

# Interview With Graciela Chichilnisky ~ Reflections Of An Innovated-Minded Economist



*In this new interview, Graciela Chichilnisky, a world leading economist and one of the major climate change forces in our era, talks about growing up in Argentina and the legacy of the Peron revolution, her struggles with gender discrimination in a male-dominated world of science, and the need to design new global institutions to address climate change.*

*Chichilnisky has published scores of books, including Saving Kyoto, and some 350 scientific articles in the world's most prestigious economics and mathematics journals. The Washington Post calls her an "A-list star" and Time Magazine a "Hero of the environment. In addition, Chichilnisky has made revolutionary contributions to the world economy - like creating the concept of Basic Needs and the UN Carbon Market.*

Marcus Rolle: You were born in Argentine and your father was a minister in the Juan Peron government. What was it like growing up in Argentina at the time of the Peron reign?

Graciela Chichilnisky: When I was a child, Buenos Aires seemed a magical place at a magical time. Buenos Aires is a lively and beautiful city, people were

interesting and intense. In reality, Buenos Aires then reminds me of New York now: a graceful old city full of life, intensity and culture. And the Argentine countryside is extraordinary - Patagonia is a huge empty land of glaciers, cattle, sheep, whales, penguins and pink flamingos. The peaceful beauty of the Atlantic Coast, the majesty of the snowy Andes that have some of the tallest mountains in the world, the Iguazu Falls in the North boundary with Brazil, the enormity of the Pampas, it was all magic.

My father was a Professor of Neurology at the University of Buenos Aires and a minister of Public Health under Peron and he built hundreds of hospitals all over Argentina. He was the doctor of Eva Peron and a friend of Juan Peron, who admired him. I still have some of the letters that Perón hand wrote to my father. Life under Peron then was intoxicatingly eventful. Evita took on the landed oligarchy and stood firm with the “descamisados” - the shirtless. In reality Evita and Peron represented the industrial revolution while the landed gentry represented the Spanish aristocracy. Landowners vs shirtless. The land in Argentina is so enormously rich and fertile - comparable only to the Ukraine and the Great Lakes in the US - that Argentina in the 1950's was bound to become one of the richest countries in the world. But the forces of darkness won and there were coups d'etat that removed Peron after Evita's early tragic death, the military dictators made torture a staple and dedicated the nation to exports of natural resources such as wheat and meat. No industrialization and a war pitting the landowning oligarchs against the labor unions. This destroyed the social advances of Peron and his intentions of industrializing Argentina. Even today a visitor can observe the industrial revolution that never happened. Eventually however and with the help of Margaret Thatcher - her best role perhaps - the military lost its prestige and was unmasked as brutal and incompetent and nowadays everybody is a Peronist. The recent presidential elections pitted one Peronist candidate against another. Even my spell corrector knows how to spell Peron and Evita and despite their errors they emerged as the heroes of the people - and the military-religious complex as the villains of the people. In a way the entire world now needs a Peronist revolution to counteract the enormous inequality of wealth that was created during the period of globalization and is destroying everything and the most basic human values along with the rest.

MR: At the age of 17 you went to the US to study at MIT as a graduate student under some rather unique circumstances. Would you relate the background of the events that brought you to the US?

GC: I was finishing high school when I started taking University courses without permission - there I met wonderful professors and students who opened my eyes to the world of science and mathematics - it was a great privilege. But towards the end of the 1960's and the beginning of the 1970's the military staged several coup d'états and in one of them they closed down the University in Buenos Aires. One MIT professor who was there at the time, the famous Warren Ambrose, a well known Mathematician, decided to take 6 Argentinian students to MIT to continue their studies, since the University had been indefinitely closed down. All of them were graduate students who were taking doctoral courses in Mathematics - except for me who never went to college. MIT accepted me, a single mother without a college degree, as a Special Graduate Student in Mathematics and the Ford Foundation gave me a scholarship. After a year of very hard but enjoyable work I came on top of the Mathematics PhD class at MIT — and then I became an official PHD student in Mathematics at MIT. This led me to obtain to a PhD in Mathematics, and then another PhD in Economics at UC Berkeley - two PhDs to compensate for the fact that I never got a college degree!

MR: Was there something specific that attracted you to the study of mathematics and economics, or, being so gifted in these fields, was it just a natural direction to follow?

GC: I was most interested in sociology and philosophy, but could not make sense of what professors and books were saying. Mathematics on the other hand seemed clear and simple, a natural way to think, a world without boundaries. Mathematics is the language that the brain uses to communicate with itself.

MR: You have been teaching for a few decades at Columbia University's Economics Department and held for many years the UNESCO Chair in Math and Finance. What specific areas in mathematics and economics has your work focused on?

GC: I am proud of the UNESCO Chair that the UN endowed for me in 1996 at Columbia, in recognition for the many years of service to the international community. UNESCO offered first the Chair for me to hold at Stanford University where I was teaching at the time, but I decided to go back to New York and Columbia University instead. I taught Mathematics and economics at Harvard University as well, after completing my PhDs, where I worked with Kenneth Arrow in his research projects. My topics in Mathematics are Algebraic Topology

and Non Linear Analysis; in Economics I have done work in international trade, development economics, extensive work in environmental economics, on the economics of markets and social risk, economic theory including game theory, growth theory, the economics of networks and the economics of Gender.

MR: What do you make of the continuing claim or myth that women are not intellectually endowed as men are to pursue careers in mathematics and the sciences?

GC: This is a shameful myth that persists in our society and causes huge damage to us all. It seems incredible in the 21st century to have such totally unfounded and degrading statements made about any group in society - especially about women who are the pillars of human society. Recall what Larry Summers had said as President of Harvard University - i.e., that women are "genetically inferior in the sciences." He did, yet he was made Director of the White House United States National Economic Council for President Barack Obama. If Larry would have said that about blacks, I feel pretty sure that he would not have been asked to serve as the adviser of President Obama. The discrimination and even hate against women is widespread in our society, particularly in a knowledge based society, where it is used to impede the participation of women in the creation of ideas and the highest pursuits. In our world physical size no longer matters, and therefore men no longer have an edge — but creativity and brainpower does. This is a way to keep women down, degrading them in what counts. Several years ago, the Presidents of the top 9 Universities in the US publicly declared gender discrimination and hostility to be a most serious issue in their own Universities and promised to fight against it - but the trend persists specially in the fields such as Mathematics, Economics, Physics, which are at the top of the science heap. The American Association of University Professors published each year official University data on salaries by gender — showing the persistent continuation and seriousness of the gender discrimination in salaries in US Universities. For a long time, Columbia University had the dishonor of being the 2nd worst among all Ivy League universities in this shameful gender discrimination and hostility trend. I advise many women on this issue, having fought and won twice myself in Court against this illegal trend, and my heart goes out to them. I work with them, we persist. We will eventually win, but the damage, destruction and loss of international competitiveness for the US is a serious cost of this irrational gender bias. We all have to work together to overcome this bias, men and women. Same

with racism, which is still deeply entrenched in many aspects of American life.

MR: You have met professional adversity in the pursuit of your academic career, which is part of the reality of the academic world. Do you believe the adversity you have faced was due largely to your gender?

GC: Yes. But it was not the only factor. Innovation is often met with hostility in well organized and successful intellectual and academic networks, as the ones that exist in the US. Partly due to my background, my work has always been a bit different- as has my life, and innovation has been my trademark. But one thing is clear. While striking innovation is met with aggressiveness and hostility in academia, for men and women alike, what men do to innovative women exceeds in scope and ferocity what they would do to other men. It is like rape - a way to try to control a group by intimidation. Think of it this way - Larry Summers would not have dared say in public that blacks are genetically inferior in the sciences - would not even talk about this topic no matter what he thinks. With women, everything goes. He felt no fear in making a totally unfounded degrading statement in public about women. Why? Because the ferocity with which women are treated is of a totally different order of magnitude, everything goes.

MR: You have been for many years one of the leading forces in climate-change efforts. How do we define climate change?

**GC:** Climate change means a major shift in climate patterns, such as dramatic increase in violence, frequency, length, and severity of climate events, including superstorms, tornadoes, typhoons, major floods and long severe droughts, and other climate related environmental disasters. These events increase both in intensity and frequency as the energy in the atmosphere increases, which occurs when the mean temperature increases. Climate change means also dramatic changes in long term climate patterns such as desertification, the alteration or the reversal of major ocean currents, changes in the sea level, melting of the planet's polar caps, glacial periods.

MR: What would you say are the most obvious facts that climate change is taking place and that the global mean temperature is driven up by human interference?

GC: The statistical evidence conforms to the definition just provided: the planet's polar caps are indeed melting, and the sea levels are indeed rising. This has been measured and is directly observed. We have increasingly violent, frequent,

lengthy and severe climate events, major floods and unusual severe droughts that do not correspond statistically to standard deviations from the mean. Thousands of scientists from all over the world who report to the United Nations Intergovernmental Panel of Climate Change (IPCC) have come to the conclusion that changes in temperature are associated with changes in the concentration of greenhouse gases, of which the main one is CO<sub>2</sub>, and that mean temperature is increasing due mostly to the burning of fossil fuels - coal, natural gas and petroleum -- for economic purposes: industrialization.

MR: It has been said that we must work towards keeping temperature from rising above 1.5C. Is this a safe operating space? And how can we be sure that temperature won't rise much higher than that?

GC: We definitely need to try to keep below a 1.5C increase in mean temperature. All the changes we measure today occurred with just 1C increase above the last century. An increase above 2C is catastrophic according to the IPCC - meaning that the climate change disasters described above become frequent and the situation irreversible. Catastrophic changes will move the planet to another climate regime altogether - the point of no return. This happened in the planet Venus where the concentration of CO<sub>2</sub> in the atmosphere is huge, and now Venus cannot house life as we know it. However, staying within a 1.5C increase is very hard, because we emitted so much CO<sub>2</sub> and we have procrastinated so long in reducing fossil emissions. In fact, this is so hard that it is actually impossible according to the UN IPCC in most scenarios - unless we actually remove the CO<sub>2</sub> that is already in the atmosphere. This is called "carbon negative technology"<sup>™</sup> and it exists and can be utilized to effectively reverse the damage we have done. It would be a major global change, which can only be realized if we organize ourselves and the financial system to build "carbon negative power plants"<sup>™</sup> to satisfy the desperate need for energy to fight poverty in nations such as China and India. These are power plants that capture more CO<sub>2</sub> from air more than what they emit, about twice as much. These plants exist. They are possible. We need to build thousands of carbon negative power plants, mostly in poor nations that need them most, and these will suffice to clean up all the CO<sub>2</sub> that humans are emitting every year into the atmosphere, which is about 38 gigatons of CO<sub>2</sub>. It seems difficult to do and it is - but economics is on our side. The capture of CO<sub>2</sub> from air is now economically feasible, it costs less than the price that markets pay for CO<sub>2</sub>, so in reality carbon negative power plants are an economic reality, they

are commercially feasible. We just need project finance to get this done. Where will the project finance come from? The Green Power Fund (GPF) I proposed in Copenhagen in 2009, which was partially adopted and became international law with the name Climate Climate Fund (a one word change). The GPF derives its funding from the carbon market of the Kyoto Protocol which by 2011 was trading about \$175 billion a year - enough to offer the project finance needed to build the carbon negative power plants that will clean the planet's atmosphere. All that is required is to build a financial institution - the Green Power Fund - that systematically offers debt finance for carbon negative power plants in developing nations, and circulates the revenues so they are used to build new such plants. This is certainly not beyond our financial abilities. In 15-20 years, climate change can be resolved at a total aggregate cost of \$2-3 trillion, which is less than 5% of the planet's GDP in a single year. Spread over 20 years, the financial burden of debt finance reduces to about 0.25% of GDP. But in reality it is no burden since the carbon negative power plants are commercially viable, they produce revenue. And the initial money can be obtained from the carbon market of the Kyoto Protocol and its CDM. It is true that, as the architect of the Kyoto Protocol Carbon market I have an undeniable sympathy for the carbon market. But think of it this way. We all know that we need to reduce emissions of CO<sub>2</sub>, and simply by agreeing on mandatory emission limits, the carbon market can function - that is how it functions - and produces enough money to terminate the catastrophic threat of climate change. And to eliminate or alleviate poverty in the poorest nations of the world, who then become great consumers for the rich nations' exports. The circle closes. We just need to do it, nothing to lose and a lot to gain. And if we do not do it, we face catastrophe. It seems impossible to argue against it given the current technologies and what they have already demonstrated that they can do.

MR: In addition to your involvement in the climate-change efforts, you have been leading a campaign for the creation of something called a New Green Breton Woods system. What's all this about?

GC: Yes, this is a crucial issue. Globalization has totally changed the world economy since the mid- 1950s. World trade increased 3 ½ times more than the growth of the world's GDP. At the same time, the wealth gap between North and South increased deeply and became three times larger than it was before, when abject poverty led over 1.3 billion people to live below the level of satisfaction of

basic needs, and on the brink of survival. The institutions that govern the global economy - the so-called Bretton Woods Institutions such as the IMF, the World Bank the WTO were created in the 1950's and have not changed since then. This is a recipe for disaster -it is like driving in a fast highway with a horse cart. Not fair for the horse, not effective for us, unlikely to succeed — and plain dangerous for all!

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[Graciela Chichilnisky](#) is Professor of Economics and of Statistics at Columbia University and Visiting Professor at Stanford University, and was the architect of the Kyoto Protocol carbon market. *Marcus Rolle* is a freelance journalist specializing in environmental issues and global affairs. He studied sociology and journalism at SUNY Binghamton and at the University of California at Santa Barbara.

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