

Changing climate the ultimate crisis for our species

David Suzuki

The Science Show

Radio National (Australia)

24 December 2016

Robyn Williams:

The Science Show – Hello! I am Robyn Williams. Today for Christmas we look back two voices both from North America, from two men whose families came from outside America, David Suzuki and President Obama. The President has barely a month to go before stepping down. This is what he said about science when he first took office.

Male Speaker 1:

(Foreign language)

On behalf of the Gaia [ph] people, I welcome all the Gaia country and Lewis Ambassador of the Adelaide Plains People, my brothers and my sisters, let's walk together to harmony. When I was a young lad, my uncle said to me, "Whenever you need a helping hand son, you'll find one at the end of your arm."

Robyn Williams:

So, come on up old man! Hey! I haven't said who is here. First of all thanks to University of South Australia for putting on this brilliant planet talks. Three questions – well, the first question is, have you heard of "Venki" Ramakrishnan? Well, think about him. He is the new President of The Royal Society of London, one of the most powerful and important scientific leaders in the world. He went to only primary school. Kaboom, two of the happiest years of his life he says. First Indian to be in such an amazing position.

The second question which I have, David Suzuki will answer is what you make it ___ dude Mick Jagger 40 years ago, smiling you see. He wants a DNA analysis, so he speaks to a geneticist and what David Suzuki did 40 years ago last October with ___ Quirks and Quarks which is a sister program to *The Science Show*. My name is Robyn Williams, I have done it since way back then but he went ___ about doing a lot of things like founding the David Suzuki Foundation where I talked to him (0:05:00) last year and the foundation is full of incredibly bright, charismatic people, young people doing wonderful work around the world which is perhaps what David is going to talk about as well. Meet David Suzuki.

David Suzuki:

Thank you Robyn, thank you for that, it is so great to see you and still up and running, and kicking ass. Good for you. It is always such a joy to return to Australia but especially to Adelaide. I first want to say, it is a privilege to stand on the traditional land of the Gaia people who lived and cared for it over thousands of years and I am so overjoyed that uncle Lewis O'Brien is here to welcome us this day.

Uncle Lewis conferred on me one of the greatest honors I have received which was a name – a Gaia name and I have carried it with a tremendous sense of honor but also responsibility to live up to that name, so thank you Lewis O'Brien. I was also delighted to visit yesterday the Suzuki Forest, you know about that Robin? I don't know, somewhere up in the hills, I don't know where the heck we went, but it was degraded land that my grand when he was Premier set aside to be restored and designated as a "Forest" in the future. I was thrilled to see that it is flourishing and learned that it is right next to Schwarzenegger Forest. So, I am sure the Terminator is going to be looking at after my little trees too.

These days I always begin my talks by saying that I am not here to speak on behalf of any group or organization. I don't speak for any political party or corporation. I am here speaking as a grandfather and as an elder, and I believe this is the most important part of my life. You see, I don't have to play games anymore to get a job or promotion, or a raise. I can speak the truth from my heart. If that offends people, that is their problem, not mine.

Elders have that credibility I believe because we are no longer driven by the need for more money or power, or celebrity, or sex. While there are a few elders, they need help, they have got problems. But most elders are like me, those are long past in our lives, so we can speak with a great deal of credibility. And elders have something more the grouping society has. We have lived an entire life, we have learned a lot. We have made mistakes, we have suffered failures, we have had a few successes. Those are hard learnt life lessons and I believe it's our job, it's our responsibility now to troll through that life of experience for those nuggets that are of lessons that are worth passing on to the generations to come. So, I urge my fellow elders everywhere, "Get the hell off the golf course and the couch, and get on with the most important part of your life."

Now, before I begin I must admit that ever since I arrived in Australia, last Sunday, I have

been peppered by the press with questions about nuclear waste. I have only been in Australia for five days for heaven sakes, I am supposed to tell you what to do of nuclear waste. My family has only been in Canada for 120 years and Canada as a country has only existed for 150 years. I have lived all my life and my culture, has never had to worry about something like sustainability.

The only group with any incredibility on sustainability over thousands of years are there indigenous people everywhere. So, to South Australians, to all Australians, I say if you were to deal seriously with the issue of nuclear waste, let the Kurna and the other indigenous groups make the decisions that the only ones that provide the view point and the perspective to do it.

You see, we stand at a unique moment in all of the history of life on this planet. That is four billion years of life. 99.9999% of all species that have ever existed in the four billion years are extinct. Extinction is the norm; but for the first time in those four billion years, one species that created the conditions for its own demise, that is us, recognizes the possibility of extinction and has the tools to avoid a catastrophic end. You know what we face human activity, burning fossil fuels (0:10:00) in machines, agricultural practices especially grazing cattle, warfare are altering the chemistry of the atmosphere that in turn is trapping heat on the planet.

I first realized that we have to take climate change seriously. When I came to your country in 1988, I was a guest in Melbourne of the commission for the future, and at that time scientist showed me the evidence that they were gathering in climatology and I went back to Canada saying, "This is no longer a slow-motion catastrophe, we got to get going on it right away."

Your leading scientist and the reality of life drought, massive fires, reef degradation show that you have a serious problem, and that there are also solutions here for clean energy in abundance. Australia should be leading the world and I must say I have been so proud of South Australia that Mike said – Mike Ram said in motion "A past towards the future of clean energy, you had 40% renewable energy, now on the way to 50% and possibly 60%. South Australians should be boasting to the world about what you are doing here. I certainly intend to when I go home."

The failure of the federal governments of Canada and Australia, the act in the face of the evidence and the enormous alternative opportunities to climate change is why many scientists and experts now declare the futility of simply eliminating the use of fossil fuels and coal for megaprojects like geo engineering and massive implementation of nuclear energy. It is crazy, but that is... we are at a desperate position.

Australia with vast deserts and sunlight Canadians would kill for, and you can't develop alternative solutions? Disgraceful. Japan – the most earthquake prone country on the planet brings nuclear plants to what? To boil water. This in a country that has boiling water in over 6000 hot springs. We boast as a species that were intelligent. In Canada first nations, environmentalists, climatologists have now been labeled the forces of 'no' and eco-terrorists.

Of course, climate is just one of the issues, there is a whole suite of ecological issues that are confronting us now. Oceans cover 70% of the planet surface and they are a mess; overfishing, islands of plastic, dead zones from agricultural runoff, sea level rise by warming and expansion of water, and acidification from the dissolving of carbon dioxide in the ocean as carbonic acid. 80% of the forest on the land are gone. Hydrologic cycles are changing. We dread the disappearance of the monsoon reliability. Species are going extinct at a rate unparalleled since the last great extinction episode 65 million years ago.

We, toxic pollutants, now had been poured into air, water, and soil. I am sorry, however well you live, everyone of us here carries dozens of toxic chemicals because of what we have done to the rest of the planet. We are a species out of control. We are expanding our ecological footprint. The amount of air, water, and land we required to live as we do is simply expanding.

Climate change is just the most obviously pressing issue we confront now, but I have to say it has taken a hell of a lot of time before it has come to the level that it is at now. The first international conference on climate was held in Toronto in 1988 and at that time, the scientists were convinced the evidence was in and were so alarmed by what they were seeing, that they issued a call for a 20% reduction in greenhouse gas emissions in 15 years. That was the call, but we didn't take it seriously and the record of political and corporate denial and monkeywrenching is why many scientists and experts despair and declare now openly that it is too late to turn things around.

When Sir Martin Rees, one of the eminent astronomers in Britain was asked, "What are the chances there will be in human beings left by the year 2100?" His answer is set to chill up my spine, 50-50. James Lovelock the inventor the concept of Gaia has written a book that declares 90% of humanity will be gone (0:15:00) by the end of the century and you all know Australia's eco-philosopher Clive Hamilton has written a book *Requiem for a Species* and guess for what species it is a requiem for. It is for us and now an American ecologist Guy McPherson is declaring "Human beings will be gone within decades in this century."

My response to all of that is, "Why are you saying that it is too late?" There is no point. Surely, we are going to struggle and fight right to the end. Yes, it is urgent and that is the message I get, but to say, "No, it is too late," that is ridiculous, that is simply too soul destroying to hear that. But I think that the urgency is what we have to listen to. We have very little time to act. So, I would suggest in your country and mine, do not offer your vote to a single candidate at any level of government unless they declare the climate changes an issue that they will devote a great deal of their lives to. And it mustn't be a political football, it is not just the green party that will say this. We must demand it out to every candidate for political office.

The signs are depressing, it is true but I cling to hope and that hope is based on more than just the ____, "Don't worry good things will happen." My hope is based on the faith one that love and please don't think I have suddenly become a dippy hippy. I believe that love is the driving force of our species and it is love of our children and grandchildren that must override all of the economic, political, and social pressures. But more than that, we ____ might have say it is too late, and then we will give you an example of why I say that.

The most prized species of salmon in the world is called the Sockeye salmon. It is the salmon with the bright red flesh and lots of fat in it. It tastes great, especially when it's raw. Sockeye salmon are the biggest run in the world is in British Columbia in the Fraser river, and ever since pre-contact levels of Sockeye salmon, the runs were between 100 and 120 million fish each year, but after contact with ____ rivers and had landslides that blocked the Fraser, we got a catastrophic decline; but the Fraser river in British Columbia has the largest Sockeye run in the world and we would like to get 30 to 35 million animals coming back. In 2009, we barely got a million Sockeye returning to the Fraser. Now remember, looking entire, my wife is saying, "That's it. They saw there just isn't the biomass to get them to those spawning grounds. Their toast has gone."

One year later in 2010, we got the biggest run of Sockeye salmon in 100 years. I used that story not to show how stupid I am. Nobody knows what the hell happened, but nature shocked us with surprise and I believe nature has got a lot more surprises up her sleeve. We just have to pull back and give her room, and she will be far more generous than we deserve. That's my hope.

I was in the United States, I studied there for eight years, getting an education in the 1950s that we couldn't get in Canada at that time. I was starting the last year in college in Massachusetts in 1957, and on October 4th, the Soviet Union shocked the world by announcing they had launched Sputnik. That was really a frightening time and Soviet Union was a very powerful force at that time and every hour and a half, we could hear the beep beep of Sputnik summing its nose at us. The Americans immediately tried to launch their own satellites and everyone blew up on the launch pad.

Meanwhile the Russians launched the first animal in space, the dog Laika, the first man Yuri Gagarin, the first team of cosmonauts, the first space rock, the first woman Valentina Tereshkova. Americans didn't flinch, they didn't say, "Oh my God, they are so far ahead, we can't afford to catch up." They said, "We got to catch these guys," and it was a glorious time. Here I was a Canadian living in the States. All you have to do is say, "I like science," and they threw money at us. It was glorious.

In 1961, President Kennedy announced that Americans would get humans to the moon and back within a decade. When he announced his plan, (0:20:00) he didn't have a clue how the hell he was going to do it. He just knew that they had to get to the moon and beat the Russians. And look what happened, not only are they the only country to land people on the moon and get them back, but all of the unexpected benefits that have come out of making that commitment, even today 60 years later when Nobel prizes are announced, believe me, Americans top a huge number of those science Nobel prizes. Why? Because in 1958 Americans said, "We got to beat the Russians in the space program."

Every year NASA publishes a magazine called 'Spinoff.' Hundreds of unanticipated Spinoffs, they have come out of the space program from laptop computers to GPS, to cellphones, to space blankets, and even thermometers, hundreds of these things have come simply by seizing the moment and the challenge, and saying, "We have got to beat it," and I believe

that is the moment we are at here. Climate change represents the ultimate crisis for our species that becomes a huge opportunity if we seize the moment and commit ourselves to ____.

I returned to Canada in 1962 and I had studied four years in the States. I was a hotshot geneticist. I was going to make my name as a big scientist and I got completely sidetracked by a woman, not that she is too young for that, but this has happened all through my life, usually with disastrous consequences, but in this case I have been ever grateful to her and the great regret I have is that I never met her. But in 1962, a woman named Rachel Carson published a book called 'Silent Spring' and it changed my life.

We have to remember in 1962, there wasn't a department of the environment in any government on earth. The word environment didn't mean in 1962 what it has come to mean today. The discovery of the DDT kills insects by Paul Miller won a Nobel Prize for him in 1947. We thought DDT pesticides were fantastic until Rachel Carson's book came out and for me as a scientist what stunned me was the realization that science can be very powerful; but we don't know and I have to anticipate all of the unknown things in nature that we can't expect to be affected.

When DDT began to be used on a wide scale, it was only when eagles in the United States began to disappear, that scientist tracked it down and discovered a phenomenon called 'biomagnification.' Up the food chain, you concentrate DDT, hundreds of thousands of times until you get to the shell glands of birds or the breasts of women. How could we have managed DDT properly when we only discovered biomagnification after eagles began to disappear, and that has happened over and over again.

When CFCs began to be used on a wide scale, we had no idea, high up in the atmosphere ultraviolet light would break chlorine free radicals off CFC that would scavenge the ozone. When nuclear bombs were dropped over Japan, we didn't know there is a phenomenon called 'radioactive fallout,' and now we have such conceit, we want a genetically engineered plants and animals for our use. We want to indeed engineer the planets with geoengineering to deal with the issue of climate change. I believe it is a form of madness to have the ____ to think that we are capable of doing that.

For me, ____ is a scientist, the most profound message I got from Silent Spring was that in

nature everything is connected to everything else, and I realized scientists look at things in bits and pieces all on the assumption if we look at enough bits and pieces we will fit them back together to get a picture of the whole system. But we spray on the chemicals on farmer's fields to kill insects and end up discovering that fish and birds, and human beings are affected. Everything is connected and we can't determine all of those interconnections through science.

I just want to tell you a story that one of the programs that the David Suzuki Foundation undertook that I am so proud about was to try to illustrate this issue of interconnectivity. One of the rarest ecosystems on the planet is called 'The Temperate Rainforest,' and in North America we have the largest Temperate Rainforest extending from Alaska down to the Northern part of California, and it starts thin band pinched (0:25:00) between the Pacific ocean and the coastal mountain range. It has the highest biomass, the weight of living things of any ecosystem on earth, and the reason for that is we have got big trees.

But the dilemma for scientist was, "How can you have such big trees when the soil is nitrogen deficient?" It rains a lot, that's why it is a rainforest. That rain washes nutrients but especially nitrogen out of the soil. So, it was a real paradox for us, you have got these big trees and you got not enough nitrogen in the soil to raise them. And it turned out the solution was the salmon. The Salmon are born in thousands of rivers and creeks, all up and down through the temperate rainforest; and they are born in freshwater, they go out to see... there are five species of salmon that live depending on the species two to five years at sea and then they come back to spawn in the original rivers of waters where they were born.

Now, it turns out that almost all of the nitrogen you find on land is the normal isotope of nitrogen called 'nitrogen-14,' but in the oceans there is a very large proportion. Well, they are small, but still very significant proportion of the nitrogen in the oceans is nitrogen-15. It is a slightly heavier atom isotope that we can detect the difference between N-15 and N-14. So, the salmon go to sea, for two to five years, they load up in nitrogen-15, and then they return to the spawning rivers and creeks by tens of millions up and down the coast.

So, they are loaded with nitrogen now and everyone celebrates. If you have ever gone to a spawning experience on the coast, you know the birds and the seals, and the whales everybody is making noise because now this massive creatures is coming back. And they get to the river and the major predators of the salmon are eagles, bears, and wolves. So,

they will eat the salmon as they are coming up to spawn, and then of course they poop and pee nitrogen-15 loaded urine and feces throughout the forest. So, they are literally fertilizing the forest.

Now, the bears are normally solitary animals, but during the salmon season they will fish in the same pool with literally dozens of others. But when they grab a salmon, they take off into the forest up to 150 meters on either side of the river because they want to eat it by themselves. I mean I understand that, they only eat the best parts which is you all know; the brains, the belly, and the eggs, and they then dump the carcasses. Lots more, they go back for another one. On average, a bear will take about 600 salmon in a season.

So, they are spreading the carcasses again through the forest, the carcasses left or eaten by ravens and salamanders and slugs, but the major exploiters of the carcass are flies. So, flies lay their eggs within a few days that carcass is a seeding mass of maggots, loading up with nitrogen-15 from the salmon, dropped to the forest for over winter and in the spring, flies hatch by the trillions at the very time the birds from South America are coming through on their way to the nesting grounds in the Arctic. So, you see those birds have been genetically programmed to come through at the very time those salmon through the flies are feeding them on their way to the artic.

If the salmon are not taken out of the river and sinked to the bottom, within a week or so they are covered with a thick mat of fungus and bacteria, and the fungus and bacteria are eaten by ___ and insects from other invertebrates. So, when the baby salmon emerge from the gravel four months later, the rivers are filled with nitrogen-15 containing invertebrates, so that the salmon can feast on their way down to the ocean. So, when dying the salmon prepare a feast for their offspring. And then what we founded was scientist to go in and actually take the cores of trees in salmon bearing areas and non-salmon bearing areas, and we showed that when we pull out the core and look at the fat rings, they are loaded with nitrogen-15. And the skinny rings when they are hardly grown, you find very little nitrogen-15. So, the salmon are literally feeding the forest with their carcasses.

So, it's a magnificent story of the interconnection of the North and Southern hemisphere, and the oceans and land and the air. Now, modern humans come along, all those indigenous people they don't know anything. We are going to manage these resources and so we say, Wow! We have got all these ____, that's the ___ of fisheries in oceans for the

commercial fishery. Oh, but then all those indigenous people, that (0:30:00) is the Ministry of ___ affairs or what about the sports fisherman. Well, that's the department of tourism. So, we divide the salmon into three areas.

Now the trees, that is the Minister of Forests and the Rivers, well, that is the Minister of Energy and the Minister of Agriculture, and the Minister of Urban Affairs. And then we have all the rocks and the mountains, that is the Minister of Mining. And oh yes, what about the eagles, the wolves and bears, that the ministry of the environment. Now, let's manage everything. I mean, it is absolutely absurd because the way we look at the world has shattered it into pieces that have no connection to each other, and we ensure we will never manage those incredible systems.

So, that was Rachel Carson's great contribution to me at least, was that everything is interconnected. Impelled by Rachel Carson's book, I joined millions of people around the world in what we now see was the modern environmental movement. And the action activity was enormous. In only ten years, we got the United Nations forming UNEP – The United Nation Environment Program, calling its first international conference on the environment in Stockholm and we began to get committees on the environment at every level of government, from domestic, municipal, to the provincial, to the national level. And we got laws to protect air, we got laws to protect water, endangered species, and millions of hectares of land were set aside as parks and reserves.

In British Columbia, ___ and I were part of that huge movement and we celebrated successes that we have been involved in as well in our areas. There was a proposal to build a dam at Site C on the Peace River, and we stopped it. Another proposal ___ was very active in raising money to stop a dam to be built at ___ and the Xingu river in Brazil and we stopped that. We stopped the American proposal to bring all supertankers off the North Slopes of Alaska through British Columbia waters to be refined in Seattle. We stopped drilling proposals in the artic and in Palk Strait.

Those are great victories, but now 30 to 35 years later guess what? We are fighting the same battles all over again. What we thought were victories, were not victories, and as environmentalists we failed fundamentally to use those battles as a means of informing people and educating people to see our relationship with the world in a different way. We have to shift the paradigm.

Years ago, I visited a small village in the Andes Mountains in Brazil and I learned the children in the village are taught that that mountain is an "Apu" underlying what Apu means God. And as long as that Apu casts its shadow on their village, it will determine the destiny of every one in that village. Now imagine how those kids when they grow up will treat that mountain. Compared to a Canadian kid growing up in the Rockies who is taught all the lives, "those mountains are full of gold and silver."

You see the way we see the world and our place in it, shapes and determines the way we will act towards it. We humans are predators, we have to eat plants and animals in order to live. We alter ecosystems in order to serve our needs thinking of the burning program that you have with your indigenous people in Australia. We modify habitats, so that we can survive in them. But the way that we do it and the sense of values that we hold determine how we are going to actually behave.

When a forest is a sacred golf, when ___ and pulp will be taken with great reverence, when the river is the circulatory system of the land, we will extract energy, fresh water and fish very carefully. When soil is seen as a complex community of life, we will no longer treat it just as dirt. When another species is our biological keen, sharing with us thousands of genes identical to each other, then it seems to me we treat our keen with greater gratitude and love. When a house is our home, that is very different from a piece of real estate or a starter house, or a teardown. When the planet is our mother, then who would treat our biological mother (0:35:00) the way we treat the earth. The way we see the world, shapes and constrains, the way that we act towards it.

Three years ago, I received a call – you know, that the big battle in Canada right now is over the future of the tar sands in Alberta. Three years ago, I got a call from the CEO of one of the largest companies in the Alberta tar sands. I was shocked, but he said, "Would it be possible for me to come and talk to." I said, "Absolutely, I would be thrilled." I said, "I am not in the fighting." I am no longer fighting because we can't afford losers. We have all got to be winners.

So, he came down to my office the next morning and he came to the door, and I thanked him profusely. I told him what an honor it was to have him come to me. And I said, "But please do me one favor before you walk in that door, please leave your identity as a CEO of

an oil company outside the door. I want to meet you as a human being to human being, because I don't want to talk about the tar sands or its future. I don't want to talk about the economy until you and I as human beings agree on one of the most fundamental needs are, ___ human beings on the planet. We have got to start..."

I will tell you he was not very happy about leaving his identity but to his credit, he walked through the door. So, I took him to my office, I sat him down. I said, "I know how difficult this is for you, but let me tell you where I am starting from." I said, "Our world, you and I live in a world that is defined, that is shaped and constrained by laws of nature. Those are laws that we can't do anything about. We have to live within them."

You can see right away I was in danger of losing him, but I said, "You know in physics, they tell us you can't build a rocket that will travel faster than the speed of light." And nobody denies that or gets mad about it, that's a limit on what we can do. The laws of gravity tell us you can't build an anti-gravity machine here on earth. We accept that. And the first and second laws of thermodynamics tell us you can't build a machine, a perpetual motion machine. And except there were few ____, most of us agree that that is true and we live with that.

In chemistry it's the same. The atomic properties of the elements, the diffusion constants and reaction rates all inform us of the kind of the actions that we can perform on the test tube and the types of molecules that we can or cannot synthesize, and we live with that. Those are dictated by nature that chemistry tells us. And in biology, it's the same. Every species has a maximum number that can live indefinitely that are defined by the carrying capacity of ecosystems or habitats. And you exceed that number, the ability of an ecosystem or habitat to support more and that population will crash.

While humans, because of our brains, we are not confined to a specific habitat or ecosystem. We can leave from the arctic to the deserts, to Temperate and tropical rain forests, the wetlands to mountains. I mean, we are a very adaptive organism. But our home is still the biosphere, design of air, water, and land where all life exists. That is our home and there it is fine. It can grow, so guess what? It has a carrying capacity for our species. Of course, number of our species that can be supported is based on two things, that is our numbers but also our consumption per capita. When you add that together Australia, Canada, the U.S., Europe are very overpopulated, because of our high consumption. But more scientists

I talk to agree, we have exceeded the carrying capacity of the biosphere for our species.

The people get mad at me when I say that. "How dare you say that? Look at the beautiful city of Adelaide, look how we are living. We are healthier, we are happier. Yes, we are creating the illusion of great success by using up what should be the rightful legacy of our children and grandchildren. Ask any elder. And biology dictates that you and I are animals. I gave a talk in Austin, Texas many years ago. There were big audience with lots of children in the front and I said, "Now kids, if you remember one thing from my lecture, remember we are animals." Man! Their parents get pissed off at me. "Don't call my daughter an animal, we are human beings. And my response was, "Listen madam, if you don't think we are animals, are you a plant?" We are animals and this animals' biology dictates our (0:40:00) fundamental needs.

So, I said to Mr. CEO, I said, "What do you think is the most important thing every human being on earth needs." And I could see he was thinking money, a job. I said, "Look, if you don't have a breath of air for three minutes, you are dead. If you have to breathe polluted air, you are sick. So, can you as a human being agree with me that one of the highest priorities of our species is to protect clean air." And then I said, "You and I are 70% water by weight." We are just a big blob of water with enough ___ at it, we don't dribble away on the floor."

But you know, our bodies leak water, right? It comes out of our skin, in our eyes, and our mouth, and our crotch. We lose water all the time. I said, "Mr. CEO, if you don't have water for four to six days, you are dead. If you have to drink contaminated water, you are sick. So, can you agree with me that clean water like clean air has got to be the highest priority of our species." And then I said, "You and I could go may be four to six weeks without food, but then we would die. If we have to eat contaminated food, we get sick. Most of our food is coming from the earth. So, will you agree with me that clean food and clean soil has got to be up there, with clean air and clean water."

Then I said, "All of the energy in your body is provided to us through photosynthesis. That energy is captured by plants, converted into chemical energy, and we get it by eating the plants or the animals that eat the plants." We store that energy in our bodies and when we need it, when we have to move or whatever, we burn those molecules of energy and liberate the energy of the sun back into our bodies." So photosynthesis should be up there

with clean water, clean air, and clean soil.

Finally, I said, "Mr. CEO, the miraculous aspect for me of life on this earth is those four things that indigenous people call "The Four Sacred Elements" – Earth, Air, Fire, and Water. Those things are cleansed, replenished, created by life. It is the web of living things that give us the four sacred elements. Before there were plants in the oceans and on land, the air was absolutely toxic for animals like us.

Oxygen is a very reactive element. When you liberate oxygen, it immediately oxidizes things, it rusts iron and it disappears. It was plants that converted carbon dioxide into oxygen and over millions of years until the present time. It is all of the green things in the ocean and on land that are keeping our atmosphere at 19% oxygen. In Vancouver, we get all of our water from three water sheds surrounded by all growth rain forest, the tree roots, you have the plant roots, sort of fungi and bacteria, filter that water so that we can drink it.

It is life that creates the very soil that we grow our food on. All of our food as you all know was once alive, but in order to grow our food in soil as anyone who read the *Martian* or saw the movie *The Martian*, when Matt Damon gets stranded on Mars and he has to stretch his potatoes out to four years instead of one, so he can be rescued. There is lots of sand and gravel, and dust on Mars. There is absolutely no soil. And so in order to grow his potatoes, he had to dig along the sand, poop in it, and then get more life.

We need soil and that is created by life itself and people that talk about terraforming the planet – My God! Anyway, don't let me get into that. It is the nuttiest idea I have ever heard. Anyway, so, those are the things that to me define almost fundamental needs that should be the foundation of the way we create an economy and get our jobs, and live. I said, "Mr. CEO, earth, air, fire, water, and other living things that are our relatives, can you agree with me, these are the basis on which we live and flourish. Where do you shake hands with me and agree that we both believe that that must be protected before anything else." And I am sorry to say that he couldn't bring himself to shake my hand. He left and I never heard from him again.

Now, it was an unfair situation. I sprung it on him, he didn't know that's what he was in for, and it was unfair because he had come down as a CEO of a company to negotiate with me. If he were to go back to his shareholders and say, "Well, I had a discussion (0:45:00) with

Suzuki, I have to agree, anything that we do must not compromise the air, the water, the soil, photosynthesis, or biodiversity. He would be fired in a flash." And so the system that we have created, can't accept that as the foundation on which it operates.

There are other things I told the CEO. There are other things, we call boundaries. We draw borders around our property and boy, people will kill and die to protect those borders. We draw boundaries around our cities and our provinces, our states and our countries. We go to war and murder and kill to protect those boundaries. Those boundaries are absolutely meaningless to nature. I mean, you just have to see it at the COP Meetings in Paris. A 196 countries deal with the atmosphere that belongs to no one, through the lenses of 196 political boundaries. It is crazy because you can't do it.

Then there are other things. Capitalism, communism, the economy, markets, corporations, these are not forces or laws of nature, we invented them for God sakes. But if you listen to the news about the economy every morning, my God, you would swear they were a thing. Out there, "Our markets are not looking too healthy today." You think it is poor market signal that ___ head going, "I feel really lousy today. What the hell we invented the damn thing?" And then we are constantly trying to shoehorn nature to feed our economic or corporate agenda. It can't work that way. We have to do it the other way and shoehorn our inventions into nature's needs.

So, this is a challenge and I would like to end this by suggesting something the foundation, the David Suzuki Foundation did for the Earth Summit Meetings in 1992, to provide perhaps a different perspective on our place in nature. We call it a declaration of interdependence. This we know. We are the earth to the animals and plants that nourish us. We are the rains in the oceans that flow through our veins. We are the breath of the forests of the land and the plants of the sea. We are human animals related to all other life as descendants of that first born cell.

We share with this kin a common history written in our genes, we share a common present filled with uncertainty, and we share a common future as yet untold. We humans are but one of 13 million species weaving the thin layer of life in developing the world. The stability of communities of living things depends upon that diversity. Linked in that web, we are interconnected. Using, cleansing, sharing, and replenishing the fundamental elements of life. Our home, planet earth, is finite. All life shares its resources and the energy from the sun,

and therefore has a limit to growth. For the first time, we have touched those limits.

When we compromise the air, the water, the soil, and the variety of life, we steal from the endless future to serve the fleeting present. This we believe, humans have become so numerous and our tool is so powerful, that we have driven fellow creatures to extinction, dammed the great rivers, towing down ancient forests, poison the earth, rain, and wind, and rip holes in the sky. Our science has brought pain as well as joy. Our comfort is paid for by the suffering of millions.

We are learning from our mistakes. We are mourning our vanished kin and we now build a new politics of hope. We respect and uphold the absolute need for clean air, water, and soil. We see that economic activities that benefit the few, while shrinking the inheritance of many are wrong. And since environmental degradation erodes biological capital forever, full ecological and social cost must enter all equations of development.

We are one brief generation in the long march of time. The future is not ours to erase. So, where knowledge is limited, we will remember all those (0:50:00) who will walk after us, and air on the side of caution. This we resolve, all this that we know and believe must now become the foundation of the way that we live. At this turning point in our relationship with earth, we work for an evolution from dominance to partnership, from fragmentation to connection, from insecurity to interdependence. Thank you.

<http://www.abc.net.au/radionational/programs/scienceshow/david-suzuki:-changing-climate-the-ultimate-crisis-for-our-spec/8132944>