy reform and aid, there will be no economic recovery, and peacekeepers will have no way out.

We have to recognize interdependence, formal interaction.

The United Nations has a term for this mutual engagement, and it's called the compact term.

We need a post-conflict compact.

The United Nations also has a compact brokerage body, the Peacebuilding Commission.

Ideally, there should be a norm in which the three parties can be expected to interact in post-conflict situations.

So that's the first idea: recognize interdependence.

Here's a second approach that works synergistically.

This approach focuses on several important goals.

Post-conflict situations are typically chaotic, with different parties having different priorities.

And in fact, unfortunately, tracking those needs doesn't really define the agenda, because in this situation there's a lot of work to do, but the resources to make change are very limited.

So we have to be disciplined and focused on what's important.

I would like to suggest three factors that are important in a typical post-conflict situation.

work first

Secondly, improving basic services, especially health care, which is the worst during conflict.

jobs, health care and clean government.

These are the three critical priorities

I'll tell you a little bit about each.

first about work

What are the distinctive approaches to creating jobs after conflict?

and why work is important

Who is this work for? It's for young people.

After conflict, it's not because old women get angry that they often revert to conflict.

because young men get angry

because there's nothing else to do

So we need processes that create jobs faster for ordinary young people.

this is difficult

Post-conflict governments often hire more civil servants.

this is not good

it's not sustainable

In fact, adding more civil servants creates long-term harm.

But it's also difficult to grow the private sector, because economic activity open to international trade is less competitive in the post-conflict period.

No environment for fostering export industry

But there is only one sector that is not exposed to international trade, and that sector can create jobs, and it is the sector that makes sense to expand after the conflict, and that is the construction sector.

The construction sector will play an essential role in recovery

But generally this sector dies during conflicts.

Because during conflicts there is nothing but destruction

There are no construction jobs anywhere, the construction sector is shrinking.

There are many obstacles to regrowing a once-shrinking construction sector.

Usually, prices go up, which leads to corrupt politicians, and profits are exploited, and jobs aren't created.

So the priority policy for expanding the construction sector is to remove barriers.

what is the obstacle

Think about what it takes to successfully build infrastructure with a lot of labor.

First, you need access to land.

Often, the legal system is so broken that even access to land is not possible.

Second, we need the mundane skills of the construction sector.

Post-conflict, we don't just need Doctors Without Borders, we need Bricklayers Without Borders to master the craft.

We need companies too, companies are gone

So we need to encourage the growth of local businesses.

If you can do all of this, you can not only get jobs, but you can improve public infrastructure, rebuild public infrastructure.

Let's move from work to the second goal, which is to improve basic social services.

Until now, the funder community has been schizophrenic about how to deliver basic post-conflict services.

On the one hand, he lip-smackedly supported the idea of ​​creating an effective nation that was inspired by 1950s Scandinavia.

In order to provide such and such services, we will create such and such ministries.

And the reason it's schizophrenic is because, deep down, the funders knew it was unrealistic, so they just avoided the problem entirely and funded NGOs.

Neither approach makes sense

What I'm proposing is what we call an independent service agency.

It divides the functions of the monopoly affiliated ministries into three

Planning and policy functions will remain within the ministry. Service delivery will be left to churches, NGOs, and local communities using all available organizations on the ground.

And in between them comes the independent service agency, which is a public agency, connecting public and aid money to individual service providers.

So rather than being independent of the government system, NGOs become part of the government system.

One of the benefits of doing this is being able to allocate money consistently.

Another advantage is the ability to clarify the responsibilities of NGOs.

Yardstick competition also allows NGOs to compete for allocation of resources.

Good NGOs like Oxfam support this idea.

they try to be disciplined and accountable

That's how we improve our basic service.

We should co-brand these services because they're government-funded.

These services are not provided by the US government or NGOs.

should be branded as implemented by the country's post-conflict government

Jobs, basic services and finally clean government.

Clean means following the flow of money.

Post-conflict governments are short on money and need our money for their life support systems.

To make the basic functions of these countries work, we have to put our money into their core budgets.

But we know that we don't have a budgeting system of integrity that puts our money into a core budget and ensures that that money is well spent.

If you just pour in your money and don't care about the rest, you're wasting your money.

At the heart of the political problem is how corrupt politicians get paid.

It empowers people who cause problems against their will.

Creating a clean government means not only providing money for the budget, but also monitoring it closely, which means also providing a lot of technical assistance to monitor the money.

Paddy Ashdown, former High Representative to the United Nations in Bosnia and Herzegovina, wrote in a book about the experience, "I realized that what I needed was Accountants Without Borders to follow the flow of money."

So in summary, my proposal can be summarized as

what is the goal

What can we achieve by pursuing that goal?

Ten years from now, focusing on the construction sector will create both jobs and security, because young people will get jobs and infrastructure will rebuild.

That's the focus of the construction sector.

The focus of basic service delivery through independent service agencies is to lift basic services from catastrophic levels that give the public the impression that government is doing something meaningful.

By focusing on clean government, we can get rid of corrupt politicians, because there's no money to intervene in politics.

Politicians will elect honest people, not unscrupulous ones.

what does it mean

It will change from the politics of looting to the politics of hope. Thank you.

(audience applause)

I want to talk to you about a new way of thinking about philanthropy, how it's going to evolve, and how you can get involved.

I would like to offer you a vision of the future, as described by the poet Seamus Heaney, who said, "Once in a lifetime, a wave of long-sought justice will rise, and people will celebrate hope and history."

Check out this vocabulary

It doesn't matter which side you want to be on.

A century ago, when charities were actually founded and philanthropy revived, activists didn't think they were on the wrong side.

They see their activities as closed, rigid, reluctant to try new things, and carefree.

They had no idea, they were reconstructing the philanthropy of the time, which Rockefeller called "the business of philanthropy."

But by the end of the 20th century, the next generation of critics had these bad images of philanthropy.

What's remarkable is that as philanthropy goes global, there's a big move to turn these images upside down, to make philanthropy open again, at scale, fast, organized, long-term.

Positive movements are happening all over the world

This movement is being fueled by a new generation of leaders like you and by the unprecedented need for new tools.

I have been observing and participating in this movement for a long time.

This report we publish

It reveals that these movements are as historic as they were 100 years ago.

I would like to tell everyone about these wonderful activities that are currently in progress.

But I'm not going to talk about the Gates Foundation, the Soros Foundation, or Google, or any of the big organizations you know.

What I want to talk about is about philanthropy by each of us, the democratization of philanthropy.

Never before in history has the average person had so much power.

Let's take a look at five attempts to shatter the traditional image of philanthropy.

First, collaboration activities by the public represented by Wikipedia

you might be surprised

Charity is not only about giving money, it's about giving time and skills.

Network-savvy writer Clay Sharkey did a good job of capturing the background behind this effort and putting it together nicely.

He said, "Few things in the world are done in the name of love, much is done in the name of money.

Now we have Wikipedia

Suddenly things were being done in the name of love."

Writer and entrepreneur Paul Hawken has a new book called Blessed Unrest.

will be released this spring

At the same time, multiple wiki sites are launched under the label "WISER"

WISER is the Global Index of Social and Environmental Responsibility

WISER seeks to document, link and accelerate these movements of unprecedented scale and speed in human history, humanity's collective antibody to today's threats.

This kind of loving experimentation is still in the popularization stage.

But once it ignites, it will be the largest, most open, fastest and most cohesive charity in human history.

The second is charity in the online marketplace.

It's a non-commercial, charitable online marketplace like eBay or Amazon.

peer-to-peer charity

This shakes up another preconceived notion that charity is only for the very rich.

Check out the Donor's Choice site

Omidyar Network has invested heavily here

It's one of the most popular sites in these markets, where people who want to donate can directly connect with classrooms at schools and donate whatever teachers request.

Next time you have a gift for a wedding or celebration, check out the Changing the Present site.

Give India to the whole country

there are many more

The third category is aggregate donations, typified by Warren Buffett.

I'm not saying that Mr. Buffett is historically ridiculously generous.

What he did was undermine the assumption that people who donate have their own foundations and organizations.

Today, there are many new funds that bring together donations and investments that bring together many people who share the same goals, and inspire them to dream big.

Jacqueline Novoratz's Acumen Fund is famous, she caught fire at TED

Others include New Profit in Cambridge New Schools Venture Fund in Silicon Valley Venture Philanthropy Partners in Washington Global Fund for Women in San Francisco

What these have in common is

These funds invest in philanthropic ventures in the form of venture capital, private equity, and ultimately mutual funds, and what's unusual is that communities are built around Acumen and these other funds.

We should pay attention to the three attempts mentioned so far: public collaboration, online marketplace, and collection of donations.

How it overturned our preconceived notions of philanthropy.

It's not that the Foundation is no longer needed, it's up to us.

What can be done in the future if these attempts are mashed up? Imagine what would happen if someone put up a million dollars for a nice cause? There were 21 donations of $1 million or more in the United States last year. It's not a big deal. It's about making the process of reaching a stated goal public so that more people can get involved.

Let's take a quick look at the fourth and fifth categories: innovation, competition, public investment.

By offering cash prizes for solutions to intractable problems, we can expect fast-paced solutions that attract talent and investment.

This undermines another premise that the problem to be solved is at the center rather than the advocates and organizations for the solution.

These methods are very effective for problems that require the help of technology and science to solve.

The last category is public investment, which is the one with the highest impact, like Zigidotnet.

This category undermines the assumption that business is not philanthropy, and that philanthropy is only for people who want to change the world.

Gigi is the navigator of this new social capital market, a community site by the community.

There are already 1,000 organizations in Zigi offering investments in social enterprises.

Thanks to these innovators, even a small investment can be put to great use and the return for good purposes is immeasurable.

What's interesting is that what's happening now isn't really new behavior, but rather, it's moving towards a new way of thinking.

We are witnessing these changes in philanthropy.

Not all of these efforts have resulted in big donations or achieved their big goals. The new thinking of our time is open, big, fast, connected and long lasting.

We must recognize that these efforts will take time to materialize.

If you don't have the stamina to step up and develop this movement, any attempt will end up as just a fad.

i'm looking forward to the future

Because it's not just philanthropy that's changing, but it's happening in every aspect of society.

And everywhere, including at TED, I'm seeing a growing sense that people have to do something.

How would you describe this new phenomenon? I'm looking for the right words to express it

Like philanthropic capitalism, natural capitalism, philanthropic entrepreneurs, or philanthropic ventures.

There are no words for this phenomenon yet

Whatever you call it, it's just the beginning, and it's going to mean a lot.

In the midst of all this, the vision I have in mind is the idea of ​​the social singularity.

Many of you will have noticed that I'm ripping off Verner Vinge's famous phrase, the technological singularity, the idea that a movement can accelerate, pervasive, and consolidate with unprecedented and shocking results.

Perhaps the social singularity of the future is what we fear most: environmental destruction may spread catastrophically; weapons of mass destruction and poverty may spread all over the world.

Because these problems are increasing day by day beyond our ability to solve them.

As we learn here today, there has never been a time when the future of civilization was so much in our hands.

The question is, is this social singularity a good thing? is

Is there a limit to how far we can coexist?

No need to imagine future limits

All you have to do is create a future full of hope.

the problem is

It's that we, as individuals and as a group, still don't know what we have to do.

What we need are the next generation of leaders who will make us grow, adapt to change and encourage learning as fast as possible.

The last thing I want to show you is

Here's a photo of my grandfather and great-grandfather taken 100 years ago.

they were newspaper publishers and bankers

A great regional leader

Of course, he was also a great philanthropist.

I have this picture displayed nearby in my office.The two of us have never met, but I feel a strange connection.

With all due respect to them

Take a look and imagine your own picture here

a community that you all want to play a part in shaping

Please try to imagine

And 100 years from now, when your grandchildren, their children's nephews, nieces, or even older generations will look at your photos, what will they say about you?

do you want me to talk please think about it

thank you

(applause)

Exactly one month ago, I was there at 90 degrees south latitude, at the bottom of the world, at the geographic South Pole.

I had two other good friends with me, Richard Weber and Kevin Valley.

Together we broke the record for the fastest time to reach the South Pole on foot.

It took 33 days, 23 hours and 55 minutes.

Shortened past best record by 5 days

In the process, I became the first person in history to walk the entire 1,040-kilometer journey from Hercules Bay to the South Pole ski-free.

So everyone wants to ask, "Wait a minute, is that hard?"

(Laughter) Now imagine pulling a sled, as you can see in the video, with a 77-kilogram piece of gear, and inside it, all the survival gear you need to walk to the South Pole.

40 degrees below freezing every day

Strong headwinds are expected

It's a crevasse where you have to cross these cracks in the ice at some point.

Right below is something like a pedestrian bridge that looks like it's going to break at any moment It might break down on the spot If you fall into the depths, neither the sled nor you, you'll never be able to come back

Purpose of your trip? look at the horizon

The South Pole is 3,000 meters above sea level.The starting point is 0 meters above sea level.

Our journey didn't really begin at Hercules Bay, where Antarctica meets the frozen ocean.

The journey began nearly two years ago

Two of my friends and I had just completed our 111-day drive across the Sahara desert.

We learned while we were there that there is a serious water crisis in North Africa.

We also found that many of the problems facing people in North Africa affect young people the most.

After 111 days of running in the desert, I went home to my wife and said, "If idiots like me can get through the desert, they can do anything they set their minds to."

But if I'm going on an adventure like this, I need a reason other than just "I want to go there."

It was around that time that I met an extraordinary human being, Peter Thum. He gave me a hint for my activities.

he was looking for a solution to the world's water problems

His dedication inspired me to run to the South Pole, during which I used an interactive website to bring young people, students and teachers from all over the world to join me on an adventure as an active member.

So we had a live website and blogged every day for 33 days about the depletion of the ozone layer and how it burns your face if you don't cover it.

sastrugi -- walking miles through waist-deep snowdrifts

Pulling a sled over 70kg through a place like this feels like pulling a sled weighing 700kg.

We updated our live website daily and wrote to the students who followed us about 10 hour treks a day, 15 hour treks, and sometimes 20 hour treks to reach their goals.

By the way, we took a short nap on the sled at minus 40 degrees.

Instead, students asked questions from all over the world.

Children Ask Truly Amazing Questions

One of my favorites: "How and where do you go to the toilet when it's -40 degrees?"

I won't give you that answer, but I'll answer other more common questions

where do you sleep Sleep in a very low tent Antarctic winds are so strong that anything else is blown away

what do you eat One of my favorite foods on road trips is butter and bacon, which is extremely high in calories.

You burn 8,500 calories a day, so that's all you need.

How many batteries did you bring for your equipment?

Virtually zero. Everything, including the video equipment, was solar powered.

Do you get along well? I hope so, because a few times during this expedition, I had to have my teammates use a big needle to drain an infected blister.

But we got along really, really well because we had a common goal: to inspire kids.

The kids were our teammates and they cheered us up.

The story we heard got us to the South Pole.

The website was a great two-way communication vehicle

Children in northern Canada, elementary school kids, pulled a sled in the schoolyard and pretended to be Richard, Ray and Kevin.

We reached the South Pole and we were crammed in this tent, it was minus 45 degrees that day and I will never forget it.

Looking at each other like this, I couldn't believe what we had accomplished.

And I look at them and think, "What did you get out of this trip?" Seriously.

Are you saying I'm super tough?

I've been running for five years in total, and I'm talking to you here now.

And before that, I was living a sedentary life with one pack of smokes a day.

What I've learned from this journey, my many journeys, I can say with all my heart that we can make the impossible possible.

i learned it at 40

Can you imagine? can you really imagine

I learned this at 40

What if you heard these words when you were 13 and believed them?

thank you very much thank you

(applause)

In 1928, in a laboratory in London, mold spores fluttered in the wind.

And then it landed in a petri dish, attached to it, and a medical revolution happened.

The head of the lab, Scottish scientist Alexander Fleming, was studying the nature of infectious bacteria.

Fleming was on vacation at the time.

When I got back, I found a moldy colony in one petri dish that I forgot to put in the incubator.

And there was a band around the mold colony, and quite unexpectedly, it was completely devoid of bacteria.

While investigating a strange phenomenon, Fleming realized that the fungus secreted a substance that killed the bacteria.

The mold is a strain of penicillin, which is why he named this antibacterial agent "penicillin." What Fleming stumbled upon is a microbial defense system.

Penicillin fungi constantly produce penicillin to protect themselves from invaders, such as bacterial colonies that steal the mold's nutrients.

Penicillin destroys bacteria by inhibiting the synthesis of a wide variety of bacterial cell walls.

The thick protective web that makes the cell wall tough is made up of sugars and amino acids and is constantly decomposing and regenerating.

Penicillin binds to one of the substances that make up this network, inhibiting cell wall regeneration during a critical phase of the regeneration process.

At the same time, penicillin promotes the secretion of chemically reactive molecules that do more damage to the bacteria.

Eventually, the structure of the bacterial cell breaks down completely.

This two-pronged attack is lethal to many bacteria, whether it's on a Petri dish, in the human body, or anywhere else.

But it's harmless to human cells, because it doesn't have a cell wall.

For a decade or more after Fleming's discovery, penicillin was of interest only in the laboratory.

But during World War II, scientists devised ways to isolate active compounds and mass culture molds.

was awarded the Nobel Prize for his work

A research team at Oxford and an American pharmaceutical company continued to develop it, and within a few years it was commercialized.

Penicillin and similar compounds were rapidly transforming the treatment of infectious diseases.

For some time they became the most important life-saving antibiotics used in medicine.

But the more antibiotics you use, the more resistant bacteria become.

In the case of penicillin, certain bacteria produce molecules that break down the chemical structure of penicillin.

As the use of antibiotics increases, the number of bacteria with this defense system increases, rendering antibiotics ineffective, while bacterial infections continue to increase.

So what we need is that doctors don't over-prescribe drugs.

On the other hand, 5 to 15 percent of patients in developed countries self-identify as allergic to penicillin, which is the most common reason reported for drug allergy.

But most people (over 90%) are not actually allergic to penicillin.

Why are you misunderstood?

Many patients are labeled as allergic when they develop a rash after treating an infection with penicillin or a closely related drug as a child.

Penicillin is often blamed for the rash, but more likely it's the original infection or a reaction between the infection and the antibiotic.

But true penicillin allergy, when the immune system mistakenly thinks it's being attacked by penicillin, is rare, but it can be fatal.

So if you're unsure about the possibility of an allergy, see an allergist.

A specialist will run an allergy test to determine if you are allergic.

Even if you have a penicillin allergy, your immune cells that respond to the drug in the future may lose their ability to recognize you.

In fact, about 80 percent of people who are allergic to penicillin grow out of it within 10 years.

For those currently diagnosed with a penicillin allergy, this is good news. Penicillin, which has helped so many people in the past, may one day help them again.

If I were invited by President Obama to be the next Head of Mathematics, I have a proposal that would greatly improve mathematics education in this country.

The method is easy to implement and inexpensive.

The current mathematics curriculum is based on mathematics and algebra.

Everything you learn after that builds up towards one subject.

At the top of the pyramid is calculus.

I would like to tell everyone that the top of the pyramid is not suitable.

The right pinnacle -- what every student and every high school graduate should know -- is statistics. Probability and Statistics.

(Applause) I'm not saying calculus isn't important.

It is one of the great achievements of human intellect.

Natural laws are described in calculus terms.

So there is no question that students of mathematics, science, engineering, and economics should learn calculus. By the time I finished my freshman year of college.

However, as a mathematics professor, I would venture to say that calculus is rarely used in everyday life, and rarely has practical application.

Statistics, on the other hand, is a subject that can and should be used every day. May I.

Risk, return, and uncertainty.

It's about understanding the data.

If students, high school students, and all Americans knew probability and statistics, today's economic turmoil might not have happened. And thank you, not only

It's a very interesting subject if taught properly.

Probability and statistics are the mathematics of games and gambling.

It is about analyzing trends and predicting the future.

Ladies and gentlemen, the world has already changed from analog to digital.

It's time to change the mathematics curriculum from analog to digital. From classical continuum mathematics to more modern discrete mathematics. In mathematics, probability and statistics deal with uncertainty, randomness and information.

Finally, there is something more important than learning how to solve calculus for your students. All students should understand what it means to be "two standard deviations away from the mean." This is important.

thank you very much.

(Applause)

In the middle of the 19th century, suspension bridge collapses were happening all over Europe.

The cables rubbed in stormy weather and snapped under the weight of the bridge girders.

So when German-American engineer John Roebling proposed to build the largest and most expensive suspension bridge ever built across the East River in New York City, it's no wonder city officials were skeptical.

But Manhattan was getting overcrowded, and commuters from Brooklyn were blocking the river.

In February 1867 the government approved Roebling's proposal.

To avoid the failures of European bridges, Roebling designed a composite bridge.

From the suspension bridge, we adopted a form in which a large cable is supported by the main tower and fixed to the shore.

This design is ideal for supporting long bridge girders, which are suspended by short vertical cables.

Roebling also incorporated cable-stayed bridge designs.

It's a method used on relatively short bridges where the girders are supported by diagonal cables that connect directly to the main tower.

The addition of this cable increases the stability of the bridge and reduces the load on the main cable.

Similar designs were used on other bridges, but they were much smaller than Roebling's plans.

His new bridge was 480 meters long, 1.5 times longer than the longest suspension bridge at the time.

Ordinary hemp rope would break under the weight of 14,680 tons of bridge girders, so his proposal called for 5,600 kilometers of metal wire to make the cables for the bridge.

To support all the weight, the pylon must be over 90 meters above sea level, making it the tallest structure in the Western Hemisphere.

Roebling was confident in his design, but in 1869, while doing a field survey, he had an accident in which his foot was caught between the ship and the dock.

He died of tetanus within a month.

Fortunately, John's son, Washington, was also an engineer, following in his father's footsteps.

The following year, work finally began on the main tower foundations.

This first step was also the hardest part.

It's built in rocky riverbeds using a method that has never been tried before, called a submerged tunnel.

A sealed wooden box is submerged in the river and compressed air is piped in to expel the water.

Workers then enter through the airlock to excavate the river bed.

As you dig, you stack the stones on top of the box.

Once we reach the bedrock, we fill the box with concrete and use it as the foundation for the tower.

Working conditions inside the bunker were dangerous and terrible.

It was lit only by candles and gas lamps, and it caught fire many times, had to be evacuated, and was flooded.

Even more dangerous was a strange disease called burial disease.

Now we know it was decompression sickness, but back then, we didn't know why it caused pain, dizziness, and even death.

In 1872, the chief engineer also nearly died.

Washington survived, but was paralyzed and bedridden.

Here the Roebling family shows their indomitableness once again.

Washington's wife, Emily, not only acted as the liaison between her husband and the engineers, but eventually took on day-to-day project management.

Unfortunately the problem didn't end there

By 1877, construction was behind schedule and over budget.

To make matters worse, it turned out that the cable that was delivered was defective.

If John Roebling's design hadn't been double and triple safe, it would have been lethal.

After adding wires to strengthen the cables, the girders were hung piece by piece.

After 14 years, over $400 million in today's money, and the lives of three Roeblings, the Brooklyn Bridge opened on May 24, 1883, and it was an undeniable feat.

The Brooklyn Bridge still stands atop a time-worn coffer that supports cables crisscrossing Gothic towers, serving as a gateway to New York City.

This is when I started what I call "craft school."

Craft schools are places where kids can get their hands on dangerous things like lumber and hammers, and where they can trust them.

Trusted not to hurt yourself Trusted not to hurt others

Craft schools don't have curricula, they don't have exams.

I'm not trying to teach you anything specific.

Children who come here are faced with a lot of things: wood, nails, ropes, wheels, and a lot of tools, real tools.

The children spend six days here crafting

We give our children time in it, which is what children with busy schedules lack in their lives.

Our goal is to have a better sense of making things than they did when they arrived, and to have a deeper sense that they can figure things out in the process of tinkering.

Nothing goes as planned...

(Laughter) And the kids learn that all projects have twists and turns... (Laughter) And they realize that each step brings the project closer to the end, whether it's a sweet success or a fun failure.

I start with doodles and sketches

Sometimes I make a proper blueprint.

Or start right away

Making is at the heart of this experience: hands-on, immersive, serious about a problem.

As collaborators, Robin and I help the entire project move toward completion.

Success lies in execution Failure is celebrated and analyzed

Problems become puzzles, obstacles disappear

There are some interesting behaviors, especially when faced with big obstacles and problems.

Decorating. (Laughter) Decorating before it's done is kind of incubating ideas.

This interlude gives us deep insights and amazing new approaches to solving the problems that have been plaguing us all this time.

you can use any material

An ordinary dirty plastic shopping bag can make a durable bridge that no one imagines.

The children themselves are amazed by what they have created.

3 2 1 Go!

It is a roller coaster handmade by 7-year-old children.

Yay!

(Applause) Thank you very much for your attention.

(applause)

can you hear me?

(audience) I can hear you

Hudspice: OK, this is amazing, because my voice changes the air pressure where you're sitting by just a few billionths of the atmospheric pressure.

how it works

The key to the answer lies in the true protagonist of this talk, a certain cell, the sensory receptor in the ear, called the "hair cell."

Now, these hair cells are unfortunately so named, and I say unfortunate because they have nothing to do with the normal hairs that are being lost from this head.

Early microscopists were the first to name these cells, noticing tiny tufts of hair sticking out from one end of the cell.

Modern electron microscopy allows us to see them in much more detail, and we can see more vividly the characteristics that give hair cells their name.

this is sensory hair

Like this, there are from 20 to hundreds of tiny rod-like columns clustered together and standing at the top edge of the cell.

And this organ is hearing my voice right now.

Now I have to say that I love these cells.

We've been together for 45 years. (Laughter) Part of the reason is that we're beautiful.

there is an aesthetic element here

For example, the cell I'm showing you here is responsible for hearing in a common chicken.

This is a bat ultrasonic sonar cell.

In my experiments, I often use these large frog hair cells.

Hair cells go even further back to very primitive fish, and many of the hair cells in reptiles are really beautiful like this, and they have a crystalline order.

But it's not just beautiful, its sensory hair is an antenna

Like a machine, it converts sound vibrations into electrical responses that the brain interprets.

At the tip of each sensory hair, as you can see in this picture, is a thin filament that connects each of the stereocilia, which are tiny hairs.

On the screen it is indicated by a small red triangle

At the base of this filament are two or three ion channels, proteins that span the cell membrane.

explain how it works

This mousetrap is an ion channel.

It has a hole through which potassium ions and calcium ions pass.

There's a little gate on the molecule that you can open and close.

This rubber string, which represents the protein filament, determines whether the gate opens or closes.

Now let's say this arm is a stereophyllus, and this arm is the short stereophyle next to it, and there's a rubber band between them.

When the sound energy hits the sensory hair, it pushes it to the higher side.

Sliding stereocilia pulls on this link, opening the channel and allowing ions to flow into the cell.

The channel closes when the sensory hair is pushed to the opposite side.

And most importantly, the back-and-forth movement of the sensory hairs is triggered during the sound wave, causing the channels to repeatedly open and close, each opening allowing millions of ions to enter the cell.

The movement of ions becomes an electric current that excites cells.

That stimulus travels down nerve fibers and travels to the brain.

The intensity of a sound is represented by the strength of this response.

When pressed with a loud sound, the sensory hairs move a lot and the channels are open for a long time, allowing more ions to flow in and produce a larger response.

Now, the advantage of this method of operation is that it's very fast.

Some of our senses, like sight, rely on chemical reactions and take time.

And therefore, if I show you a series of photographs at a rate of 20 to 30 per second, you get the feeling of a continuous image.

Hair cells don't use responses, so they're easily 1,000 times faster than other sense organs.

We can hear sounds as high as 20,000 times per second, and some animals have even faster ears.

For example, the ears of bats and whales detect their ultrasonic pulses at 150,000 times per second.

But this speed alone doesn't explain the superior hearing ability.

We know that an amplifier called "Active Process" is very helpful to our hearing.

The "active process" is what enhances hearing and enables all of the features I've already mentioned.

explain how it works

First, the active process amplifies sound, and at the smallest sounds, the movement of the sensory hair is about three tenths of a nanometer, but we can still hear it.

It is a vibration about the diameter of a water molecule.

it's so amazing

The system also has an extremely wide dynamic range.

Why do we need this amplification?

A long time ago, amplification was useful, because it was important for us to see the tiger before it saw us.

It was the early and distant warning system of its time.

Today, it's important to be aware of danger signals, such as fire alarms and the sirens of emergency vehicles such as fire trucks and police cars.

Without amplification, hearing deteriorates dramatically, and people who do this will need electronic hearing aids instead of biological hearing aids.

This active process also enhances our frequency selectivity.

Even an untrained person can distinguish between two notes that differ by only 0.2 percent in frequency, which is 1/30th the difference between two notes on the piano next to each other.

This superior discriminating ability helps us distinguish between different voices and understand the nuances of language.

Again, if the active process degrades, verbal communication becomes more difficult.

Finally, active processes help expand the loudness of sounds that our ears can handle, from the faintest sounds we can hear, like a dropped pen, to the loudest sounds we can endure, like jackhammers and jet planes.

The ratio of sound intensity is equivalent to a million times greater than any other sense or any man-made device that I know of.

Again, if this system is damaged, the effect may be that the faintest sounds become difficult to hear and the loudest sounds become intolerable.

Now, to understand how hair cells work, let's look at what's around them in the ear.

We learn in school that the hearing organ is a spiral tube like a snail.

An organ about the size of a chickpea

It looks like it's embedded in the bones on either side of the skull.

We also learn that a prism can break down white light into light of different frequencies that we see as different colors.

Similarly, the spiral tube acts like a kind of acoustic prism, breaking down complex sounds into frequencies.

When the piano sounds, different notes mix together to form a chord.

Swirl tubes reverse the process

Separate the sounds and send them to different places

This diagram shows where the middle C of the piano and the notes at both ends, all three, correspond to the spiral tube.

The lowest frequency is transmitted to the tip of the spiral tube and extracted

The highest frequency sound, 20,000 hertz, is picked up around the base of the spiral tube, and the other frequencies are picked up somewhere in between.

And as this figure shows, adjacent pitches on the scale are separated by dozens of hair cells on the surface of the spiral tube.

Now, this separation of frequencies is key to our ability to hear different sounds, because every instrument, every voice, has its own set of different pitches.

Coil tubes divide it by frequency, and 16,000 hair cells report the strength of each frequency to the brain.

Your brain compares all the nerve signals to determine what you're hearing.

But this doesn't explain everything I want to explain.

where's the secret?

I've already told you about the wonders of hair cells.

So how does the active process work, and how does it realize the amazing features I mentioned at the beginning?

The answer lies in volatility

We used to think that sensory hairs were passive entities that stayed still unless they were stimulated.

But actually, sensory hairs are an active mechanism.

Sensory hairs use energy all the time internally to work mechanically and enhance hearing.

Active sensory hairs vibrate continuously, even when in a dormant state with no external input.

constantly moving back and forth

However, when a faint sound comes in, it picks up the sound and begins to subtly move in sync with the sound, thereby boosting the signal thousands of times.

This same instability also increases frequency selectivity, with some sensory hairs vibrating most intensely at the frequency they normally vibrate in the absence of stimulation.

So this tissue not only gives us a wonderfully sharp sense of hearing, but also a very fine tuning.

So I'd like to do a little demonstration here.

I'm going to ask the sound guys to make it more sensitive to certain frequencies.

Just like my hair cells are tuned to one frequency, the amplifier emphasizes specific frequencies in my voice.

Can you see how only the sound of a certain pitch stands out clearly compared to the background sound?

This is exactly what hair cells do.

Each hair cell amplifies and transmits only certain frequencies, while ignoring all others.

And a series of hair cells, as a group, tell the brain which frequencies were present in the sound they heard, and the brain can then determine what melody it's listening to and what the intended speech is.

Now, amplifiers, such as public address systems, can also cause problems.

If you increase the amplification too much, the sound will not be stable, and it will howl or crackle.

What's strange is why the active processes aren't the same.

Why are our ears silent?

The answer is "make a sound"

In a moderately quiet environment, 70% of healthy people produce one or more sounds from their ears.

(Laughter) Let me give you an example.

A healthy person's ear emits two high-frequency sounds.

Background noises may also be discernible, such as the hiss of a microphone, the rumbling of a stomach, the heartbeat, the rustling of clothes.

(Presenting ear sounds) This is a typical example.

Most ears produce about five sounds, but some ears produce as many as 30 sounds.

Each ear is different, so my left and right ears are different. My ears are different from yours.

Arranging the story

It turns out that the ear can adjust its sensitivity, or amplification, on its own.

So in loud environments, like sporting events or concerts, this capability drops to its lowest level, requiring no amplification at all.

If you're in a place like this venue, it's going to be a little amplified, but the sound system does most of the amplification.

And finally, in a very quiet room where you can hear even a single pin drop, this feature is at near maximum amplification.

And in an extremely quiet room, like an anechoic room, the amplification goes up to memory 11, where it becomes unstable, and then you start making sounds.

These sound emissions are a clear indication of how active hair cells can be.

I'll spend the rest of my time dealing with another question that might arise from this: what are we going to do next?

I'm going to talk about three things that I'd like to work on in the future.

First, what are the molecular motors that drive the movement of hair cell amplifiers?

Somehow, nature's accidental acquisition of systems can oscillate and amplify at more than 20,000 cycles per second.

This is much faster than any biological oscillation, and we want to understand its origins.

Second, it modulates the amplification by hair cells according to the sound environment.

Who adjusts amplifier knobs in quiet or noisy environments?

And the third thing we all care about is what can we do about hearing loss.

Thirty million Americans, and more than 400 million people around the world, have significant problems in their daily lives, and struggle to hear speeches and make phone calls in noisy environments.

There are many who are in even worse situations.

What's more, the situation tends to get worse over time, because when a human hair cell dies, it can't be replaced by cell division.

But in non-mammals, we know that cells are replaceable, and these non-mammal cells are replaced each time they die throughout life, so animals can maintain normal hearing.

Here's an example of a small zebrafish

The cell at the top undergoes cell division to produce two new new hair cells.

Those cells move around for a little while, and then after a while they settle down and start functioning.

So we think that if we can decipher the molecular signals that emerge when hair cells regenerate in other animals, we can do the same in humans.

Now, our group and many other groups are working on ways to regenerate these wonderful hair cells.

thank you

(applause)

I'll start with my favorite poet, Emily Dickinson, who said "surprise" is neither knowledge nor ignorance.

It's something that floats between what we believe we should be and traditions we've forgotten.

Listening to these amazing people here, it's incredibly inspiring to see so many great ideas and visions.

And yet, when you look around your surroundings, you realize how architecture resists change.

It's precisely this kind of idea that I resist.

we can figure these things out and make great things

And yet, in the end, it's difficult to change even one wall.

We celebrate "well-behaved boxes"

But I'm interested in making things that have never existed, things that have never existed, places I've never been before, except in the world of my heart and soul.

That's what architecture is based on

Architecture is not made of concrete, iron and earth

based on surprise

That wonder is what makes the great cities, the great spaces we have.

This is architecture. Architecture is a story.

By the way, it's a story told through hard materials.

It's a story of striving and fighting against the unlikely.

When I think of great buildings, churches, temples, pyramids, pagodas, cities in India, I am amazed that they are not some abstract idea, but they are realized by people.

Anything made could not have been made,

Anything made could have been done better

Here's what I believe about important architecture.

I want to work with this kind of thing as a model

this is a very personal thought

It's not what art critics, architecture critics, city planners care about.

But they are, like oxygen, necessary for us to live in buildings, to live in cities, to connect in social spaces.

And I believe architecture moves forward with optimism

Architect is the only profession you have to believe has a future

Generals, politicians, economists can be depressed, minor-key musicians and dark painters.

But architecture is the complete ecstasy that the future is better than the present.

I believe that it will move society

Pessimism preachers are all around us today

Even in times like these, architects can succeed with great ideas, ideas that aren't small.Think great cities.

Empire State Building, Rockefeller Center

These aren't necessarily made in good times, in some ways.

But still, the energy and power of architecture moved the social and political space these buildings occupy.

Second, I believe in expressiveness

i have never liked the neuter

I've never liked the neuter in anything in my life

i think the expression

It's like espresso coffee, the essence of coffee.

that's what expression is

Expression disappears from a lot of architecture because architecture is considered to be the realm of neutrality, the realm of dissent, the realm of no values.

Still, I believe that the expressiveness, the expressiveness of the city, the expressiveness of our own space, gives architecture meaning.

And of course the expressive space does not keep quiet

Expressive space is not just a place to confirm what we already know.

Expressive space confuses us

I think it's part of life too.

Life isn't like smiling with an anesthetic, it's about reaching out into the abyss of history, into places you've never been, or where you might have been if you weren't so lucky.

Next, on Radicality and Conservatism

What is Radicality? It's rooted in something, rooted somewhere deep in tradition

That's architecture, that's radicality

It's not about preserving a dead body in formaldehyde.

It's really about connecting live with cosmic events that we're a part of, and certainly a story about what's happening right now.

Has no good or bad ending

In fact, it's our own actions that push the story in certain directions.

i believe in radical architecture

This Soviet architecture is conservative.

Just like Las Vegas used to be

We held our emotions, we held our traditions, and that was what kept our minds from moving forward.

And our architecture is against our own senses.

so it shouldn't be cold

Although such cold architecture is greatly appreciated

I'm always against it, I think you need emotion.

Life without emotions is not life

even the heart is emotional

It's okay to bring your emotions into the realm of ethics, the philosophical mystery of who we are.

I think that emotions are an important norm that should be introduced into the space of the city and the life of the city.

And of course we are in a conflict of emotions.

That's what makes the world a space full of surprises

And, of course, I think the confrontation between the cold, apathetic and the emotion is a conversation that the city itself has cultivated.

That's how cities grow

It's not just the shape of the city that's important, but the fact that you've imbued it with emotion, not just the emotions of the people who build it, but the emotions of the people who live in it...

"Unexplainable" and "Understood." We always try too hard to understand everything.

But architecture is not a verbal language

It's a language, but it's not something that can be reduced to composable symbols that we can write in words.

Most of the buildings you see outside are so mundane they only tell a very short story: "I have nothing to say."

(Laughter) So what's really important here is to bring in architectural elements that are completely indescribable in words, because they work in proportion, in materials, in light.

It's tied to a variety of sources -- less prefrontal, more complex arrays of vectors embedded in life itself, in the history of cities, in the history of people.

So I think the idea that buildings should be easy to understand is a misconception. It reduces architecture to mediocrity.

hand or computer

Of course, what can you do without a computer?

My whole job depends on my computer

But the computer must not be the glove of the hand, the hand itself must drive the computer.

Because the hand is utterly primitive, and has a physiologically obscure source, though it's not clear what it is, and we don't have to take it mystically.

I believe the hand was gifted by a force beyond our autonomy.

And when we draw by hand, it may look like a computer, but it's not computer drawing, it's coming from Source, and it's something completely unknown, something that's not normal, something that's never been seen before.

I think that's part of the complexity of architecture.

We're used to the propaganda that simplicity is good. I don't think so.

Listening to all of you, the complexity of thought and the complexity of multi-layered meanings is overwhelming.

And architecture shouldn't run away from that either. Neurosurgery, nuclear physics, genetics, economics, it's a very complex field.

Architecture must not escape from it and present the illusion of a simple world.

Architecture is complex Space is complex

Space unfolds itself into a completely new world.

The space is so marvelous that it cannot be reduced to its often extolled simplicity.

And also our lives are complicated

emotions are complicated

intellectual needs are complex

So I think architecture also needs to reflect the complexity of each space that we have and each of our deep knowledge.

Of course that means architecture is political

Politics is not the enemy of architecture

The word "politics" comes from "polithea", which is the city, the whole of us.

And the act of building, even if it's a private house, is a political act from the perspective of others, because others can see it.

Our world is becoming more interconnected

Therefore, I cannot escape into the world of pure architecture, autonomous architecture that is nothing more than an abstract existence.

And I believe in the interaction with traditional architecture, which is sometimes very difficult to do, in a way that confronts history, takes a stand above the usual expectations, and provokes criticism.

Because architecture is also about questioning

more than just answering

Like life, ask questions

Therefore it is important to be realistic

we can simulate anything

But there is one thing that cannot be simulated, and that is the human heart, the human soul.

And architecture is closely interwoven with them, because we are born and die "somewhere".

So architectural reality is physical, not intellectual.

It doesn't come from books or theories

It's real, it's a door, a window, a threshold, a bed that you can touch with your hands.

Space for the office: a sustainable space that works both in the virtual and in the real world.

unexpected and habitual

What are habits? I am a shackle to myself

It's poison that I brought with me.

the unexpected is always the unexpected

The church is the unexpected and will always be the unexpected.

Frank Gehry's building that will continue to be unexpected in the future.

Not conventional architecture, which instills in us a false sense of stability, but tension-filled architecture, architecture that penetrates itself and touches the human soul and heart, frees us from the yoke of convention.

And of course convention is reinforced by architecture

Seeing similar architecture makes us accustomed to a world of the same point of view, the same light, the same materials.

we think of the world as our building

And your architecture is limited to the technology and wonder that are part of it.

Again, 'unexpected' is also 'raw'

I often think about "raw" and "refined"

What is "raw"? It is a naked experience, free from luxury, free from expensive materials, free from the sophistication associated with high culture.

To be "raw" is to be living space, where sustainability really is, in the future, living space, undecorated space, unconventional space, but cold in temperature and resistant to desire.

A space that is not like a dog trained to follow you all the time, a space that orients itself to show other possibilities, other experiences, a space that is not in any architectural vocabulary of the past.

I'm also very interested in juxtapositions like this, because there's a spark of new energy there.

So I like something that's sharp, not blunt, that's focused on reality, that has the power and influence to transform even the smallest of spaces.

Architecture may not be as great as science, but through a certain focus it can amplify the way the world is in an Archimedean way.

Often a single building can change our experience of possibilities, achievements, and how the world is stuck between stability and instability.

Of course the building has its own shape

it is difficult to change its shape

And yet, I believe that all social spaces, all public spaces, are trying to convey something more than just mediocre ideas and techniques.

So this is memory

my main interest is in memory

Without memory we are amnesiacs

We don't know where we're going, we don't know why we're going there

That's why I'm not interested in forgettable reuse, where you reinvent and reuse the same thing over and over again. They get critical acclaim.

Critics like performances that repeat the same thing over and over again.

But I'd rather be dealing with something I've never heard of, and even if it's hurt, than repeat the pointless emptiness over and over again.

And also memory is the city, memory is the world

Without memory, there is no story to tell

there's no place to look back

Memory is what we think the world is

And it's not just our memories, but the memories of those who remember us, which means that architecture doesn't sit still.

it is a communication technique

It tells a story A story arrives at an ambiguous desire

It also reaches sources that are apparently hidden from view.

It takes thousands of things that have already been buried and turns them into unexpected treasures.

So the perception that architecture is silent doesn't appeal to me at all.

Silence is good for graveyards, but not for cities

Cities are full of vibration, sound and music

So, really, the mission of architecture, which I believe is important, is to create vibrating, multidimensional spaces that transform very mundane activities and raise them to a whole other set of expectations.

Make shopping centers more swimmable, more like museums than entertainment venues

that's my dream

It's also a risk. Architecture should be risky.

Spend a lot of money and so on, but yeah, it can't be safe

The reason why it shouldn't be safe is because if it's safe, it won't go in the direction we want it to go.

And of course risk lies beneath everything in the world.

A world without risk would not be worth living in

So yeah, I think all architecture should be at risk

It is a risk to create a one-sided support space like this picture

It's the most dizzying spatial risk ever, as it should be in a forward-thinking city.

Risk really moves architecture, and even with its blemishes, it takes us to a much better world than now, where the emptiness of the ready-made product repeats itself.

And that is the ideal form of architecture that I think of.

it's space, not fashion

it's not about decoration

It's about making something that can't be repeated with minimal means, something that can never be simulated anywhere else.

And we need a space where we can breathe, we need a space to dream

It's not just a luxury space for some of us, it's important for everyone in the world.

This is not about changing fashions or changing theories

to make room for trees

To create a place where nature can enter into the space of an urban home.

It's a place where something that has never seen the light of day is put into a dense internal structure.

I think this is really natural architecture

i believe in democracy

I hate beautiful buildings built for totalitarian states.

where people can't talk, vote, or do anything

We admire buildings like this too much, we think they're beautiful.

But when I think of the poverty of a society that doesn't give people freedom, I can't admire a building like this.

In other words, although there are difficulties, we believe in democracy.

And of course ground zero what else?

this is a very complicated plan

This is emotional There are many interests

It's political, so many groups are involved.

There are so many interests, money and political power.

feelings for victims

And in all the chaos, in all the trouble, I hate to say: "This is a blank sheet of paper, architect, do as you please."

nothing good comes out of it

architecture is agreement

And it's about the dirty word "compromise." Compromise isn't bad.

Compromise, if it's artistic, if it's against strategy -- this is the first sketch and the final rendering -- it's not that different.

And compromise, agreement is what I believe

And Ground Zero is moving forward, despite many difficulties.

Difficult 2011，2013，Freedom Tower，Monument

I would like to finish with this

I, like thousands of other people, immigrated by boat, and I was inspired to see America in that regard.

This is America This is freedom

This is what I dream about, the individualism that appears in the skyline, and I want to restore it.

And finally, it's the freedom that America stands for, freedom not just for me as an immigrant, but for everyone in the world. Thank you.

(Applause) Chris Anderson: I have a question.

So you're the one who's done with the loss of your original, brilliant design in the process of the Ground Zero project?

Daniel Libeskind: We have to change the idea that we are authoritarians and that we can make decisions about everything that happens.

We depend on others and must form the best way in them

I grew up in the Bronx, I was taught not to be a loser, never to be the one who gives up in the fight.

You must fight for what you believe in You can't have everything you want to win But you can steer

And I think what's created at Ground Zero is meaningful, inspiring, and conveys to future generations about the sacrifices and the meaning of this event.

Not just for New York, but for the world

CA: Thank you very much.

(applause)

Now, there's Alexander Graham Bell's famous quote in his first successful phone call, "Hello, are you Mr. Domino's Pizza?"

(Laughter) I'm really very grateful.

Another famous man, Jerry Garcia, said, "It's a really weird long trip."

But I should have said, "It's going to be a very strange long trip."

Right at this moment, you can see my upper body

The lower body is attending other lectures (Laughter) in other countries.

This means that you can be in two places at the same time.

But it's a pity that I can't meet you in person.

I have to make amends someday

Sure I'm a rock star, but I don't just want to take a warm bath

But the technology that excites me isn't even the ability to add more songs to an mp3 player.

Revolution This revolution is much bigger than that

I hope and believe

What fascinates me, and personally excites me, in this digital age is that the gap between dreams and reality has closed.

You know, if you wanted to make one record, you needed a studio and a producer

i need a laptop now

If you wanted to make a movie, you needed a lot of equipment and Hollywood money.

Now all you need is a camera that fits in the palm of your hand and a few bucks to buy a blank DVD

Imagination freed from old constraints

i'm so excited about it

Every little thing excites me

What I want to see is idealism detached from all constraints

Political Science, Economics, Psychology, Any Field

The geopolitical world has learned a lot from the digital world

I learned from the relief that obstacles could be removed, obstacles I never thought I could even make smaller

And this is what I want to talk about today

The first thing I should explain is why and how I came here

Let's talk about a journey that began 20 years ago

Everyone remember? "We Are The World" to "Do They Know It's Christmas?"

It's about Band Aid and Live Aid

Another tall old rock star, my friend Sir Bob Geldof, set out on a quest to "fill the world".

It was a great event that completely changed my life.

That summer my wife Ali and I went to Ethiopia.

we quietly watched what happened to us

I lived in Ethiopia for a month and worked at an orphanage.

the kids named me

It's called "bearded girl"

(Laughter) Let's do this

Anyway, I learned that Africa is a mysterious place.

A big sky, a generous heart, a big, shining continent

beautiful and wonderful people

Everyone who has been able to do something for Africa learns a lot and comes back.

Ethiopia didn't just excite me, it opened my heart

Anyway, on the last day of my stay at the orphanage, a man put his baby in my arms and said, "Will you take my son home?"

He knew that in Ireland his son would live, and in Ethiopia his son would die.

It was a symbol of really bad hunger

But I declined his offer

I kind of felt bad and weird, but I declined.

I feel like I'll never forget

That moment I started this journey

That's when I turned into a badass Rock star in activism But it's not activism

6,500 Africans die every day from AIDS, a disease that can be prevented and treated, but there is a shortage of medicines available in pharmacies.

It's not a social problem, it's an emergency.

The 11 million AIDS-infected orphans in Africa will become 20 million in 10 years.

Let me repeat, it's not a social problem, it's an emergency.

Today, every day, another 9,000 Africans will become infected with HIV because of discrimination and lack of education.

I'll say it again, it's not a social problem, it's an emergency.

Human rights are what we are talking about here

right to live as a human being

the right to live, that's all

And what we face in Africa is an unprecedented threat to human dignity and equality.

The next thing I want to clarify is what's wrong with this problem and what's not.

because this is not charity

this is justice no doubt

This isn't about charity, it's about justice.

must be so

But unfortunately we are good at charity

Americans are as good at charity as Irish people are

Even the poorest people are forced to give charity

we like giving so give a lot

Look at the reaction to the tsunami damage, a good example.

But justice is on a different level than charity

You see, Africa makes fun of our idea of ​​justice

The idea of ​​equality becomes a farce

Sneering at our pious hearts and not believing that we care

I don't think the promise will be fulfilled

Because you don't look straight at what's going on in Africa, and if you look at it honestly, you'll think it's unacceptable that something like this is happening somewhere.

You've seen it on film, somewhere but not here

Not here, not America, not Europe

In fact, the leader of a country I know very well admitted that it's true.

Such a loss of life would be unacceptable outside of Africa.

Africa is on fire

And if we accept in our hearts that Africans are human just like us, they will do more to put out the fire.

There's a fire hydrant nearby, all we need is the fire brigade to come over.

Certainly not as dramatic as a tsunami.

It is foolish to think such a thing

Does it have to be in the back of your head in a way that's like a trendy action movie?

The countless lives slowly disappearing isn't dramatic, it's true

Catastrophes that can be prevented are not as fun as catastrophes that could have been prevented

I'm laughing

Anyway, I think that kind of thinking is boring for the intellectuals in this room.

6,500 people die every day in Africa may be someone else's problem But it's not on the nightly news The fact is it's not treated like an emergency by us in Europe or you in America I want to tell you tonight it's our crisis

I want to tell you that Africa may not be on the front lines of the war on terrorism, but it will soon be.

Every week, extremist religious men attack African villages

They're trying to plunge a peaceful village into chaos.

But why shouldn't we?

You know that poverty breeds despair, right?

You know that despair breeds violence, right?

In troubled times Is it more sincere and wiser to keep mighty enemies as friends than later to defend yourself against them?

The fight against terrorism goes hand in hand with the fight against poverty

It's not my opinion, it's Colin Powell's words.

Now, if the military says that this battle cannot be won by force alone, maybe we should listen.

Here's a good chance, really

No confusion, no wishful thinking

The problems facing the developing world give us in the developed world an opportunity to change the way the world works.

Not only will we improve the lives of others, but we will also improve their perception of us.

In these tense and dangerous times, that would be meaningful.

They're only thinking about profit, and anti-retroviral drugs are great publicity for Western inventions and technologies.

Are we not worthy of pity?

Then let's stop doing silly things

In some parts of the world, neither the EU brand nor the USA brand is attractive.

The neon hissing and cracking

A brick was thrown through the window

Managers of regional branch offices are holding their heads

Westerners have never received so much attention.

Is there such a thing as our values?

trust?

That kind of thing is being beaten all over the world

USA brands may become brands again

I'm a fan of USA brands too.

I buy USA brands

But think about it

Providing more antiretroviral drugs is a given

But that's just the easy part

But when it comes to equality for Africa, it's too big a problem.

The pain is so great that I can't feel it

What can we do for Africa?

of course not just thinking

Even if it's not all problems, we can look at them one by one.

Because I can do it, absolutely

That's the undeniable and noble truth

not a theory

In fact, as the first generation, we see disease and poverty with our own eyes, and we see Africa across the ocean.

The whole African continent is crumbling We can't just wait

(Applause) I'm not being sarcastic, I'm not making fun of ex-hippies.

Forget the 60's and change the world

You and I can't do it alone, but together we can do it

I believe the people in this room think so too.

Consider the Gates Foundation

they're doing so well it's unbelievable

But together we can change the world

We can change our inevitable destiny We can improve the quality of life for millions When we get closer they're just like us

Sorry for laughing, '60s Haight Ashbury guys have changed so much

(Laughter) I just want to say that this moment is for you

The seeds I sowed blossomed when I was young

Ideas that everyone devised in their youth

i am thrilled

This room was made for this moment I just wanted to say this tonight

Do you want to change the world?

It's a digital world that's already starting to change.

See, right now, right now, we can change the physical world

that's the truth

Ask an economist, he knows better than me

Then why don't you raise your fist and celebrate

We knew we could do something, so we had to do something

that's annoying

The issue of equality is really troubling

But for the first time in history, we've got technology, we've got the know-how, we've got the money, we've got the medicine to save lives.

Then what about your will?

I hope there is, but I'm not a hippie

That's why I don't have a passionate and fluffy feeling

I don't even have flowers in my hair

Actually I'm from punk rock

Crash was wearing big military boots, not sandals.

But I know that strength

And wherever peace and love were spoken on the West Coast, there was a driving force to create a movement.

See, idealism far from reality is just a dream

But if idealism is accompanied by pragmatism Rolling up your sleeves and running the world would be so inspiring and so real and so powerful

A group like yours should be able to

At last year's DATA, I was involved in the formation of this organization, which launched the above-mentioned inspirational campaign to fight AIDS and extreme poverty.

We call it the ONE Campaign

The origin is our belief that the actions of one person can make a big difference, and if many powers come together and act, the world can change.

Do you feel like it's time to prove ourselves right?

There are moments in history when civilization reevaluates itself

Now is one of them

I believe this is the moment the world finally decides it can no longer accept the unjustified loss of life in Africa.

Now we're very serious about changing the world for the many people living on planet Earth.

lively and energetic

I'm staggering a little bit, but I'm gaining momentum

This year is a year of trials for us, especially the leaders of the G8 nations, and a historical gaze from all over the world.

Lately I've been let down by the Bush administration.

Early in my administration, I made a promise about Africa.

Some of them were really good promises, and they actually delivered on many of them.

But there are still some things we can't do

It is also true that there is no support from the people.

And there's a reason why I'm disappointed When you talk to Americans, it seems like they care about the budget deficit or whether they're doing well.

i can understand

But if everyone unites their hearts, it will become a great power

What I'm trying to say is that help would be great, but aid to Africa is worth the money when America really needs it.

To put it bluntly, the return on investment isn't half bad.

It's not just saving people's lives. Goodwill. Security. That's what we get.

So that's my wish, it's a brazen request, but please don't subtract from the number of wishes I can grant

(Laughter) My hope is to go beyond personal goodwill to call upon politicians to do justice for Africa, for America, and for the world.

Why don't we let them use the power of politicians, our financial resources, and our national budgets to help millions of people?

This is what I want everyone to do now

Because we need your intellectual property, your ideas, your skills, your talents.

And you TED attendees are in a special position.

Some of the technologies we're talking about have you guys developed or revolutionized the way we use technology.

Together you guys changed the era from analog to digital and pushed the boundaries.

I want you to share that energy

Energy to dream and energy to realize

two things are at stake

one is africa

and the other is our own consciousness

so people are starting to realize

The movement is also booming

Artists, politicians, pop stars, missionaries, CEOs, NGOs, mothers' associations, student unions.

A lot of people working together Under the umbrella I was talking about earlier Yes, the ONE campaign umbrella

I think they have only one idea in their minds, where in the world they live should not determine whether or not they can live in this world.

(Applause) History, like a god, sees what we do

When the history books are written, I think our times are told in three ways.

Only three things truly shape this whole era, surely

Of course the digital revolution

The war on terrorism is also talked about

And what did or didn't you do to save Africa?

Can't afford that? I can't afford to do nothing

thank you very much

(Applause) Look, I have three requests.

People who are recognized by TED will listen

Mind you? If what I believe to be true is that the digital world you've built has freed your creative imagination from the constraints of the physical world, then it's really easy.

lol

Most of them are impossible, some are impractical, and one or two are immoral.

(Laughter) I can't stop doing this job, especially when someone pays me...

It's okay, it's from the first request

I need you to help me build a social movement for Africa with more than a million Americans participating.

this is my first request

i believe i can

Just a moment ago, I told you that the civil movement is gaining momentum.

you'll see it more often

The ONE campaign is our umbrella, my organization, DATA, and other groups are pouring energy and passion into this movement, expanding it from Hollywood to the Midwest region of the United States.

A surplus of energy makes this movement powerful

I need your help to succeed

America's Church America's Corporations Microsoft America Apple America Coca-Cola America Pepsi America Nerd America Annoying America

I can't decide coolly or sit back

If we become a movement with a million Americans participating, it will be a great force We won't be denied

The U.S. Congress will hear

On the first page of Condoleezza Rice's report Close to the president's office

If one million Americans, as I know it, were ready to call and ready to send an email, I'm sure we could change the course of history for the African continent.

can you join me

John Gage and Sun Microsystems have already agreed, but there are a lot of people here who want to hear

Okay, second request from me, second

There's someone on the planet I'd like to see found in internet searches, everyone who lives on less than a dollar a day.

Then you'll have a billion hits

Google or AOL

Steve Case, Larry, Sergey, they helped.

This can also be done on NBC and ABC

I'm actually talking to ABC about the Oscars today.

I have a video produced by John Kamen from Radical Media

You know, we need time to air our ideas

The numbers and statistics need to be made known to the American people

I believe in the old Truman line I believe that if the American people knew the truth they would do it

And one more thing, this is not Sally Struthers.

We must think of it as an adventure, not a burden

(Video): Step by step they move forward, nurses, teachers, housewives, and lives are saved.

the challenges are immense

one person dies every three seconds

Another three seconds

Most of Africa is in a desperate situation.In Asia and even in America, aid groups are connected, working together, just as they were in the tsunami.

We can overcome extreme poverty, hunger, and AIDS.

so i need help

One more message Another voice makes the difference between life and death For millions of people

join us let's work together

It's a great opportunity for Americans

you can make history

Let's start making history in eradicating poverty

one by one one by one

Visit ONE here

I'm not asking for money, I'm asking for a voice

Bono: By the way, I want TED to show us the power of information, the power to rewrite rules and change lives, to connect everything, hospitals, health clinics, schools, in one African country.

I want Ethiopia to be

I believe we can connect all the schools in Ethiopia, the health clinics, the hospitals, we can connect to the internet.

This is my request, my third request

i think i can

I think this room has the money and the brains to do it

And it's a wish that excites me when I think it will come true

As I said earlier, I went to Ethiopia.

Ethiopia was where it all began

The internet that has changed our lives can change a country, a continent.Even a continent left behind by analog, let alone digital... I was fascinated by the idea.

But it didn't start well

The first long distance line between Boston and New York was used by telephone in 1885.

It was only nine years later that Addis Ababa was connected by phone to Harare, 500km away.

not much has changed since then

It actually takes an average of 7-8 years to get a landline line in Ethiopia.

But there was no wireless technology then

I'm Irish and I love to talk

Communication is very important for Ethiopia and it changes the country.

Nurses will be well trained Pharmacists will be able to place orders Doctors will share their expertise in all areas of medicine

It's a really good idea to go online

And this is my final request to everyone at the TED talks

thanks so much

(applause)

Charles and Ray were a team, husband and wife

Despite the recent efforts of The New York Times and Vanity Fair, they're not brother and sister, they were very funny.

Ray wore the '& mark' in his family

(Laughter) Today I'm going to focus on Charles, because it's his 100th birthday.

But talking about him is really talking about the team

I'm Charles, 3 years old. I'll be 100 this June.

Lots of cool celebrations ahead

When it comes to their work, most people think of furniture, and I'm sure you've seen some of the chairs that I'm going to show you.

But let's start with the circus

why am i showing this?

Because Charles and Ray made the movie?

This is actually a clown school training movie they had

They even worked as clowns when the future of furniture didn't look bright.

This is a picture of Charles let's see the next video

It's what they made for the World's Fair in Moscow

Video: This is the Earth

there are many contrasts

Both rough and flat

cold place

hot place

Too much rain in some places, too little in others

but people live there

And like Russia, people gravitate to towns and cities.

this is how they live

Eames Dometrova (ED): This is a movie you rarely see in America

7 screens, total length 60 meters

it was in the middle of the cold war

Nixon and Khrushchev's kitchen meeting took place just 15 meters from here.

So how did it start?

The first sentence of Charles's narration on "commonality" is: "The stars that shine in Russia are also shining in the United States. From the sky, all cities look the same."

This is the human connection that Charles and Ray found in everything.

And the thing is, I believed that it was important to get the big picture, and that humans could handle so many images.

let's end here

Charles and Ray were always building models of something.

always trying something

One of the things I'm passionate about: it's my grandfather's work.

We all want our children to be interested in music.

Me too

But I don't want my child to be Bono or Tracy Chapman.

I want music to run through a child's head and thoughts.

The design is the same, it must be the same

Here is the model they made for their 7-screen presentation

Charles is checking there

Let's go to the area of ​​furniture

This is an unusual installation of airport chairs

Take a look at some of our Eames furniture

They said the designer's role as a good host is to anticipate what guests want.

That's a cool picture, something that I think is really cool.

These are all prototypes. They're failures.

I'm trying and trying to improve

some think it's a terrible chair

Some of them look cool It's like, "Hey, have you tried this?"

It's a repetition of hands-on work, just like folk crafts and indigenous designs in traditional culture.

That's what modern design and traditional design have in common, and that's exactly what I think we should be doing in the next 20 to 30 years.

Another cool thing is that when you see this, or in the media, when someone says "design," they mean "look."

But here I want to talk about the essence of design

Things are just fulcrums

It is the fulcrum between processes and systems

This movie is about the process of making the Eames Lounge Chair.

Charles and Ray's design process doesn't end with production.

And it goes on and on, I was always trying to improve.

It's kind of like Bill Clinton talking about a screening facility in Rwanda.

It's not enough to make just one

We have to create a system that keeps improving.

I like this prototype photo

because there is nothing more basic than that

just try

This is a fairly famous chair

The early model has an X-shaped pedestal. Collectors want it.

Charles and Ray liked the better one

This one is better. The pedestal is H-shaped. It's much more practical.

this is called a splint

I was struck by Dean Kamen's military or soldier work, because Charles and Ray often designed plywood molding splints, and this is it.

they used to do furniture work

While working with splints, they learned a lot about the manufacturing process, which was very important to them.

Maybe I'm showing you too much because I want you to know the essence of ideas and images.

This is the house designed by Charles and Ray

my sister is chasing someone not me

Someone stole her diary, I swear it wasn't me

The one on the bottom left is a movie made by Charles and Ray.

Look at that plastic chair

The house is built in 1949

The chair is also made in 1949.

Charles and Ray never stuck with style per se.

We didn't say, 'Our style is curves, let's build our houses with curves.'

Don't say "our style is plaid, plaid on chairs"

they were aware of the need

I was trying to solve a design problem.

Charles said: "How much design style you have is how many unsolved design problems you have."

A bit of a rough quote

This is the early design of that house.

Again, they succeeded in prototyping a house, it's architecture, it's a very expensive material.

This is the movie that is often talked about

"Powers of 10" is a movie they made

If you look at the following video, in the upper left is the first version of "powers of ten."

Bottom right is the well-known one

Eames' film "Koma" is in the lower left

And the lamp that Charles designed for the church.

Video: It Next Belongs to the Region's Galaxy

These form part of the grouping system, which is the same as the star system.

They are so numerous and diverse that from a distance they look like stars from Earth.

ED: As you can see, the great thing about this conference was that everyone was talking about scale.

Everyone here got here by different roads

Let me give you an example

E.O. Wilson once told me: ``When you look at an ant--he likes ants and wants to know more about it--always look at the ant in terms of scale.''

there's that little creature

And just by looking at it on a different scale, you can learn a lot, and you get things like the TED Awards.

They were always making models They were always making models of things

Part of the reason is that they never left the understanding to others.

Our family was very lucky because we were able to study design backwards.

Design is like no other

it's part of public business

part of quality of life

I have some family photos

You can tell by my hairstyle that I'm not stylish

Either way. (Laughter) When I was a kid, the Eames family had chopped grapefruits.

watch another movie

This is a movie called "Toys"

there is me, same hairstyle, top right

The upper left is a movie that was shot on a toy train.

The lower right is a solar battery type "machine that does nothing"

The lower left is a "Day of the Dead" toy

Charles said that toys are not as innocent as they seem

that it is often the harbinger of something greater

And this way of thinking -- that train over there is honest with its materials, just like you're honest with composite materials in a high-end chair.

Now let's test you guys

This is a letter my grandfather sent to my mother when she was 5 years old.

Can you read?

"Lucia angel okay" I

Audience: (I saw a lot of trains)

ED: Awl, "Or So" Leatherworker

(and) what is he doing? "Row, Lord...

Sun? No What is another name for the sun?

"Boom" yeah yeah

"Ortho, Road, On, One Eye...

Audience: (hope you have one) ED: Well, you've probably visited the "Dogs of St. Louis" website in the mid-1930s, so this is a Great Dane, right?

So (hopefully...) AUDIENCE: (good time, time—) ED: (of time)

Citizen Kane, Rose—Audience: Rosebud

ED: No, "Bad" D is right (Buddy's-) Audience: (Party love)

ED: Yeah great

"I have seen many trains, and I have ridden one

You're having a great time at Buddy's party."

well done great

My mother and Charles had a wonderful relationship, exchanging these letters with each other.

It's part of what they call "play hard."

Here are some of the photos from my project "Kimerica"

like parallel worlds

It's like reinterpreting the landscape.

These are the plaques we have installed around North America

We plan to install 6 more in the UK next week.

They pay homage to real world events from a fantasy world.

The plaque is of course bronze, so it is the actual product.

Video: Waterfall and Kimerika Falling Down - ED: This is a traditional Kimerika song

A spelling competition was held in Paris, Illinois.

Video: Your Word Is N Carolina

Girl: Indiana

ED: And the Embassy Row is a historic place, because in the Chimerica story, this is where the "Parisian Diaspora" happened, and the embassy was there.

And you can actually have this three-dimensional imaginary experience.

the town does really well

We held a spelling competition in collaboration with the Gwomeus Club

What's really cool is that we tend to take what we see as it is, but it's really not.

Other things could have happened, the Japanese might have discovered Monterey.

We could have been born 100,000 years ago

There are many interesting things This is the "Bench Museum"

I have trading cards and lots of other cool stuff

And you get caught in the details of chimerica

Tahatchabe, the great road building culture

A person named Nobunaga, a Japanese Columbus.

But let's get back to reality around here

This is Cranbrook, and I'm going to show you something really good, the first movie that Charles ever made.

let's see no one should have seen

Can be shown here for the first time, courtesy of Cranbrook

It's about Maya Gretel, a potter and teacher in Cranbrook.

he made this for the staff exhibition in 1939

It's silent No soundtrack yet

It's very simple. It's just the beginning. It's a "learn by doing" kind of thing.

Want to know how movies are made? I should make the decision to make a movie.

try anything

But this place is amazing

Can you see that chair? The orange one, that's an organic chair from 1940.

Charles made the chair at the same time he made this movie.

So the point is, they had this scope of vision, this big picture vision of design from the beginning.

In other words, "Oh, I made a chair and it worked

It wasn't like, let's make a movie next.

It's always been part of their worldview, and that's why it's been so powerful.

And when people here advance design, it's not about making one thing.

It's about how you approach the problem, and that's where this big, beautiful design and the commonality that spans business and the world.

The last document

I've shown you pictures so far, but now pay attention to the sound.

this is charles voice

Charlie Eames: In India, the have-nots, the lowest caste, they often eat from banana leaves, especially in South India.

People a little higher up eat from low-fired china plates.

A little more upstream has a glass called tali

A little higher up the brass tali

Things get a little weird from here

there is a silver plated thali

And the pure silver Thali

and someone else might have eaten it with a golden thali

But there's more

People with a certain amount of knowledge and understanding, not just having things, take the next step: eat from the banana peel.

And in times like these, times of turning back and rebuilding, I don't know why the banana leaf fable is useful again, because you never know if the banana skin someone uses to eat is the same as someone else's.

But the process that happened in that person changed the banana peel.

ED: I'd like to quote this quote and share it with you here.

because that's where we're going

I also want to share

“Beyond the Information Age is the Age of Choice”

we are right there

And it's pretty cool to be in that tradition and family he was talking about back in 1978.

Why these things matter, and why everything we do matters, is because they're the ideas we need.

And this is what it's all about: "Let yourself go on a design journey"

this is all we should do

Designing is not just for designers It's a process, not a style

All great thinking must be used to solve the very key problem

Thank you for your attention

(applause)

Last year at TED, I set out to try to unravel the overwhelming complexity and richness of what I experienced at the conference, a project called Big Viz.

Big Viz is a collection of 650 sketches Two visual artists

David Sibbett of The Globe and Kevin Richards of Autodesk drew 650 sketches, trying to capture the essence of each presenter's ideas...

everyone said it went really well

The key ideas, the faces of the presenters, the magical moments from last year come alive.

This year, I thought about "why did it go so well?"

How can anime and graphic illustrations create meaning?

This is an important question, because the more we know how our brains create meaning, the better we can communicate... and the more we think and collaborate.

So this year, I'm trying to visualize how the brain visualizes.

Cognitive psychologists say that instead of seeing the world as it is, the brain uses several processes to create a set of mental models that capture those moments of "Ahhhhh!" discovery.

Of course, the process begins with the eyes.

Light enters, hits the back of the retina, is transmitted, and most of it flows to the rearmost part of the brain, the primary visual cortex.

The primary visual cortex sees only simple shapes.

But it also acts like a relay station, rebroadcasting information to other parts of the brain.

As many as 30 parts selectively comprehend meaning and create meaning through the experience of "oh yeah!"

I will talk about three of them here.

The first is the ventral cortical visual pathway

this side of the brain

This part of the brain recognizes what it is.

It's a "what" detector

Look at your hands, a remote control, a chair, a book

It's the part that works when you give something a word.

The second is the dorsal cortical visual pathway

Its role is to position objects in physical body space.

Looking over this stage creates a mental map of the stage.

That way, even with your eyes closed, you can guide them in your mind.

At that time, the dorsal cortical visual pathway is activated.

The third thing I want to talk about is the limbic system.

It's deep in the brain, and it's evolutionarily very old.

the part that feels

You could say it's an instinct center that looks at something and says, "Oh, I have a strong emotional response to what I'm looking at."

The combination of these processing centers creates meaning in different ways.

What can we learn from this? How can we apply this insight?

Again, the big picture is this: the eye visually inspects what it sees.

The information produced is processed in parallel by the brain, asking many questions and combining them into a single mental model.

For example, when you look at this picture, your eyes search for well-drawn diagrams, select the ones that connect, and create visual logic.

Looking at a picture creates meaning

It's selective logic.

We strengthened this by spatializing the information.

Many of you may remember the "magic wall," which we created in conjunction with the Perceptive Pixel, literally creating the "wall of infinity."

Compare great ideas side by side

By focusing and creating interactive images, the meaning becomes richer.

activates other parts of the brain

And when you see motion or color, it activates the limbic system, and I've already told you that there are major shape and pattern detectors.

so what's the point

We create meaning through seeing, through visual integration.

you can learn three things

First, use pictures to clarify what you are trying to convey

Second, by making the painting interactive, you can create a much deeper interest.

And third, it enhances memory by creating visual persistence.

These techniques can be applied to a wide range of problem solving.

Here's the low-tech version

By the way, this is the method that several Autodesk organizations use to develop strategy.

What we're doing is having the team draw the whole strategic plan on a big wall.

This is very powerful because everyone can see everything else.

There's always a place where you can understand all the pieces of your strategic plan.

This is a time-lapse video

You may ask, "Who's the boss?"

You know, coming together, working together, painting changed the way we worked together.

I don't use PowerPoint even once in two days.

Instead, the whole team can share a mental model and all agree to move forward.

And this is enhanced and amplified by new digital technologies.

This is today's big announcement

It's a new combination of technology that uses a large screen display and intelligent computation behind the scenes to make the invisible visible.

What we can do here is literally visualize sustainability.

The team can actually see all the major parts that contribute heat to the structure, make choices, and see the final result visualized on the screen.

There are three parts to making a picture meaningful

Clarify ideas by visualizing first

Second, make it interactive.

And the third is to make it sustainable.

I believe that these three principles can be applied to solve some of the most difficult problems we face in the world today. Thank you.

(applause)

A gazelle with tuberculosis dies in the grasslands of Mauritania

It fell over in a small pool, so its carcass could contaminate the water.

But for a desert sweeper, the carcass is a treat, not a nuisance.

Weighing about 10 kilograms and with a wingspan of 3 meters, the vulture with its wattles on its face is the undisputed king of carcasses.

Vultures use their powerful beaks and necks to effortlessly tear through tough skin and musculature, allowing even weaker vultures to peck.

Fighting for food with larger vultures is too dangerous for the smaller Egyptian vultures.

With a wingspan of only 1.8 meters, the Egyptian vulture migrated to Africa from a family nest in Portugal, floating in the air for hours at a time on thermal updrafts.

But when you arrive, the pecking order is almost last.

Luckily, even being small makes up for it with intelligence.

A short distance away, I spotted an unsuspecting ostrich nest full of gigantic hard-shelled eggs.

They use big stones to break the shells, feast on their own, and after the big vultures are gone, they return to the gazelles.

A spotted vulture flies above the noise

Soars up to 11,000 meters, higher than any other bird

You can't see individual corpses at this height,

Fellow vultures' eyes guide them to their feeding grounds

The hairless head helps reduce the body temperature spike as it soars and keeps it clean while tearing through the carrion of the gazelle.

Carcasses are cleaned up within hours, so the carrion does not contaminate water sources.

And vultures don't get tuberculosis.

Vultures have the most acidic gastric juices in the animal kingdom, and they have evolved to digest carrion and excrement without getting sick.

In fact, animals such as bearded vultures that live in the mountains have highly acidic gastric juices that can digest most of their bones in just 24 hours.

This adaptation allows smaller vultures to eat even feces-covered prey, while larger vultures take up to three days to digest the carrion.

The strong stomach acid also protects against live animals, and the pungent vomit smell keeps most predators away.

A steely stomach is essential for ridding African ecosystems of pathogens like cholera, anthrax and rabies.

Vultures can easily digest natural wastes, but man-made chemicals are a different story.

Diclofenac, a veterinary drug commonly used in India to treat cattle, is lethal to vultures.

In India, eating beef is forbidden for religious reasons, so vultures often eat carcasses of cattle.

Since the 1990s, India's vulture population has declined by 95 percent due to electrocution threats from pharmaceuticals, power towers and habitat loss.

Near Africa, poachers are killing vultures by deliberately poisoning their carcasses to hide their whereabouts and fend off the authorities.

One poisoned carcass can kill over 500 vultures

Today, more than 50 percent of vulture species are threatened with extinction.

Carcasses take three times longer to decompose in areas where vultures are dead.

Carcasses contaminate drinking water, and wild dogs and rats carry disease into human society.

The vulture crisis in Asia and Africa has led to an epidemic of rabies in India, where the infection kills about 20,000 people each year.

Fortunately, some regions have realized the importance of vultures.

Conservationists have successfully banned drugs like diclofenac, and other researchers are trying to breed vultures in captivity.

In some areas, vulture feeding stations are set up, and farmers safely dispose of drug-free livestock.

With help, vultures can continue to do their part to keep the planet healthy, and death to turn decay into life.

In the 8th century, the misty sea was teeming with Vikings.

They came from Scandinavia in Northern Europe and traveled in all directions.

Some have looted and settled in the British Isles and France;

Boasting stable navigation, advanced longships and formidable tactics, they have been sailing for over 300 years.

But compared to their power, the relics left behind are few.

Instead, stones, bark, and bone fragments serve as clues to deciphering their culture.

Many of the objects found in tombs, swamps, and ancient settlements were inscribed with Old Norse script written in runes.

Not only that, but the Vikings carved runes into their everyday items, jewelry, weapons, and even shoes.

Deciphering these sentences is not easy

The runes, made up of short lines, straight lines, and diagonal lines, make up an alphabet called the futhark, and people of all classes spoke and wrote the language in all dialects.

Instead of a standard spelling, they used their own runes and pronounced them with regional accents.

There are also inscriptions influenced by other cultures that interacted with the Vikings. For example, the runic inscription "Love conquers all" was originally written in Latin by the poet Virgil.

Many of the stones, like the mysterious Lake Stele, are inscribed in verse style, emphasizing the form of Old Norse poetry.

Even though modern runic scholars can read some of the runes, their meaning is unclear.

Even if there are still some unsolved mysteries, many inscriptions have been deciphered, some inscriptions about the deceased, others documenting the history of the region, some of them magical spells.

Carved into a rocky outcrop by a bridge, the Ramsund Rune Stone in Sweden was carved for travelers passing through the marshes.

This causeway was built at the request of a local woman named Sigrid.

She displayed her status and the power her family boasted by carving their names, and also associated herself and her family with mythical heroism by digging up illustrations of Sigurd (Siegfried) the dragonslayer.

In the Danish town of Jelling, there are two 10th-century stone monuments inscribed to two generations of a royal family.

The first was built by Old King Gorm in memory of his wife, Queen Thula, and the second was built after the death of Old King Gorm by their son Harald the Blue Tooth.

These stelae mark the power of the dynasties of the Viking Age and are among the oldest Danish historical documents.

These stones suggest that Denmark was the first great power of the Viking Age, as evidenced by the account that King Harald ruled over southern Norway and converted Denmark to Christianity.

The initials of Harald Blue Tooth King are now the logo of Bluetooth.

In the 10th century, Egil, a warrior and poet, was a celebrated carver of rune stones.

According to the poem, they carved runes into the poisoned horn and shattered the horn.

Another story says that a whalebone engraved with healing runes was placed under a girl's pillow to save her life.

Norse poetry tells of spells written in runes that were chanted to wish for calm seas, safe births, and victory in battle.

But the true meaning of the spell is not fully understood. Many of the inscriptions on swords, axes, and spears are illegible.

The Lindholm Island amulet is inscribed with what appear to be a spell, a riddle, or a religious message.

It's hard to pinpoint exactly when the Viking age ended, but by 1100 AD the expansion of power in the seas was largely over.

But throughout Scandinavia, people continued to speak various Old Norse languages, and in rural areas runes continued to be used until the 19th century.

Many rune stones still stand today in their original ruins.

The inscription on the Danish Gravendroop Stele, for millennia, utters the formidable proclamation: "Whoever harms this stone, or whoever drags it in the memory of others, is a wizard."

A woman in rags came out of the swamp accompanied by seven giant scorpions.

With her baby in her arms, she went to the nearest village to beg for food.

She approached a splendid mansion, but the landlady, seeing her filthy appearance and strange companion, slammed the door in front of the visitor.

So she continued down the road and came to a hut

The hut lady took pity on the stranger and gave her all she could: snacks and a bed of straw.

The guest was no ordinary beggar

She was Isis, the most powerful goddess in Egypt.

Isis killed her husband and even tried to kill her son Horus - trying to hide from her brother Seth.

Seth was also a powerful god who was looking for them.

To hide her true identity, Isis acted very carefully, unable to risk using force.

But someone helped her

Serket, goddess of poisonous creatures, sent seven vicious servants to protect Isis and her son.

When Isis and Horus were in a humble hut, the scorpion was angry that the rich woman had once blasphemed the goddess.

The scorpions combined their venom and gave it to Tephen, one of the seven.

Late at night, Tefen sneaked into the mansion.

Teffen slipped under the door and saw the young son of the landlady's mistress sleeping peacefully before stabbing him with a vicious stab.

Isis and the hut mistress were immediately awakened by a loud cry.

I looked through the hut door and saw a mother running down the road crying with her son in her arms.

Isis realized she was the woman who sent her back, and she understood what the scorpions had done.

Isis took the boy in her arms and began chanting a powerful spell, "Poison of Tephen, get out of the boy's body and fall to the ground!

Poison of Befen Do not circulate in your body any more Do not injure your body Get out of the boy's body and fall to the ground! ”

I am Isis, the great wizard and caster of spells.

Fall, Mested's Poison Don't be hasty, Mesteff's Poison

Don't go up Pettet and Mattet's Poison Stay away Mattet's Poison

With each name call, the scorpion's venom became less effective.

The child got up, and the mother sobbed with gratitude, lamented her previous ruthlessness, repented, and gave Isis all her possessions.

On the other hand, the woman who let Isis stay at her house watched in awe, but she didn't know the identity of the guest who had invited her into her house.

From that day onwards, people learned to make poultices to heal scorpion stings and cast magical spells like the goddesses.

New drug cuts heart attack risk by 40%

Shark attacks double

Drinking a liter of soda a day doubles your chances of getting cancer

These are all examples of relative risk, which is a common way of expressing risk in news articles and the like.

Risk assessment is a complex mix of statistical thinking and personal preferences.

It's this difference between relative risk and what's called absolute risk that trips a lot of people.

Risk is the likelihood of something bad happening

It can be expressed as a percentage. For example, heart attack affects 11 percent of men in their 60s and 70s. Risk can also be expressed as a percentage: 1 in 2 million divers on the west coast of Australia each year has a fatal shark accident.

These numbers represent the absolute risk of a heart attack or a shark accident in each group.

Change in risk can be expressed in relative or absolute numbers.

For example, say, "A 2009 study found that mammography reduced the number of breast cancer deaths from five to four per 1,000 women."

Absolute risk reduction is 0.1%

The relative risk reduction from 5 to 4 cancer deaths is 20%.

When people heard this higher number on the news, they overestimated the effectiveness of the test.

To help you see why the difference between the two representations is important, let's take the hypothetical example of a new drug that reduces the risk of heart attacks by 40 percent.

Suppose 10 people in a group of 1,000 people who aren't taking this new drug have a heart attack.

The absolute risk is 1% in 10 out of 1000 people.

In a similar group of 1,000 people taking the new drug, six will have a heart attack.

The new drug prevents heart attacks in 4 out of 10 people, so the relative risk reduction is 40 percent.

The absolute risk has only gone down from 1% to 0.6%, but a 40% relative risk reduction sounds much bigger.

If it can reduce heart attacks and other unwanted events even slightly, isn't it worth doing?

not necessarily

The problem is that choices that reduce some risks may increase other risks.

Let's say heart attack drugs cause cancer in 0.5% of patients.

The drug would prevent 4 out of 1,000 heart attacks, but it would also cause 5 new cancers.

The percentage reduction in the relative risk of heart attack is large, and the absolute risk of cancer seems small, but it creates a similar number of new cases.

The reality is that how you assess risk depends on your situation.

If a family member has a history of heart disease, even if the absolute risk reduction is small, the motivation to take drugs that reduce the risk of heart disease will be stronger.

Sometimes you have to decide between risks that aren't directly comparable.

For example, if a drug for heart disease were to increase risk not for cancer, but for a non-life-threatening problem like migraine, the assessment of whether the risk is worth taking would change.

In some cases, there is no right answer. Some people may think that even the slightest risk of being attacked by a shark would not bother them to swim in the ocean.

So, risk assessment is inherently difficult, and reporting on risk can be misleading, especially when absolute and relative numbers are mixed.

Knowing what those numbers mean can help you avoid confusion and make better risk assessments.

About 4:00 p.m. on July 20, 1969, minutes before humans landed on the surface of the moon.

As the astronauts were about to make their final descent, the emergency alarm lit up.

Something overloaded the computer and forced the spacecraft to abandon its landing.

On Earth, Margaret Hamilton watched with bated breath.

As she led the team that developed the pioneering software on board the spacecraft, she knew that the mission could not afford to go wrong.

But this last-minute emergency proved that the software was working as intended.

Born 33 years ago in Paoli, Indiana, Hamilton was always curious.

I majored in mathematics and philosophy in college and took a research job at the Massachusetts Institute of Technology to pay for graduate school.

It was there that I got my first exposure to computers and developed software to support research in a new field called "chaotic logic."

Then at MIT's Lincoln Laboratory, Hamilton developed software for America's first air defense system to detect enemy aircraft.

Then, when I heard that renowned engineer Charles Draper was looking for someone to work on sending humans to the moon, I immediately joined his team.

NASA asked Draper's group of more than 400 engineers to develop the first miniature digital flight computer, the Apollo Guidance Computer (AGC).

This device guides, steers, and controls the spacecraft according to input from the astronauts.

At a time when computers were unreliable and room-sized, AGC had to work flawlessly and fit within a cubic foot.

Draper split the lab into two teams, one for hardware design and one for software development.

Hamilton led the software development teams for the Command Module and the Lunar Module.

The term "software engineering" was coined by her for this crucial task.

Human lives were at stake, so every program had to be perfect.

Margaret's software needed to detect unexpected errors quickly and recover in real time.

But early software could only do things in a pre-determined order, so it was difficult to create such adaptable programs.

To solve this problem, Margaret designed an asynchronous program, where high-priority work preempts low-priority work.

Her team assigned every task a unique priority so that no matter what happened, each task would be executed in the right order and at the right time.

After finding this breakthrough, Margaret realized that the software could help astronauts work in an asynchronous environment.

We've designed a "priority indication" process that interrupts the astronauts during their normal scheduled tasks to alert them to emergencies.

This allowed the astronauts to communicate with control and determine the best course of action.

This was the first time flight software interacted directly with the pilot asynchronously.

It was this safety mechanism that alerted us just before we landed on the moon.

Buzz Aldrin soon realized his mistake: he had inadvertently turned on the rendezvous radar.

This radar was essential to getting us back to Earth, but it was using up precious computer resources.

Luckily, the Apollo guidance computer was able to handle such situations.

When overloaded, the software restarted the programs so that only the highest-priority tasks could be performed, including the program for landing.

And the priority screen gave the astronauts a choice: to land or to give up.

With no time to spare, the control room made a decision.

The successful landing of Apollo 11 was a result of the astronauts, the control room software and hardware all working as one integrated system.

Hamilton's contribution was essential to this feat of engineers and scientists inspired by President Kennedy's goal of putting man on the moon.

And her life-saving work wasn't just limited to Apollo 11, the software onboard the Apollo manned spacecraft was bug-free.

After Apollo's work, Hamilton founded a company that used a unique universal systems language to bring new developments in systems and software.

In 2003, NASA honored her with the largest award ever given to an individual by NASA.

And 47 years after Hamilton's software sent the first astronauts to the moon, she was awarded the Presidential Medal of Freedom for her work in changing the way we think about technology.

I'm in the business of teaching how to rebuild a nation after the war.

I will share my experience today

This is a photo of my family, taken in 1977, with four siblings, my mother and me.

we are cambodian

This photo was taken in Vietnam

How a Cambodian family moved to Vietnam in 1977

I've prepared a short video explaining the Khmer Rouge regime between 1975 and 1979.

April 17, 1975

The Communist Khmer Rouge took Phnom Penh to free the people from the Vietnam invasion and the US airstrikes.

Led by peasant Pol Pot, the Khmer Rouge migrated people to rural areas to create a communist utopia, much like Mao Zedong's Chinese Cultural Revolution.

The Khmer Rouge cut diplomatic ties with foreign countries

Four years later, the country is in dire straits.

In a country of just seven million people, one and a half million people were slaughtered by their own leaders, and the mass graves of Killing Fields turned into a pile of corpses.

What this video says is true. April 17th, 1975. We were living in Phnom Penh.

My parents were told to evacuate the Khmer Rouge because of the impending three-day US airstrikes.

This is a picture of the Khmer Rouge

Soldiers were young and mostly children

This is very common in modern warfare, because it's so easy to send a child to war.

The story of the US airstrikes isn't exactly a lie.

Between 1965 and 1973, more ammunition was dropped on Cambodia than was dropped on Hiroshima and Nagasaki, including the atomic bombs, than Japan dropped during World War II.

The Khmer Rouge didn't believe in the value of money.

Blow up a bank equivalent to the Federal Reserve Bank.

banned the use of coins

I don't think there's any precedent for money being abolished.

Money is the root of all evil, but the abolition of money didn't stop Cambodia's wickedness.

My family moved from Phnom Penh to Pursat province

This is the landscape of Pursat

It's one of the cleanest parts of Cambodia where rice is grown.

people were forced to work in the fields

my parents ended up in a concentration camp

Around that time, my mother heard from the head of the community that the Vietnamese were told to return to Vietnam.

My mother had Vietnamese friends when she was a child, so she could speak a little Vietnamese.

So my mother decided, despite the objections of her neighbors, to take the risk of claiming to be Vietnamese, something she did in order to survive.

They were fed a modern-day calorie-restricted diet, porridge with just a few grains of rice.

Around this time, my father became ill.

my father didn't speak vietnamese

After my father died in January 1976,

I was able to put this plan into action.

The Khmer Rouge moved us from Pursat to a place called Kochiev on the Vietnamese border.

There's an internment camp there, where they test the language of people they think are Vietnamese.

My mother's Vietnamese was so bad that our children were given Vietnamese names to make it look a little more authentic.

But the mother gave her son a girl's name and her daughter a boy's name.

I didn't know that until I met a Vietnamese woman, and she gave my mother a two-day intensive Vietnamese language course, and she prepared for the test.

If we fail, our family will be hanged, and if we pass, we can go to Vietnam.

Of course I'm here because my mother passed.

We settled in Hong Nhu on the Vietnamese side

went to chordok

This is a photo of the current Hongu

A rustic place in the Mekong Delta

this meant freedom for us

freedom from Khmer Rouge persecution

When the Khmer Rouge trials began last year, with the support of the United Nations, I decided to file a civil complaint with the court regarding my father's death in order to have a court record.

And last month, I heard that the allegation was formally received by the Khmer Rouge court.

This trial is historical justice and responsibility for the future, because sometimes Cambodia is a lawless land.

Five years ago, I went to Chau Doc with my mother.

At the time, I had just escaped from Cambodia, so I returned to a place that meant freedom to my mother, but also terrified me.

It's my pleasure to introduce you to my mother today.

my mother came

thanks Mom

(applause)

Four or five years ago, in Philadelphia, I think, I was sitting on stage with this bag.

And he took a molecular model out of his bag and said,

"I don't think you know much about this molecule, but your body knows it very well."

At the time, we thought our bodies hated this because we were immune to it, and it's called the alpha-gal epitope.

Porcine heart valves are so rich in these that they cannot be easily transplanted into humans.

Our bodies don't actually hate this.

i love this and i eat it

The cells of your immune system are always hungry.

When an antibody sticks to one of these things on a cell, it means, "This is food."

As I thought about this, I thought to myself, "Humans have an immune response to this strange molecule that we don't make ourselves, and we see similar phenomena in other animals and materials.

But you can't get rid of that reaction.Everyone who's tried a heart valve transplant knows that you can't get rid of this immune response.

How about using this? ”

What if we could attach this molecule to a pathogen that had just invaded our lungs?

It wouldn't require a five or six day immunization period, and would be able to trigger an existing immune response instantly, anything with this on it would immediately attack.

It's like being stopped by the police in Los Angeles for a traffic violation, and the cops drop a bag of marijuana in the back seat and arrest you for possession of marijuana.

It's a very fast and efficient way to get people out of town.

(Laughter) Even bacteria that don't make this antigen at all can be eliminated from the body if they can bind it well.

And some bacteria no longer have an efficient means of getting rid of them from the body.

effective antibiotics are running out

Because we are hitting the bottom all over the world

Maybe 50 years from now, we'll have streptococcal bacteria going around. We're not here, so it doesn't matter.

So I started working on this with a bunch of collaborators,

We tried to bind this epitope to a substance that attaches to a specific target site on bacteria that we don't like.

Now I'm like George Bush

I feel like declaring "Mission complete"

It's possible he's doing something stupid like Bush did back then.

Basically what I talked about there is working fine now.

This is how the immune cells kill the bacteria and start eating them.

On the slide, this molecule is represented as a small green triangle.

You can bind this to something called a DNA aptamer.

DNA aptamers bind specifically to specific targets of choice

So all you have to do is find something that's unique about bacteria that you don't like. Staphylococci, in particular, I hate because I lost a friend of mine, a professor, to death last year.

Antibiotics don't work, so I hate staphylococci.

So we're making aptamers that bind to this epitope.

It seeks out staphylococci that have invaded the body and alerts the immune system to follow.

This is the result. Can you see the dotted line at the top?

It shows mice infected with anthrax by fellow scientists at Brooks Air Force Base in Texas.

These mice have been treated with a drug that we prepared to target anthrax to the immune system.

All the mice on the top line survived, 100% survival rate.

After that, I survived another 14 days and ended up killing it on the 28th day to find out what the hell was going wrong.

why didn't you die?

Because the anthrax was gone from my body.

So we succeeded

(clap hands) Mission accomplished!

(applause)

For the sake of what I'm about to tell you, first of all, I have to prove that I'm qualified to talk about environmental issues.

As a boy, I made a firm commitment, as an American, to protect and conscientiously prevent the wasteful exploitation of this country's natural resources: air, soil, minerals, forests, water, and wildlife.

And I've kept that vow

At Stanford University, I majored in ecology and evolution.

In 1968, we started The Whole Earth Catalog, and there was a time when I was "Mr. Natural."

After that, I worked for California Governor Jerry Brown.

Brown's team and many of my friends looked at energy efficiency in California, and as a result, 30 years later, even with 80 percent per capita economic growth, it's still basically at the same level.

And we have the lowest greenhouse gas emissions of any state.

California is basically on par with Europe in this regard.

This year, "The Whole Earth Discipline" will be published as an addendum to The Whole Earth Catalog.

The biggest demographic shift right now is urbanization, which is happening at an incredible rate.

By mid-century, 80 percent of humanity will live in cities, and this is already happening, especially in developing countries.

The funny thing is that history always depends a lot on the size of a city.

Most megacities today are in the developing world, growing three times faster and nine times the size of the developed world.

It's qualitatively different.

You can see that it has influenced history

This is what the world looked like a thousand years ago

Even today, the distribution of urban power exists in a similar way to how it was 1,000 years ago.

This shows us that the rise of the West, though dramatic, is a thing of the past.

And when you look at the total numbers, it's pretty staggering: 1.3 million people move to urban areas every week for decades.

What's going on?

The answer is the ongoing depopulation of villages around the world.

The subsistence agriculture basically dries up.

Villagers come to cities looking for opportunities

this is the cause

I used to think villages were romantic, but I guess it's because I've never lived in a place like that.

(Laughter) The city, this is Kibera, a squatter settlement near Nairobi, has vibrancy and opportunity.

There's also the cash society, which the subsistence farming community couldn't participate in.

There are many aesthetic aspects in places like this.

is also lively

They're poor, but they're extremely urban and creative.

All together, the billion people who live in the squatters today form the urban world, the world they make up, from individuals to families to tribes to communities.

Fragile at first, gradually becoming solid

they even build their own infrastructure

Although it starts with stealing infrastructure,

Cable TV, water, stealing everything

And gradually the area becomes richer.

Slums don't necessarily reduce prosperity, but in functioning slums, they can also contribute to prosperity.

Mumbai, for example, is half slum, but accounts for one-sixth of India's GDP.

Slum infrastructure is very urban and dense.

These guys are worth it as a group

This is how it works

I think many people look at these poor people and think, "They're in bad shape. We need to improve the housing situation."

I was worried that "I have to connect the phone"

Now they even have their own phone service.

famine became mostly rural

what they care about

that's what we can help

They can also help the nations they belong to.

They themselves work together to solve problems.

When you go to a very dense slum area like this one in Mumbai,

You will see a road like the one on the right

I wonder "What is there?"

the answer is "everything"

This is better than a shopping mall

More densely packed and exchanged

It's a tremendous scale

The important thing is that these people are not living in poverty,

I mean, I'm busy trying to get out of poverty, I'm desperate to get out of poverty as soon as possible.

they help each other

You can do it by ignoring the law. It's an informal economy.

This informal economy is like dark energy in astrophysics: something huge that shouldn't exist.

We don't know how it works, but it's important to understand

What's more, in the informal economy, the gray economy, over time, crime will occur. Some people will become involved in the criminal community, while others will join the legal society.

It's our job to help make it easier for them to choose the legal world, otherwise they're heading towards the criminal world.

There are many activities here

In Dharavi, the slums not only provide slum services, but also services for the city.

One of the important activities is the "ad hoc school".

Parents bring money to hire local teachers, small private, informal schools.

Education is more accessible in urban areas, and that's going to change the world.

You can see interesting things that are unique to the city here.

It's happening here in Sao Paulo, where something hits another.

This is how cities create value by colliding things against each other.

In this case there is supply right next to demand

The maids, the gardeners, the security guards, on the left, live in the busiest part of town, and walk to work in the boring upscale neighborhoods.

proximity is great

Let's see what dense proximity looks like.

Connecting the city and the countryside keeps the good things about the countryside, and the way the city does things is unique.

This is what makes cities. (Applause) This is what makes cities green in the developing world.

As people flee the poverty of subsistence farmers and environmental disasters, they move to cities.

After they leave, the natural environment begins to return to its original state very quickly.

And those who remain in the village will also shift to produce that sells, sending the food they grow to the growing city market.

If you want to save rural areas, you can do it by having better roads, better cell phones, better power grids.

Humans have come to live on urban planets.

more than half do

That's a lot. There's a billion people living in informal settlements.

An additional 1 billion people are expected

More than one-sixth of the human race lives like this.

This greatly influences how we function.

For us environmentalists, perhaps the biggest advantage of urbanization is that it puts a stop to the population explosion.

When people started living in cities

reduce the number of children born suddenly

Even if you're not getting richer, just having that chance will lead you to have fewer, better-quality children, and your fertility rate will plummet.

Here's an interesting side effect: slides from Philip Longman.

I see what's going on

As there are more and more old people like me, there will be fewer and fewer babies.

And the living area will be divided

Here we see that the old people live in old towns the old way in the North.

And young people are doing new things in the brand new cities they've built in the South.

Which one is the most lively?

Let's change the theme and talk a little bit about the climate.

The climate news is unfortunately worsening at a greater scale and speed than we expected.

The climate is a very complex and nonlinear system, full of runaway positive feedbacks, hidden limits and irreversible tipping points.

Let's see some examples

Amazing things happen one after another, and those things are often bad.

The impact of this on humanity will mean a massive increase in climate refugees, which will happen in the coming decades, resulting in resource wars, chaos wars, like the conflicts in Sudan and Darfur.

This is what happens when drought hits

Drought reduces the resources needed for life, makes it impossible for people to sustain their livelihoods, and causes trouble.

Let's talk about electricity

Baseload power is the minimum amount of power required to sustain a city, this urban planet.

There are currently only three types of power generation available for baseload: coal and gas, and nuclear and hydro.

Of these, only nuclear power and hydropower are environmentally friendly.

Coal causes global warming

People keep burning it because it's so cheap, unless the government raises the price.

We can't use wind and solar power because we don't yet have a way to store it.

Hydroelectric power is nearing its limits, thermal power will only contribute to global warming, and nuclear power, the low-carbon resource that is currently in operation, may help prevent global warming.

And finally, if we could have good solar power plants in space, that would help, too.

Because this is what drives prosperity in developing countries, in rural areas and in cities.

Now let's compare coal and nuclear fuel waste.

If nuclear power were the only source of electricity for your lifetime, the total amount of fuel waste would be contained in one can of Coke.

Coal-fired power plants, on the other hand, a typical 1-gigawatt power plant burns 80 train cars of coal a day, 100 tons per car.

And it emits 18,000 tons of carbon dioxide into the air.

If you compare the amount of carbon dioxide a person emits in a lifetime by energy source, nuclear power is about the same as solar power and wind power, which is worse than solar power.

Is nuclear power competitive with coal?

Ask any Australian miner and you'll know

You'll find the answer here, not from your fellow environmentalists, but from people who are worried about the rise of nuclear power.

The good news is that the developing world, and generally the whole world, is building nuclear power plants or preparing to do so.

this is good for the atmosphere

and good for their prosperity

Now, I'm going to show you something interesting, the environmentalists' favorite thing called micropower.

I don't know if it's going to work, but it's a kind of local solar and wind power generation at the same time.

Nuclear microreactors, which are currently being developed, look even better.

In Russia, they're building floating reactors, and they're going to use them when the ice in northern Russia starts to melt.

We're starting to sell these sub-35 megawatt floating reactors to developing countries.

Here's Toshiba's early design

It's interesting to compare the 25 megawatt thing, which is the 25 million watt thing, to the standard Westinghouse, Arriva, 1.2 billion watts, 1.6 billion watts, and other standard giant iron hunks.

They're fairly small and highly adaptable.

This is the design of the Lawrence Livermore Institute in the United States

There's another one, also an American design, that was designed by the Los Alamos Research Institute and has been put to practical use.

Not only are these small, but they're also effective for non-diffusion.

These reactors are basically buried in the ground

invention is moving very fast

Microreactors will be very important in the future.

When it comes to nuclear non-proliferation, nuclear power has contributed more than any other activity to the abolition of nuclear weapons.

Maybe 10 percent or 20 percent of the power in this room comes from nuclear power.

Half of that fuel comes from dismantled Russian warheads, with the United States coming soon.

I hope that the GNEP (Global Nuclear Partnership) announced by the Bush administration will be actively promoted.

Happily, President Obama endorsed the idea of ​​a nuclear fuel bank in a speech in Prague a few weeks ago.

The final topic is genetically modified agricultural products, and from my biologist's point of view, there's no reason to argue about it.

Environmentalists take an irrational, unscientific, and very harmful position on this.

Despite their best efforts, genetically engineered crops have caused the most rapid agricultural revolution in history.

These are good things for the environment. They allow no-tillage farming, which leaves the soil in the ground, and it gets better and better as the years go by.

Reduces use of pesticides

And yields will go up, which will allow us to have smaller agricultural areas, which will result in more wild areas.

If you look at this outdated map from 2006, you can see how Africa at that time was under the influence of Greenpeace and Friends of the Earth, and it's finally starting to move away from that influence these days.

And finally, in Africa, biotechnology is making rapid progress.

this is a moral issue

The Nuffield Council on Bioethics has debated the issue twice, and has concluded that it is morally imperative to provide genetically engineered produce to the population as soon as possible.

Speaking of imperatives, geoengineering is now taboo, especially in government agencies. DARPA was talking about this a few weeks ago, and it's going to be inevitable, not this year, but soon, because the grim realization looms.

this is the list

Basically, the news will only get scarier.

These are the things that could happen: 35,000 lives endangered in a heatwave, and this happened some time ago.

Another cyclone is approaching Bangladesh.

There are also wars for water, and this happened on the Indus River.

And when these events keep happening, it makes us say, "What can we do?"

But with geoengineering comes little questions: Which agency makes the decisions, who's where, how much, and how much.

Everyone is under their influence, downwind of their manipulation.

But if we make it completely taboo, civilization may be lost.

But simply say, "Okay, China, you must be worried, take your pick.

You guys should do geoengineering your way, and we'll do the same."

This would be considered an act of war between the two countries.

very interesting diplomacy comes out

I think it's much more practical than people think.

This is one of the many geoengineering ideas that climatologists love.

It was inspired by the 1991 eruption of Mount Pinatubo, which generated sulfur dioxide and lowered the Earth's temperature by half a degree.

The next year, 1992, there was a lot of ice, and a lot of polar bears were born, called Pinatubo cubs.

Spraying sulfur dioxide into the stratosphere would cost about $1 billion a year.

But it's nothing compared to other energy solutions.

Another idea is to spray seawater on the clouds over the ocean to make them more reflective, which increases the global albedo.

What I'm going to show you next is something that's easy to do anywhere, and it's pretty good, and it mimics the methods of the ancient Amazonian Indians.

this is the current state of humanity

Nobel Prize-winning climatologist Paul Crutzen calls the current geological epoch "The Anthropocene," an age when humans rule the planet, and we cannot escape our responsibility.

In the opening pages of The Whole Earth Catalog, I wrote, "We are expected to be like gods, to manage things."

The Whole Earth Discipline begins with this: "We must act like God, and we must do it well."

thank you

(applause)

I have a studio in Berlin, let me operate it, it's in the snow, just last weekend.

We do a lot of experiments in the studio.

I think of my studio more like a laboratory.

I have meetings with scientists from time to time.

I have an academy which is part of the Fine Arts University in Berlin

We meet once a year, and that meeting is called "Life in Space."

"Life in space" is really not necessarily about "how" we do things, but about "why."

Can you look at the little cross in the center there with me?

don't worry about me just watch

You can see a yellow circle, and I'm going to do an afterimage experiment.

When that circle disappears, you'll see another color that's complementary.

When I say something, your eyes and your brain respond with something.

The whole idea of ​​sharing, the idea of ​​building reality by layering what I say and what you say, think of this as a movie.

Two years to date, I've been working on these films with a stipend from the Ministry of Science in Berlin, so we're making films together.

I don't think this movie is necessarily interesting

From a narrative point of view, it's clearly not funny at all.

But nevertheless, what the potential is -- just keep looking at it -- what the potential is is clearly moving the boundaries of who is the creator and who is the receiver.

Who are the consumers, if any? And who is responsible for what is seen?

I think there's a dimension of socialization about things like moving that boundary.

Who decides what is real?

This is the Tate Modern in London

The show is kind of about it

It was about the space I put the semicircular yellow disc in.

I also added mirrors to the ceiling and added some fog.

My idea was to make that space real.

The problem was that in such a large space, there was clearly a contradiction between what the body would accept and what the space was here.

So I had the hope that I could make the space real by putting in some natural elements, maybe some fog.

As a result, people begin to see themselves within this space.

Look at this Look at that girl

Of course you have to look through the museum's flawed camera, right? This is what modern art museums are all about.

But look at her face, she's looking at herself in the mirror to be sure.

"Oh my! My feet are there!"

she wasn't sure if she was actually looking at herself

And [the question is] how do we construct a relationship between our body and space?

How do you rebuild that relationship?

How do you know that being in space makes a difference?

You know what I said at the beginning about "why" instead of "how"?

"Why" really meant: "What is the cause and effect if I take a step?"

"What's wrong?"

"Does it matter if I am in that world?"

“Does it matter if the type of my behavior turns into a sense of responsibility?”

Is that what art is like?

I think so, obviously art is not just about decorating the world and making it look better or making it worse, in my opinion.

Art is clearly also about responsibility, like when I poured green dye here, among other places, into the rivers of Los Angeles, Stockholm, Norway, and Tokyo.

This green dye isn't environmentally dangerous, but it does look rather terrifying to look at.

And on the other hand, I also think it's very beautiful, somehow showing the turbulence of these central areas in these different parts of the world.

The "green river" is one of the activist's ideas, but it's not part of the exhibition. It's about showing people that in this city, as they walk by it, space has dimensions. Space has time.

And the water flows through the city with time

Water has the ability to make cities passable and materialize.

Transmissible means it makes the difference whether you do something or not.

It makes the difference whether you say

"I am part of this city and if I vote it will make a difference.

If I make my point, it makes a difference.”

I think that this whole idea of ​​the city, not as a photograph, is in a way something that has always been treated with art.

The idea that you can assess the relationship between what art actually means in photography and what it means in space. What's the difference?

the difference between thinking and doing

These are various experiments on that, let's take a quick look.

bottom right corner Iceland is my favorite place

These experiments transform into architectural models

they are ongoing experiments

One experiment I did for BMW was an attempt to build a car.

made of ice

In the center of the top row is a stackable crystal element that I wanted to make into a concert hall in Iceland.

A kind of running track or walkway on the roof of a museum in Denmark, made out of a circle of colored glass.

So the movement of your feet changes the color of your horizon.

[Summer two years ago] At the Serpentine Gallery in London's Hyde Park, there was a kind of pavilion of time, where you could only see the pavilion by moving.

This summer in New York, we're going to do this about falling water, and specifically about the time it takes for water to fall.

it's very simple and fundamental

I have walked a lot in the mountains of Iceland

Every time we reach a new valley Every time we encounter a new landscape There is a certain view

When you're standing still, the scenery doesn't always convey its size.

doesn't really tell you what you're looking at

When you start moving, the mountains start moving

The bigger the mountain in the distance, the smaller the movement

The smaller the mountain in front, the greater the movement

When you stop moving again, you suddenly think, "Is that canyon going to take an hour?

3 hours for a hike? Or does it take a whole day to see now? ”

If there's a waterfall there, right there on the horizon, you'll see it, and you'll say, "Oh, the water is falling so slowly."

And then you'll say, "Well, that's a really big waterfall in the distance."

If the waterfall is falling fast, it means it's a small nearby waterfall, because the speed of falling water is pretty much the same everywhere.

and your body somehow knows that

So that means waterfalls are a way of measuring space.

Of course, being an iconic city like New York somehow makes it an interest to play with the sense of space, and you could say that New York wants to be seen as big as possible.

Add in the measurements, and it's an interesting measurement, because the falling water suddenly gives you this feeling of, "Oh, Brooklyn is just about this size, which is the distance between Brooklyn and Manhattan. In this case, the Lower East River is about this size."

It wasn't necessarily just about putting nature in the city.

It was also about giving the city a sense of dimension.

why do we want to

I think it makes a difference whether your body feels part of the space rather than just having your body in front of the picture.

"Ahaha there's a picture and here I am, what's that about?"

Does a sense of causality exist?

If I have a sense of space If I feel space is real If I feel the presence of time If there is a dimension that I can call time I also feel that I can change space

It suddenly makes a difference in terms of making space accessible.

Some would say that this is all about community collectively.

that it's about being together

How do we create public spaces?

So what does the word "public" mean today?

And when you ask me, I think it represents a great point about parliamentary ideas, democracy and public space coming together and being each.

How do we create ideas that are both individual and collectively tolerant as two distinct things without pitting them against each other?

Of course, the world's political agenda is very intent on pitting the two against each other into different ideas that are exactly the norm.

This is why art and culture are so interesting in the times we live in. I think they have proven that they can create certain spaces that are sensitive to both individuality and collectiveness.

It's just about this causal consequence.

I'm talking about how we relate to what we think and what we do.

What is between thinking and doing?

I would say that right in the middle between thinking and doing is experience.

And experience isn't just a kind of casual entertainment.

experience is a responsibility

To have experience is to participate in the world

Participating in the world is actually sharing responsibility.

So in this sense, I think art has an incredible relevance to the world we're moving into, right now.

Thank you very much

(applause)

If you ask evolutionary biologists when humans became humans, some of them will say, "At some point, we started to stand on our own legs, we became bipeds, and we began to dominate nature."

Some scholars would argue that the immeasurably enlarged brain has led to much more complex cognitive processes.

Some scholars might argue that the development of language allowed us to evolve as a species.

Interestingly, all three phenomena are connected.

I don't know how or in what order, but it all stems from a change in the shape of the cervical vertebrae at the back of the neck, which changed the angle between the head and the body.

So they were able to stand upright, and the brain evolved in the back, so the larynx in primates was 7 centimeters long, but it grew from 11 to 17 centimeters.

This is the "Laryngeal Descent"

The larynx is where the voice comes from

In modern humans, the larynx had not yet descended when we were born as babies.

Occurs for the first time at about 3 months of age

As an analogy, each one of us here has followed the evolutionary path of the entire human race.

When it comes to a baby, when the fetus begins to grow inside its mother's womb, the first sensation that comes from the outside world — when it's only three months old and about the size of a shrimp — it's tactile sensation, which comes from the vibrations of the mother's voice.

As you can see, the human voice is very meaningful and important. Whether it's at the species level or at the societal level. It's a way of communicating and building bonds. At the individual and interpersonal level, we use our voices to communicate much more than words and data.

And our voice is indistinguishable from other people's impressions of ourselves.

It's the mask we wear in society.

But the relationship between us and our own voice is very unclear.

I rarely use my voice to myself, I use it in the form of "giving" to others.

Voice is the way to connect with people

You're using words to groom a monkey.

But what do you think of your voice?

Please answer by raising your hand Who doesn't like their recorded voice?

(Laughter) Thank you. In fact, most people say they don't like their voice recorded.

What do you mean

Let me explain in the next 10 minutes

I'm a researcher at the MIT Media Lab in the Opera of the Future lab, and my research looks at how people relate to their own voices and the voices of others.

I study what can be learned from listening to people's voices in a wide range of related fields, including neurology, biology, cognitive science, and even linguistics.

The tools and activities I'm developing in my lab can help you understand your own voice better and help you in your real life, whether it's to reduce your preconceived notions, improve your listening skills, create healthier relationships, or just gain a deeper understanding of yourself.

To do that, we need to think about all the facets of the voice.

As you learn more about voice, think about what it can be used for and what it means.

"Voice" is a very complex phenomenon

You have to work more than 100 different muscles all over your body at the same time.

And by listening to voices, we can also learn about changes that may be happening inside our bodies.

For example, listening for some very characteristic disturbances and non-linearities in the human voice can help us detect the very early stages of Parkinson's disease, which we can do over the phone.

Listening for shortness of breath in the voice can help detect heart disease.

We also know that changes in the tempo of pronouncing each word is a very clear sign of depression.

The human voice is also deeply linked to hormone levels.

A third person who listened to a woman's voice was able to guess exactly where she was in her menstrual cycle.

from auditory information only

And now technology is listening to us all the time, which is why Alexa on your Amazon Echo might be able to guess if you're pregnant before you even know it.

So... (Laughter) Consider the ethical issues.

Voice is also deeply connected to building relationships.

When people speak to different people, they speak differently to each other.

By analyzing snippets of your voice, you can tell whether you're talking to your mom, your brother, your friend, or your boss.

We can also predict the future by reading your "speech attitude."

It's how you consciously use your voice when you talk to someone.

The way you vocalize when you talk to your spouse can predict not only if you're going to get divorced, but when.

It means that there is much to be learned from the voice.

We have to start by understanding that we don't have just one voice.

I'm going to use the model of a mask to talk about the three voices that most of us all have.

Masks reflect certain personality traits.

Let's call it the "Outward Voice"

This is also the most classical way of thinking about the voice: it's a way of projecting one's self into the world.

The mechanics of this projection are well known.

When the diaphragm relaxes, it pushes air out of the lungs, causing the vocal cords to vibrate continuously and produce sound.

The vocal tract then modifies the sound by opening and closing the cavities in the mouth.

This system is the same for everyone

But each voice is very different.

That's because tiny differences in size, physiology, hormone levels, and so on can make tiny differences in your outward voice.

The human brain is very good at picking up on these subtle differences in the external voices of other people.

In my lab, we train machines to read these subtle differences.

We're using deep learning in real-time speaker identification systems to help raise awareness of how people are using the shared conversation space, for example, who is speaking and who is silent during a meeting, to increase collective intelligence.

The difficulty here is, first of all, that the human voice is not static.

I talked earlier about how your voice changes depending on who you're talking to, but your voice changes throughout your life as a whole.

At the beginning and end of this journey, male and female voices are very similar.

It's very difficult to tell the difference between a little girl's voice and a little boy's voice.

But between infancy and old age, the voice becomes a marker of shifting identities.

In general, male voices undergo significant changes during puberty.

And a woman's voice changes with each pregnancy, and it changes dramatically at menopause.

Everything you've talked about so far has been about your voice as people hear it.

So why are we so unfamiliar with our own voices?

Why is the voice I hear myself different from the voice I hear outside?

let's think

When you're wearing a mask, you can't see the mask

If you try to see it, what you see is the inside of the mask.

That's the "inner voice"

To understand the reason for the difference, let's first consider the mechanism by which we perceive an inward voice.

Because the inner voice follows a different filter path through the human body than the outer voice.

In order to perceive, it must first reach the ear.

Outward voices travel through the air, but inward voices travel through bones.

This is called "bone conduction".

Because of this, the inward voice resonates in the lower vocal register and is more musically harmonious than the outward voice.

Once the inward voice reaches the ear, it then reaches the inner ear.

A different mechanism works there.

It's a mechanical filter, a little compartment that tries to protect your inner ear every time you make a sound.

There is also a function to reduce the volume of what you can hear

The third filter is the biological filter.

An organ called the cochlea, which is part of the inner ear and processes sound, is made up of living cells.

These living cells respond differently depending on how often the sound is heard.

It is the effect of "habituation"

That's why, even though your voice is the most common sound you hear in your life, you actually hear less of it than any other sound.

The fourth and final filter is

a neurological filter

A recent neurological finding is that when you open your mouth to make a sound, your own auditory cortex shuts down.

So even though you can hear your own voice, your brain doesn't actually hear it.

Well, it might make sense, evolutionarily, because cognitively, you know how your voice sounds, so maybe you don't need to spend your energy analyzing that signal.

This is called escort firing, and it happens with each movement of the body.

An escort firing is exactly a replication of the motor commands that the brain emits.

It doesn't make a move, but instead what happens next is sent to other areas of the brain to communicate something.

Speaking of voices, escort firing has another name.

It is the “inner voice” (voice of the heart).

So let's summarize

People have an "outward voice" as a mask, and inside the mask, there is an "inward voice" and an "inner voice."

An inner voice is like someone manipulating the strings of a puppet.

You hear your inner voice, for example, when you're reading a sentence silently, or when you're rehearsing an important story in your head.

Sometimes it's hard to cut off the inner voice, and it's very hard to look at a sentence written in your native language and prevent the inner voice from reading it.

Even if I try to stop the silly song that's playing in my head, it's my inner voice that won't stop

(Laughter) Some people say that their inner voice can't help themselves.

In the case of schizophrenics, they have auditory hallucinations.

I can't distinguish between my inner voice and the voice that comes from outside.

In my lab, we're developing a small device that can help these people distinguish between voices that are coming from within and voices that are coming from outside.

Inner voices can also be thought of as voices heard in dreams.

Inner voices come in many forms.

In dreams, you are unlocking the potential of your inner voice.

So that's another study in my lab that's trying to access the inner voices we hear in our dreams.

You can't always control your inner voice, but you can always get involved, through your inner dialogue.

Moreover, the connection that exists between thought and action is thought to be the inner voice.

Now, I hope this gives you a better understanding of all the voices we have and the role they play inside and outside of us. Voices are the most important determinants of what makes us human and how we interact with the world.

thank you

(applause)

I'm an artist and an engineer

I've been thinking a lot lately about how technology mediates our perceptions.

It's done so cleverly that it's completely invisible.

Technology is designed to shape our perception of reality under the guise of being an actual experience of the real world.

As a result, we're completely unaware of, or even aware of, the existence of such technologies.

Let's take the glasses that I wear all the time.

Glasses are part of the way I experience my surroundings on a daily basis.

Even though my glasses are always cropping out reality, I hardly notice it.

The technology I'm talking about is designed to work in the same way, transforming the way we see and think, but without our being aware of it.

The only time I'm conscious of my glasses is when something happens that forces me to focus on them, like when my glasses get dirty or my prescription changes.

So I asked myself, "What can I do as an artist? How can we give the same attention to the digital media, the press, the social media, the advertising, the search engines, the ones that shape our reality?"

So I built a variety of perceptual devices that challenge and question the way we see the world.

For example, many of us these days have a kind of allergic reaction to opinions that differ from our own.

You may not even be aware that you have a so-called "psychological allergy."

So we created a helmet that artificially causes an allergy to the red color.

When worn, it mimics hyperesthesia and makes red objects appear larger.

There are two modes, nocebo and placebo.

In nocebo mode, it creates a sensory experience of hypersensitivity.

Every time you see red, the red looks bigger.

It's analogous to the amplifying effect of social media, where when you see something you don't like, your anger gets amplified as you join with people who think like you and exchange messages and memes.

Sometimes even the tiniest of arguments are amplified and bloated into a maddening scale.

Maybe it's because we live in the politics of anger.

Placebo mode is an artificial treatment for these allergies.

Every time the red color hits the eye, the red color appears to shrink.

Like digital media, it's just a stopgap

When I come across people who disagree with me, I unfollow them and don't see them at all.

You treat allergies by avoiding the target.

But this way of intentionally ignoring dissenting voices makes human society overly fragmented and more fragmented.

The device inside this helmet reconstructs reality and projects it to our eyes through a series of lenses that create augmented reality.

I picked red because it's intense and emotive, but it's also highly visible and political.

What if you looked at the power map of the last US presidential election through this helmet?

(Laughter) It doesn't really matter if you're Republican or Democrat, because our perceptions are altered by agents.

both sides have allergies

In digital media, what we see every day is often mediated and very well done.

If we are not conscious of this, we remain vulnerable to many psychological allergies.

Perception is not only part of our identity, but also part of the value chain in digital media.

Our sights are packed with so much information that our perceptions have become commodities with real estate value.

Design is used to exploit unconscious bias, and algorithms love content that reaffirms their opinions, so every inch of your vision is eroded to sell ads.

Like this, when you see a little red dot appear on your notification screen, it expands and fills your head.

As I started thinking about how to put a little smudge on my glasses and how to change the lenses of my glasses, I came up with another project.

What I'm going to show you is a concept, not a real product.

It's a web browser plug-in that lets you notice things you wouldn't normally notice.

Like Helmet earlier, this plugin reconstructs reality, but this time it reconstructs digital media itself.

Bring out the hidden voices that have been sifted out

What you need to focus on becomes more and more active, and in this example, an article about gender bias emerges from among the cats.

(Laughter) This plug-in was able to dilute the events amplified by the algorithms.

If there are many people shouting the same opinion like this comment section,

This plugin makes such comments terribly small

(Laughter) The amount of pixels you see on your screen is proportional to the actual value you're contributing to this thread.

(Laughter) (Applause) This plugin also shows the real estate value of our vision, telling us how commoditized our perceptions are.

Unlike ad blockers, it shows you how much you could earn for every ad you see on the web.

(Laughter) We live on a battlefield between two realities, the real and the commercialized reality, and the next version of this plugin is going to crush the commercialized reality and let us see the bare facts.

(Laughter) (Applause) You can imagine the many ways this idea could go.

We know it's going to be a high risk to actually bring this technology to market.

I built this plugin with good intentions to train perception and eliminate bias.

But a similar approach can be abused, like forcing citizens to install plugins like this to manipulate public opinion.

It's not easy to make it fair and personal, and without that effort, you're just adding more intervening things.