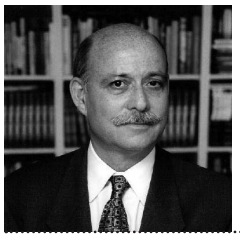
Keynote Speech



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Keynote Speech

I teach at the oldest business school in the world, the number one ranking business school in the world, the Wharton Institute. I've been there a long time. I teach business leaders. Many CEOs (chief executive officers) in Europe have suffered through my classes over the years. When they come to the sabbatical conferences I tell them that commerce is not a primary institution, it never has been. We have grossly misunderstood the role of commerce in the affairs of human civilization. There has been a misreading since the Enlightenment. If you go back and look at the medieval world, during the period of St. Thomas Aquinas, the great vision or dream was the eternal salvation in the next world. The glue was social faith and it was embedded in feudal relationships.

In the Enlightenment René Descartes, John Locke and Adam Smith had a better idea. They didn't think of men as sinners. Men were materialists, utilitarian, self-interested, but they were not sinners. The dream is not about salvation in the next world, it is progress in this world. The glue was not faith, it was reason, and it was embedded in markets and national states. If we look back at the view of nature from our forbearers in the Enlightenment, it's clear that they bought John Locke's prescription that we are acquisitive beings. They bought Bentham's prescription that we are utilitarian animals. Or to quote one of the great songs: "Living in a material world, and I am a material girl." She got it right, but they all got it wrong, from Adam Smith to Karl Marx.

There is not a single example in history where people first established commerce and trade and then, later, created culture. Not a single example. Commerce and government are not primary institutions. They are extensions of culture. Culture is not what you do after work; culture is where we create our stories, our narratives, where we establish the bonds to eternity. We live by stories; that's why we have language. And with language, we reach out. Because the primary nature of human beingsis not that we're acquisitive, self-interested, utilitarian, not that it's all about libido and erotic drives. That's all secondary; substitute. What we are learning at the cutting edge of cognitive psychology is something that every parent has always known. When a little baby is born it has a mission, and that mission is companionship, affection, reaching out, and embracing.

We've just recently discovered mirror neurons, in about 1994, and this has been a great breakthrough. Because we now realize that we're born to empathize. These mirror neurons have been discovered in mammals—some of the primates and human beings. They were looking at macaque monkeys in a cage. They had an MRI apparatus on their heads, and the macaques were trying to open a nut, trying to push it on the floor, when certain neurons on the MRI lit up in the brain. Then the researchers looked at another monkey that was on the MRI too, and the same neurons lit up in their brain, as if they were experiencing what the other monkey was doing. They had no clue of what they discovered for years. What they had discovered is, if you like, a smoking gun for empathy. We call it empathy neurons, and it is our ability to actually experience other as if it was ourselves. That's the basis of socialization. All nursing mammals have it.

Culture is a sphere, where we nurture the emphatic bond, where we create our narratives and stories. It's how we find our meaning and purpose with each other in the big scheme. It's where we create trust.

Commerce doesn't create trust, it lives off the trust we establish in our culture. Commerce can eat up trust. It can destroy trust but it cannot create it. What we need to understand is we're in a big crisis today, and it is a crisis of culture. Our ability to completely reframe our thinking of culture will determine how we address the economic crisis, the environmental crisis and the global crisis we're in. We're not there yet—in the EU, in America, or anywhere else. We're still treating culture as if it's entertainment, diversion, something interesting. We've got to catch up on the cultural front!

When Chancellor Merkel became the chancellor of Germany, she asked me to come to Berlin and help her country to address the question of how to grow the German economy in the 21st century. It was an interesting proposition. When I got to Berlin, the first question I asked the Chancellor was how to grow the German economy, the European economy, and the world economy, in the last stage of the energy era. We are in the sunset of the great energy regime: coal, oil, natural gas and uranium. Sunsets take a long time. We're going to be in this twilight period for many decades. It starts to become clear that problems attendant to these energies are now overwhelming the benefits we get from them.

What do we do? It's all about the fossil fuels. We grow our food in petrochemical fertilizers and pesticides. Food is our cultural story. You know the way food is grown, it tells you a lot about a culture. We grow our food in toxins. Our building materials are petrochemical based, our pharmaceutical products, clothes are mostly petrochemical based. Our power, transport, heat, and light, too, is petrochemical based. We have an entire civilization based on fossil fuels.

In this twilight period, we have three great crises. They're feeding off each other. They put us in a perfect storm. The only way to address this storm is to rethink our cultural initiatives on this planet.

Crisis number one: We have a global economic melt-down of epic proportions. It is not like the depression of the 1930s, as this is much more serious.

Second, we have a global energy crisis. We're at the end of the energy era; we're in the sunset of an entire regime. Third, we have real time impacts of the climate change, affecting agriculture and infrastructure. Don't even talk about culture unless it relates to how we solve this crisis, because this is the crisis of humanity. If you're not addressing these crises and how we reshape thinking, then you're on the margins.

Crisis number one, the global economic meltdown: This is not about a credit crisis, not about a banking crisis, not even about the deregulation of the market. Those are the results of the crisis. What actually happened is the second industrial revolution. In the 1950s, highways were built across America and Europe. We built all of the construction, created a lot of jobs. The entire second industrial revolution was based on the automobile and suburban construction and development. It peaked around 1988. We went into a Great Recession in 1989. We came out of that housing recession in 1991, but we didn't have a new industrial revolution. So what did we do? We actually came out of it by eating up the savings of the Second Industrial Revolution for the last twenty years. We've been building an entire globalization process on the savings of the 1950s, '60s, '70s and '80s. So we started issuing credit cards in America in the early '90s.

It is about culture. It's all about how we think about materialism, what makes us happy, and whether or not we can live within our means. But we created a credit card culture. And then we started eating up our family savings, and when that was gone, we started to use these bizarre instruments of mortgages for homes, so you got a home for nothing down. You did not even have to pay a mortgage for ten years. And then you could refinance your home, and like an ATM machine, get more cash. Because the auto culture peaked in the '80s, jobs peaked, and there was nothing to take their place in terms of a big multiplying effect.

The bottom line is that we had a nine percent rate of family savings in my country. It's zero today. The Brits followed our lead into the abyss. The ICT revolution couldn't make up for the automobile culture in terms of moving the economy. What I'm going to suggest is that the two trillion dollar bail out by President Obama will not cover it. Why? The total household debt in my country today is $12.5 trillion. We ate up the entire legacy of the second industrial revolution. This is a meltdown. We didn't have anything like this in the Great Depression. One last point about crisis number one: the whole point of globalization is that American consumers can buy the goods of the world. If we continue to buy, they continue to make the goods. Does anyone think the American consumer will continue to buy the goods of the world? We're broke!

The second crisis is energy. The second assumption of globalization is that energy is so cheap that you can move capital to cheap labor markets like China, make food, manufacture goods, and send them back, because the energy is cheap. That assumption has now disintegrated.

When energy prices rose to over $50 per barrel, inflation started to hit everything from food to petrol. When energy hit $95 a barrel, people stopped purchasing. When energy hit $148 a barrel last July (2008), then it happened. Remember your food prices were up at the store, your petrol prices, everything was up. Purchasing power went down radically at $148 a barrel. The engine turned off.

That's what I call peak globalization. That is the outer wall of the fossil fuel industrial revolution. You can never get beyond that wall. The engine will always turn off. The prices will go down for energy because we're not using them.

Why did we hit this wall? You've heard about the idea of peak oil. Peak oil is a petrol geology term. Peak oil is when half the oil all over the world is used up. Now, there's a lot of controversy over when the oil will be used up. The optimists (the IEA) say maybe 2035. The pessimists, some of the best geologists in the world, using new computer simulation studies, looking at the gas and oil reserve figures in the Middle East (including the new oil discoveries we don't even know about yet), new efficiencies with oil—they're still coming up with figures saying that we're going peak between 2010 and 2020. The North Sea peaked three years ago. Mexico, the fourth largest producer, peaks in 2010. Russia peaks right after that. Say goodbye to them as big powers in oil and gas. I don't know who's right, the optimists or the pessimists among the scientists. It makes no difference; we're now arguing about ten or fifteen years. That's a very small time to rethink the entire energy regime and infrastructure in the world. It takes my breath away!

Why did we reach a peak of globalization when we hit $148 a barrel? It's based on the study called the Peak Oil per Capita. It happened in 1979. It was the peak of the oil era, during the suburban construction is when the oil peaked. If you distributed all the oil in the world to every human being in 1979, that was the most per person you could get if it was equally distributed. We found more oil since then, but we've had quicker population growth. So if you distributed the oil to all six billion people, it's less per person. When India and China made their bid to become part of the second industrial revolution with a third of the human race, the demand for oil ran the prices through the roof. Too much demand, not enough supply. The engine turned off at a $148 a barrel, peak of globalization.

First, we have an economic meltdown with the sunset of the second industrial revolution. Second, the energy prices are never going to be cheap again. We've hit the peak of globalization at $148 a barrel. Third, we are now impacted with real effects of the climate change. There's only one cultural question right now for the human race and that is how we tell a new story saving the human race. It won't happen in the market place; it has to happen in culture.

The climate change is a lot worse than we think. I was with President Chirac in 2007, when we issued the UN Report on Climate Change to the EN panel: 2500 scientists, 125 countries, and 20 years of research. We were all shocked. Everyone at the meeting was shocked, because we all got it wrong. I got it wrong; all my colleagues got it wrong. For thirty years I've been monitoring climate change in my books, and I completely got it wrong. We continue to underestimate the speed of climate change. We cannot anticipate all the subtle feedback loops in advance, because the planet is incredibly complicated. If you look at the third assessment report of the UN in 2001, our scientists were telling us that the great snow peaks on our mountain would disappear in the 22nd century. The new report says the ice is melting in real time, right now, from the Alps to the Pyrenees to the Andes. It will be gone in the first thirty years of this century. One out of every six human beings on this planet lives in a valley and relies on the melting snow for irrigation, sanitation, and water. How do we repopulate 1/6th of the world population in thirty years? That's just the beginning.

In the third report our scientists looked at the Caribbean, where there will be more intense hurricane activity in the 22nd century. The fourth report of the UN says that with Katrina, Rita and Gustav, we're in real time, where climate change is concerned. We've doubled the intensity of hurricanes in the Gulf of Mexico. This is not academic; millions of Americans in the gulf, from Florida to Texas, are scared to death during the hurricane season. They're watching the weather channel every morning. There's another hurricane, is it going to hit? Do they stay? Do they go? You can't even get insurance in the US along the coast from Maine to Houston, Texas, for your house.

Our scientists say the temperature may go up 3° Celsius this century on the planet. Right now it's a mid-range scenario. It's pretty optimistic. To put this in context, if we only go up 3 degrees, it takes us back to the temperature three million years ago - completely different fauna and flora, completely different ecosystems, and different hydrologic cycles. The climate change is about shifts in hydrologic cycles. If we move up to 2 or 3 degrees, we risk potential extinction according to the UN Climate Panel. Between 20 - 70% of all the animal species on the Earth will be extinct, maybe by the end of the century. We need to be really clear. We've had five waves of biological extinction on this little planet in four hundred fifty million years of life. Every time we had a wipe out it took ten million years to recover the biodiversity we lost. As my wife says, we're not grasping the enormity of this moment. If we were, we'd be on the same page with a new cultural story for our species. It is about our extinction!

It gets worse. Recently there was a little survey done about the permafrost melt in Siberia. It mentioned that the permafrost is melting six times faster than we projected twelve months ago. Why do we care about the permafrost? All of Siberia is permafrost. That's a whole continent! What's in that permafrost? The entire carbon deposits of the pre-ice age. Siberia was a beautiful, open, grassy savannah teaming with animals and plant life a long time ago. When the chemistry of the planet tipped and the temperature changed very quickly, within a matter of years, it tipped at that point and the carbon was captured in the frost. The frost is melting and the carbon is going up. But now, as the water starts to spread from the frost, the carbon is coming up as methane, which is twenty-three times more polluting than CO2. In the journal *Nature* it was reported that it's moving six times faster than we thought twelve months ago. That's catastrophic!

It's even worse. The team of James Hanson, the chief climatologist in the US government, gave us a surprise in Brussels. They went down beneath the ocean to look at core samples last year. James Hanson found out, if we leveled it at 450 parts per million by 2050, and no one even wants to do that, we go up not 2 °C, we go up 6 °C by the end of this century. That is the end of human civilization as we know it! We are asleep! Don't talk to me about culture unless we are talking about a new story. And we won't have a story.

So, what do we do? We need a new economic vision and a game plan. More importantly, we need a new story about what the human race is all about; about what our meaning on this planet is; about what our future should be, what our teleology must be.

Let me start with the big economic revolutions in history. Two things always happened. First, people changed the way they organized the energy on the Earth. Second, we changed the means of communication to organize the energy regimes. When energy revolution converges with communication revolution, those are the pivotal points in history. They change everything. They change our spatio-temporal orientation, our cognition. They change consciousness, and we tell new stories.

I'm going to give you an example: the Sumerians. Why do we care about this culture in ancient Mesopotamia, today contemporary Iraq? The Sumerians were the first to capture the sun in photosynthesis in cereal plants and stored grain. They created an energy surplus, allowing them to decide who got the grain and who didn't. We began the process of differentiation and integration between people.

But when they started to store grain, it was very complicated. First, they had to build canals, and in order to do that they had to engage thousands of workers, and logistically feed them and clothe them. They had to create craft skills to create the dykes. They had to create all sorts of specialized skills to run granaries and develop the logistics of distribution. It required a communication revolution to organize it, so they invented writing called cuneiform. Everywhere you see hydraulic agricultural civilizations like in the Middle East, India, China, Mexico; the civilizations independently created writing to organize it. When communication and energy revolutions converge, something else happens. Consciousness changes at the same time.

As we begin to organize the energy of the Earth and communicate differently from the way we used to, our brain becomes wired differently. A hunter-gatherer culture is oral. Oral cultures don't think like script cultures. A script culture thinks differently than an oral culture. A print culture thinks differently than a script culture. The first generation of the electricity culture thinks differently than a print culture, etc.

When we have new communication and energy regimes, they change consciousness and cognition at the same time, they feed off each other. When we moved on from hydraulic agriculture, we moved from animism to polytheism and, subsequently, to monotheism.

It's our cultural story. We went from hunter-gatherer environments to the first cemetery, urban environments and the first glimmer of self-awareness. The first written story of our stories is called *Gilgamesh*. *Gilgamesh* could not be created in a hunter-gatherer environment because it's oral, it's formulaic. There is a deep relationship between energy, communication, consciousness, development of self, and right in the centre is how we start evolving the story of who we are as human beings.

In the first industrial revolution, between 1830 and 1880, communication and energy converged once again, both in Europe and America. The printing press had no economic mission for centuries. It had a cultural mission to mass-produce Bibles in the vernacular, and it allowed Martin Luther to create the Great Schism in Christianity. The mass production of the Bible in the vernacular was what Google and MySpace are to kids today. He took off with the revolution. He said you stand alone with your God, just you and your Bible, no intermediaries, no church, no Vatican. We had the reformation in the Thirty Years War, the Peace of Westphalia, and nation states were established.

How does it relate to a new cultural story? The printing press didn't have an economic mission until James Watt invented the steam engine, and we went to steam power. Around 1830 we began to introduce linotype, a steam technology with which you could get really cheap print production very quickly. Then we introduced public schools and mass literacy. Between 1830 and 1880, cheap print, mass literacy and public schooling converged with coal, steam, and rail to give us the first industrial revolution. You couldn't have organized it with a codex!

In the late 19th century came the first generation of electricity. The telegraph was transitional but the telephone converged with oil and the combustion engine to create the second industrial revolution.

We are in a global economic meltdown and energy crisis and we're paying the bill. We are at the end of an era. As we change our tools change. We say, when you have a hammer the whole world looks like a nail. We live by metaphors, and our metaphors are gestalt, they're based on our gestures and our behavior. In the time of hydraulic agriculture, they lived by hydraulic metaphors. In the early pre-first industrial revolution, we lived by mechanical metaphors. When we went into the romantic period in the 1830s and electricity was first discovered, we began to use electrical metaphors. We change our metaphors as we change the tools we use. We're players; we're toolmakers. Playing and making technology to manipulate the world.

We are on the threshold of the third industrial revolution. But what we're missing for this third industrial revolution is the story, culture, the re-schooling, the rethinking of the human mind. We had a very powerful communication revolution in the last fifteen years: a personal computer and the internet. It certainly changed the classroom, culture, and the environment. What distinguishes the ICT revolution from the first generation of communication by electricity—telephone, television, radio and motion pictures? That was centralized communication from the top down, scripted with passive receivers. This new ICT revolution is very different. It's distributed! That is a key word to the rethinking of our story. By distributed I mean that everyone in the room can communicate their imagination through video, audio or text across the planet in 7 seconds. We did it in ten

years. We grafted the ICT revolution onto the Second Industrial Revolution, which was about centralized energy and infrastructure, but it did not work, because it is about distributed communication.

Let me suggest that this distributed ICT revolution has a different anthropological mission. It's just now converging with a new energy regime, distributed communication to organize distributed energy. It is the third industrial revolution!

What is distributed energy? Let's compare it to "elite" energies. "Elite" energies are energies you don't have in the backyard. You don't have coal, oil or natural gas in your backyard, they're only found in certain regions of the world. It requires huge monetary investments to secure them, huge geopolitical investments to manage them, and huge capital flows to organize them. They're the most hierarchically centralized energy regimes on the planet.

We've been living in centralized, patriarchal, communication, energy regimes since hydrologic agriculture. As we got to the first and second industrial revolution we began to distribute it a little bit. It has changed everything. It changes our gender relations, our gestalt. It's no accident we're beginning to let the human race be reined by women. For example, we have moved from the energy communication regimes that were patriarchal, and that are now becoming increasingly distributed. So the third industrial revolution gives us a finely distributed pattern.

What are distributed energies? You find them in the backyard. The sunshine is everywhere in the world. The wind blows across the planet every day. We have got heat under the ground everywhere we walk and we have agricultural and forestry waste. We've got garbage for energy. We have small hydro-energy: coastal tides and ocean waves are coming every day. We have got all the energy we need!

The European Union, under Chancellor Merkel's presidency, committed itself to 20 – 20 – 20 and 20: 20% increase in energy efficiency to clean up the old energies, 20% reduction in global warming. What happens then? The revolution happens. Twenty-seven member states, five hundred million inhabitants, committed to twenty percent energy renewal by 2020. It is pillar number one. One of the four pillars of the third industrial revolution. We're going to distribute renewable energies. But then the question in Brussels becomes how to collect renewable energies. We can't build enough solar and wind plants to run Europe. They're essential, but they're not sufficient. That's 20th century thinking: large centralization of solar and wind energy. I'm for it but it's only transitional.

We're now thinking of buildings, buildings, buildings, which is the second pillar. If you look at the second strategic energy review it's all about buildings. When we change the communication-energy revolution, we change habitats and culture. It has something to do with your habitats, with your spaces.

When we moved to the hydraulic culture we went to the first urban settlements, and just the very beginnings of cosmopolitan behavior. Rome was the first great cosmopolitan city of all –all roads lead to Rome. When we went to the first industrial revolution we moved to the first great urban cities with a million people, London being the first. Fossil fuels allowed us to do it. When we went to the second industrial revolution we built the suburbs, a completely different approach to culture. Now I'm talking about the third industrial revolution, where our habitats become our power plants. Every building we're in is a power plant. Every home, every office, every factory, every technology park, every building becomes your power plant. You put a little vertical wind turbine on a building, you capture the wind. You put a heat pump underground, you capture the heat. If you're around the ocean, you capture the tides. If you're in the rural areas, you capture the forestry waste. All we need, it is there.

The first power buildings are now opening in Europe. If you go to Zaragoza in Spain, General Motors has the largest Opel factory in Europe there. They produce half a million cars a year. A couple of years ago I went there to see it, and I said, "You have got a nice roof on the building. That's a huge roof." Last fall, General Motors leased that roof to a French company; they put a seventy-eight million dollar unit on the roof five months ago. Do you know how much electricity it produces? It is ten megawatts. That is enough to power 4700 homes. From one roof!

Olivia Buig is the second largest building company in the world. They have just shown me four solar plants in buildings being built right now. It sucks up all the sun and it creates more power than it needs. You produce a little bit of your own energy in your home, more energy than you need. We have a revolution in building and construction and then we jump start a new economy. Do you want to start a new economy? It's always about construction.

However, then we face pillar number three in Brussels. How do we store renewable energy? The wind isn't always blowing, the sun isn't always shining; it's intermittent. I was the advisor to Roman Prodi, when in 2003 he was the President of the EU Commission. I told him: "Romano, we wake up in Europe, in the Czech Republic, in 2020 and we get thirty-three percent of electricity in the Czech Republic from renewable energy and the sun is not shining for two weeks, and the wind is not blowing, what do we do?." Romano said that it was a very good point! We put in a two billion euro research and development plan for hydrogen storage.

Hydrogen is the basic element of the universe. It's the lightest element. You use it for power; the only by-product is water and heat. Our astronauts just came down from the space lab today. Astronauts have been circling this planet for thirty years, powering their spaceships with high-tech hydrogen fuel cells. So it is time for you to create electricity in your home with your solar roof or your vertical wind turbine or your waste heat, the electricity you don't need is stored. Then, when you need the electricity, because the sun isn't shining, you convert it back to the fuel cell for electricity. It's elegant.

To resume, first pillar: renewable energy is distributed; second: buildings become our power plants, like our desktop computers have become our communication source—no main frames. Third: we store hydrogen. The fourth pillar is where the distributed communication revolution converges with energy to create a new story.

We used the exact same technology to create the internet. We take the power in the Czech Republic and around Europe and turn it into a grid in the next twenty-five years. So in twenty-five years, millions of us are producing our own energy, as well as our own information and we store it with hydrogen like we store with digital media. Then we share with one another across the European continent on the grid. The first smart grids are coming to Europe at the end of this year. So, you're going to have to get an advanced meter for your building, a meter that is digital. The old grid is sixty years old and it's falling apart. It's collapsing, it is not even digital. But then, we're going to attach every appliance in the Czech Republic to the grid with a sensor and software, so that we know what every washing machine is doing. If there is too much demand and not enough supply of electricity, anywhere in Europe, the software can say to five million washing machines that we want them to go down by 1.5 in the rinse cycle. If you bought that program, because you're an energy player, you get credit, it is voluntary. The price of your electricity changes every day on your grid: every moment, every hour. You're going to know your price. If you're producing your own energy off grid and your price on the grid says sell, your automatic software will sell back.

This is called distributed capitalism. This is power to the people. This is going to change our story. Our tools create our metaphors. Our metaphors help us to create our stories. Our stories create our trust. And it's by trust we then create our business and market models. It goes one to the other in a cycle. Distributed capitalism means we all play. It answers the question we couldn't actually answer for thirty years: how do you run Europe on wind mills and solar roofs? For thirty years we could not answer it. We were thinking, yes, we love solar plants and windmills, but we can't run Europe on just these; we still need some coal, oil, gas, and uranium. We actually couldn't answer that question for thirty years. Now we can. The cutting edge of the IT revolution is called grid IT. That's what we're introducing in business around the world. You can now take hundreds of thousands of desktop computers and not have much distributed power. But when we connect them, the distributed power of hundreds of thousands of connected computers proceeds with the magnitude of more power than you could get from the greatest super computer you could have ever imagined. We can take the grid IT to the producing lines, and if millions of us are producing a little bit of energy, whatever we don't need, we share it across the smart grids with the IT.

Everybody here under the age of forty, and all of your students who grew up on Wikipedia, YouTube and MySpace, as well as file sharing and Linux, knows exactly what I'm talking about. And everyone over fifty is sitting and saying, "What?"

The music companies didn't see file sharing coming. They lost. The newspapers and television didn't see the blogosphere coming. They lost. What I'm saying is that we're heading towards distributed capitalism! It requires a new story. The tools shape the metaphors, and we use the metaphors for our narratives, and narratives help create our trust and our social bonding, and then we create business models and governments that reflect the stories we tell about ourselves and our relationship to the natural order.

This is a sustainable world, maybe. At this moment, I don't know if we can get there. The big beneficiaries of this revolution will be the developing world. The reason people are powerless today is that they literally don't have power. This globalization process was based on "elite" energies that never got to a larger proportion of the human race. Thirty percent of the human race has no electricity and has never had electricity. Another twenty percent has a little bit of access day to day. If you go to developing countries, every once in a while electricity comes on. If we couldn't get electricity to people at three dollars a barrel, we're not going to get it to them at fifty. If we create this technology in the EU and the U.S. and have a huge technology transfer, we can move it to the southern hemisphere with massive financial help. There should be little solar roofs in every little home in the world; vertical wind turbines, heat pumps, and waste. Then we don't have to rely on Russian gas, or Middle Eastern oil. It can be done. The question is will it?

I think it's the next stage of European integration. It started with energy here in the form of the coal, steel and uranium project. Fifty years on, you have got a political union with Maastricht, financial union with the Euro, and geographic union with the twenty-seven states. You did it! It wasn't elegant, but you did it against all the odds! The next step is that you need an integrated logistical union based on a post-carbon energy regime. You have five hundred million consumers here in Europe. Did you know you're the leading economy of the world? The GDP of the twenty-seven member states in the EU is greater than the GDP of the fifty states in the U.S.A. And in the U.S., we say you're a museum. You're not. You're a leading economy! You're a leading export power in the world, not the U.S., not China,

not India. You have the only currency that is really viable. And you have five hundred million consumers and an additional five hundred million associated consumers in the Mediterranean and North Africa. You have a billion people! You need a seamless logistical infrastructure from the Irish Sea to North Africa, so that you can engage in commerce and trade with them.

It means, from what you produce here in the Czech Republic, that you share agricultural waste and your energy with the Irish. They have wind parks, and they can share their energy with the Norwegians. They have hydro plants; they can share with the French. You produce local, and you share across wide regions. You integrate. You become a flagship for sustainability, and maybe we have a chance.

Now let me end with culture. I think you can have a good economic game plan in this third industrial revolution, and the EU has a game plan. Two years ago the Parliament of the EU called for the third industrial revolution. The President of the EU said that this is our roadmap for 2050. President Barosso has given speeches on it, and Mr. Peabox has given speeches on it. We're going to the third industrial revolution, but we have to get there soon. To get there, there's something else that has to happen. We have got to think differently! We can have the best economic plan, but this is just the practical plan we need to get to where we want to go. This is not rocket science. We won't get there unless we change the cognition of the human race really quickly, as well as our education, our stories and our culture.

We have to move from geopolitics to biosphere politics. We have been in the geopolitical field from the Peace of Westphalia; national states competing with national states for rare resources. Now we have to move to biosphere politics and think of ourselves as a species embedded on a single planet, with a sheet called the biosphere that binds us and every other creature to it.

How do we get to this point? How do we recreate human consciousness quickly? There are periods in history, where the human story changes quite radically. When a new energy communication revolution comes into being, a change in consciousness follows. As we create new energy-communication revolutions, we quicken the flow of energy in society as well as the complexity of life and the density of life. When we increase the complexity of life, we create more differentiation, people have more skills, personal roles to play, and we have more elaborate integration.

Real history can be traced through stories, as those in the literary world might tell you. The philosophers, on the other hand, don't really have the key to history. The cultural anthropologists do, if you trace the oral mythological culture, mythological consciousness – that is, the hunter-gatherers—theological consciousness, hydrologic culture, ideological consciousness, the first industrial revolution, the psychological consciousness of the 20th century, and the electrical revolution, which was the second industrial revolution. Today, on the threshold of the third industrial revolution, we have dramaturgical consciousness.

We may be heading to a biospheric consciousness, where we will begin to think that an individual is not autonomous, but a composite of all the relationships making us up. We are heading in that direction! I grew up on the enlightenment idea that the cultural story was all autonomous. That's our goal, because we want to secure freedom. When I was growing up, the cultural story defined freedom as the ability to be autonomous and mobile—automobile. That's why we love it. We love being autonomous, mobile, an island to oneself. We began to think about the way you become autonomous and mobile from the enlightenment perspective. The more property you acquire and have, the more independent you are and the freer you are. That was our story.

Now what we are learning in our cultural studies is that Jefferson got it wrong. Life, liberty, and happiness were actually very close to life, liberty and property. When you had property, you could be happier. Now all the cutting edge studies on happiness are showing us something that we already knew; if you're really poor, you're not happy; you don't even have a moment to be emphatic because you're just surviving. But after you have the minimal resources to sustain a reasonable quality of life, you become increasingly unhappy with every increase in wealth. If that is true, freedom only exists at the level, where we feel we have the moderate necessities to maintain our lives. If we create more material wealth, our possessions end up possessing us. Freedom becomes elusive.

What we're now learning is that there is another way of defining freedom, not exclusive but inclusive. If the good life, a life that's meaningful, is measured by the extent of one's relationships and the quality of one's relationships, then one is free to the extent that one has a deep, secure series of meaningful and sincere relationships with others. Freedom is not exclusive, it's inclusive. It's not an island to oneself.

I'm over sixty. You look back at your life and the things that were meaningful were those special, significant moments where you actually connected to another person. And those relationships define freedom and are directly related to the quality of life. So what we need to do is to redefine freedom. We need to redefine the truth and reality around the idea that we are related, not autonomous.

The American dream is about personal opportunity and success. That's a good story but it's based on autonomy and exclusivity. Here in Europe you have a different dream. You ask a European what their dream is and nine times out of ten, after two minutes of scratching their head, they reply, "quality of life." It's a communal exercise. It requires us being solidary with each other, because the things that we want are collective in nature. We don't give up the individual life, but we understand

we are completely woven into the collective "WE." That's the dream moving us to an unbiased consciousness in a globalizing world. Don't give up the "I" because the "I" only exists in an ingrained "WE."

If you ask an American what the dream is, we'll say growth; a European will say "sustainable development." We'll say "property rights;" a European will say "social and human rights." We'll say "to have a firm hand with a strong military;" a European will say, "building bridges to peace." We'll say "live to work;" a European will say "work to live." I'm not saying the European way is ideal. I could go through hours and hours of biases existing in Europe. Europe is a mess, but so are we. All I'm saying is that the European dream is more akin to where we need to go, which is quality of life, defining freedom as inclusiveness and access, relationships and meaning, building bridges and peace, and understanding that in a better and sustainable world, social and human rights are more important than property rights.

Now to the last thing I want to mention is education. We've got to rethink education. We're still teaching the progressive education from the post-World War II era in America and Europe, based on Frederick Taylor's society of scientific management: get them productive, get them efficient and get them marketable. I know most people on the cutting edge would like to change this. But we've got to change it dramatically!

If you ask what the primary cultural story is, it's always spatial and temporal. Culture stories are always about gestalt, space and time. What's the primary temporal story of the modern age? What's the primary temporal value of the modern age? It's efficiency. Isn't that the bottom line? It's our cultural story. Efficiency is a new term in the way we define it. Go back to the Samuel Johnson's Dictionary of the English Language from 1740 and look up the word efficiency. It meant "divinely inspired." First, there was the word, and then there was the world.

In the late 19th century, our engineers were examining entropy energy flow in machines. They redefined efficiency: to maximize your output in a minimum time with a minimum input of labor, energy, and capital. We've taken that engineering idea, and made it a part of our very being. But would you ever treat someone you care for efficiently? Would you ever say to someone: I love you so I'm going to maximize my output with minimum time, minimum labour, energy, and capital?
That's our school system. What our children are really learning is not their ABCs: they're learning their temporal and spatial gestalt; they're learning to be efficient. Can you ever be intimate in an efficient way or have a pure joy in an efficient way? Can one be emphatic in an efficient way? Our children are being taught efficiency, which is expedient, utilitarian and instrumental. Everything becomes instrumental at the end. Why am I efficient? I got the grades. Why do I get the grades? Because then I get the job.

What happens if we train an entire generation to believe that efficiency is their primary value? Then we try to introduce the idea that there are more important things than useful behaviour, that people are an end, not a means. It doesn't go with the temporal gestalt. It's going to start to change the story. It's efficiency that has gotten us to climate change.

We have to balance efficiency now with sustainability. Spatial gestalt—we have thought of space as property or resources we command. We even think that knowledge is something we control. Francis Bacon said knowledge is power: we control it! But now we have a generation of teachers who are saying that that's not what it's about. They know knowledge is not something one controls. Knowledge is what exists between one mind and another in the empty space called the collective WE. So what we're beginning to introduce is collaboration. What goes with distributed capitalism is collaborative thinking. We have to introduce collaborative, distributed thinking to the classroom because our kids, on their computers, are already thinking collaboratively. The millennium generation, at least, are thinking collaboratively and in a distributive fashion. We have to introduce new education models completely based on distributive knowledge. Knowledge is not something I know, possess or control. Knowledge is the space where we come together to imagine and create. Imagination is based on empathy, what we seek or see in another person: affection, companionship and relationships.

I've been stuck on this because it is clear to me in Brussels, and when I visit the U.S., that we've got a big job in the cultural arena. We have to get up to speed and begin to get on top of this story, the crisis that the human race is facing. We have to look at our metaphors, at the narratives we've created, at the educational system we still have, and turn all of this upside down and inside out and remake it. And we have to do it in this generation.

So what we want is an educational system and cultural stories reflective of a distributive, collaborative world. If we can move into a distributive, collaborative world, where we understand we are indebted to the relationships existing on this planet, we've got a shot, but it's a long shot. I don't know if we're going to make it. But if we don't get on the same page quickly and achieve global consciousness, think as Homo Sapiens, and rethink our stories, I don't think we are going to make it. I see the statistics and the studies. I talk to scientists. They're frightened to death. I hope they're all wrong, completely wrong, but I don't think they are.

I leave you with a final thought. We came out of the World War II, out of the Holocaust, and we said never again. We have got to turn a new page here. Basically, we do seek each other, even though we're frightened sometimes. I'm not going to get into attachment theory and all that, but it's all in the way we raise our kids. That little baby is seeking first and foremost affection

and attachment. They want to have the security of knowing that they are listened to and that they can respond to other people. And they want to explore at the same time. It's a very delicate balancing act for parents and schools. You have to create trust and bond between a new individual and older folks. Then we've got to let them explore. If you can't do that by the time they're ten or twelve, if they don't develop attachment behaviour, these kids are lost, they develop avoidance behaviour. And then all the things we think of as substitutes: aggression, violence and libido. Those are substitutes, because they didn't get what we wanted. They don't have affection, companionship and intimacy. We've got to have a clear, seamless line from parenting through school. That's essential.

Since World War II, in coding our Declaration of Rights, we've accepted a lot of other people. Women had been alien, different, since the beginning of hydraulic agriculture. And then there were the children, and the disabled, and gays. And now we're learning to bring in others so that we're inclusive; we're part of one family. It's an extraordinary thing we've done these past 60 years. We have eliminated the realm of "the other."

Now we have to encode one final right and that is a right that not only humans have, but every creature existing on this planet: a right to their fair share of the energy that is on the planet, so that they can flourish. But if they don't have their fair share of the energy on the planet, they can't flourish and live. There are unborn children and unborn creatures that are not yet here in this little experiment. They have a right to be exposed to the mystery of this experience. We think life is pretty precious; we hold on to it every day. We have no clue what it is. We create all sorts of narratives. We have set up lots of television and radio shows in the universe, but no one is answering back. They are probably smart; they don't want to talk to us. Maybe they don't exist! So, this experiment is very precious. We don't know what life is but we certainly want to make sure that those who are not yet here can have this opportunity.

The mission is the cultural arena. Update the story; go right to the center of the problem facing this world, which is the breakdown of trust in the global economy. It is the end of the energy era, and it is real-time climate change that is threatening our existence. Go to the centre of the story. Help us rethink parenting, bring up a generation that is collaborative, thinks distributive way, understands that a sense of "I" isn't always better than a composite "WE," so that we can begin to understand our deep connection to everything existing on this planet. Then we, maybe, have a chance to save the Earth.

Curriculum Vitae

Jeremy Rifkin is the President of the Foundation on Economic Trends, advisor to the European Union and lecturer in the Executive Education Program at the Wharton School at the University of Pennsylvania. He is also the Chairperson of the Third Industrial Revolution Global CEO Business Roundtable. The Roundtable is composed of 100 CEOs of leading North American and European global corporations that are committed to ushering in the four pillars of the Third Industrial Revolution to address the triple challenge of global economic recovery, energy security, and climate change.

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