Is Malfunctioning US Democracy Responsible For Climate Change? An Interview With Graciela Chichilnisky And Heikki Patomaki

Heikki Patomaki

As the climate change crisis continues unabated, it is becoming increasingly clear that the absence of global governance is a major factor in our failure to take necessary action for protecting the future of the planet. But an equally significant factor behind this failure is the dysfunctional state of the American political system as the global superpower's elected officials continue to deny the global warming phenomenon and to insist on a business as usual approach vis a vis the environment in general and climate change in particular — in spite of the fact that the majority of the American people have a different view on the matter.

To what extent is the absence of global governance and the malfunctioning US democracy responsible for climate change? What will it take to turn things around and rescue humanity from an unmitigated disaster of its own making? Can technology provide a way out? These issues are debated below in a joined interview with two leading scholars: *Graciela Chichilnisky*, a world renowned economist and mathematician, Professor of Economics and of Statistics at Columbia University and Visiting Professor of Economics at Stanford University), and a leading force in the climate change battle (architect and author of the Kyoto Protocol Carbon Market, CEO and cofounder of Global Thermostat), and *Heikki*

Patomaki, Professor of World Politics at the University of Helsinki, Finland, and a leading authority in the field of global governance.

J. Polychroniou and Marcus Rolle: Climate change has emerged in early 21st century as the most critical global problem, although there still continues to be plenty of denial and inexcusable political inertia across the globe. In this context, to what extent is the difficulty of addressing climate change a problem related to the absence of global governance?

Heikki Patomaki: Global governance in this field is not entirely absent, as witnessed by the Kyoto Protocol and Paris Agreement, but it is seriously lacking in many important ways. A key reason for why proper global governance – or government – is needed is that individual state-actions and world markets are often poor in preventing unnecessary, unneeded and unwanted worldwide developments from happening. World markets and separate states may generate economic crises and downturns or global warming or other unsustainable developments. Without legitimate and well-functioning common institutions it is also difficult to take action against underdevelopment, uneven industrialization or growth, or global accumulation of privileges and power – all of which may also be self-reinforcing processes in the absence of proper countervailing responses. Moreover, these processes can also trigger and strengthen conflicts among states, which may lead to securitization, even to arms-race and wars.

We can talk about reflexive self-regulation when knowledge about the way the social systems – including the world system as a whole – function is applied recursively in interventions that aim at avoiding unwanted or achieving desired outcomes. But what is unwanted or desirable is always an ethico-political question. Not only are different anticipations about the possible and likely futures involved in the politics of climate change, but so are assumptions concerning justice or the extent to which either actual or administratively created simulated markets can regulate themselves.

Graciela Chichilnisky

Graciela Chichilnisky: Globalization emerged after World War II fostered by the Bretton Woods Institutions that were created in 1945: The World Bank, the IMF, the WTO. They provided governance of the world economy for the first time in history. The United Nations and its various organizations emerged in that same period, and offered diplomatic and political governance. But by their own design, the Bretton Woods institutions shaped *the world economy,* and, also by design, they were dominated by the United States, which emerged as the sole economic power after the destruction caused by WWII. It is not surprising, therefore, that the main obstacle for the global governance of climate change originates in the USA — in particular in the US Congress, which seems to be out of step with the American people. Economics, indeed industrialization as fostered by the Bretton Woods institutions and the USA as the chief supporter, is deeply anchored at the source of climate change. The Bretton Woods organizations enforced an economic model based on industrialization with deep and extensive overuse of natural resources of all types and particularly of fossil fuels as a source of energy. The world's resources were extracted by developing nations and exported at low prices and overconsumed in the industrial nations. Climate change is a physical fact, but its origins are economic. There is nothing that can be done about climate unless we change our prevailing economic models and institutions including the overuse of global resources such as water, air, biodiversity, and fossil fuels. These are the economic factors at the source of the problem: the governance of the world economy we have is forcefully imposing a pattern of economic growth – and defining economic progress – in a way that may have been possible a hundred years ago but is no longer feasible now. Economic progress as defined by the

Bretton Woods institutions will in all likelihood lead to catastrophic climate change and even to the extinction of the human species, destroying globally the sources of clean air, drinkable water, biodiversity, and a stable climate that are our basic needs for survival. We need to change the global governance of the world economy for our species to survive. The United Nations governance is anchored on the concept of nation states –it uses a "one nation one vote" principle, while the Bretton Woods institutions use "one dollar one vote", governance is determined by the dollar amount that a nation controls. Nation states are a relatively new concept in human history, and there is nothing that a single nation can do by itself to avoid the worst outcomes of climate change which is a global phenomenon, since CO2 concentration is the same everywhere in the planet, whether it is measured in New York, in Beijing, in Madrid or in Buenos Aires it is always the same. Each continent has enough fossil fuels to cause climate change by itself, affecting the entire world, Africa could cause trillions of dollars in losses to the USA, for example, just by burning its own coal. The issue is global and cannot be resolved by any single nation: it is truly a global issue and our global governing institutions are not appropriate for the challenge. Lord Nicholas Stern said that Climate Change is "the biggest externality in the history of humankind" and yet our economic governing institutions are based on markets for private goods that completely disregard externalities. We need new global governing institutions and a new economic discipline focused on internalizing externalities in order to face the climate challenge. This is the global carbon market I designed and wrote into the Kyoto Protocol achieves for the atmosphere. Traditional economics with private goods and private markets, with governing institutions based on nation states and private market values do not make the cut.

J. Polychroniou and Marcus Rolle: The political economy of climate change is a newly emerging field, yet it's epistemological foundations seem to rely heavily on traditional approaches to addressing social and economic problems, which essentially means that it relies heavily on market-based solutions even when climate change represents the biggest market failure (as a negative externality) in the world. What's your view about market-based solutions to combatting climate change?

Heikki Patomaki: We live in a neoliberal era. Neoliberalism is a program of developing and resolving problems of human society by means of competitive markets. This ideology in turn is based on a discourse of modernity that

presupposes atomist egocentrism, incapacity to understand wholes, abstract universality, lack of reflexivity and a number of other problematical assumptions. This worldview is more part of the problem than a solution to it.

The system of emissions trading means privatization of an aspect of the atmosphere. In economic theory, the idea of privatization as a solution to environmental problems is associated with the Ronald Coase and the Chicago School. The legal creation of property rights is supposed to enable efficient markets and contract mechanisms to function. Neoliberal thinkers believe that this should gradually solve the problem of climate change, although it may of course be admitted that past emissions may have delayed effects, or that for each state, there is a temptation to free-ride by allowing their firms off the hook, in order to make them more competitive.

In the cap-and-trade system some countries and firms can reap unearned profits by selling excess greenhouse gas allowances, depending on how those allowances are organized. Thus the cap-and-trade system creates a perverse incentive to be as polluting as possible during the initial assessment measurement, and a follow-on incentive to lobby for maximum numbers of permits by claiming for contingencies etc. This may co-explain the surplus of certificates and tendency for the prices of emission permits to decline.

The cap-and-trade system includes also trade with various financial derivatives of the certificates. Like speculative finance more generally, this encourages the search for quick profits and reinforces short-term temporal horizons. In the secondary markets of pollution permits, ecological sustainability appears as a secondary concern. What matters is money-making. Given this orientation, it is no wonder that the profit-oriented carbon trading has been liable to outright corruption. Apart from cases of fraud and bribery, abuses of power, and other conventional forms of corruption, as a UNDP report explains, “corruption in this sector has also taken more original forms, such as the strategic exploitation of ‘bad science’ and scientific uncertainties for profit, the manipulation of GHG market prices, and anti-systemic speculation”.

Graciela Chichilnisky: Capitalism is an ever changing force, whether it is viewed as a God or as a monster. It is always changing. Using its own internal engine of change, it is possible to evolve capitalism by creating global markets for the use of the global commons: for example, the atmosphere. This is the UN Carbon

Market. Water markets and markets for biodiversity have the same objective and the same capabilities for water and biodiversity which are critically endangered global public goods on which our species depends for survival. These are new markets and will provide different market values for the global commons, for example giving enormous value to clean air, clean water and a thriving biodiversity. Therefore, once these new markets are created, optimizing GDP acquires a different value. GDP is the sum of the *market value* of all goods and services produced by the economy and acquires then a completely different definition, one where economic progress is consistent with human survival and the satisfaction of basic needs, a concept that I created in the mid-1970's in the Bariloche Model of Argentina. Basic Needs were voted and adopted by 150 nations at the 1992 Earth Summit of Rio de Janeiro as the cornerstone of Sustainable Development: satisfying the basic needs of the present without depriving the future from satisfying its basic needs. It is key to understand that markets for the global commons are first of all based on limiting the use of air, water and biodiversity globally, which is needed right now. Without mandatory limits, or property rights, markets do not work. Some people are against the carbon market for philosophical or ethical reasons, but this is a complete misunderstanding of what the carbon market means, what a market for water or biodiversity would mean. Markets cannot exist without mandatory limits on the use of air, of water and of biodiversity, nation by nation, and globally. Scientists agree that we need such limits. The critics of the carbon market do not argue with limiting the use of the atmosphere – which is needed before any market can operate. So what is the argument? The argument against the carbon market appears to be a misunderstanding. The argument is against the trading of rights to emit, which is the carbon market: but there is no argument from that side on the limits on emissions that are mandatory, nation by nation and global, and are sustained and implementing globally by the carbon market as is required by the scientists of the IPCC (UN Intergovernmental Panel on Climate Chance, the global scientific authority that was awarded the Nobel Peace Prize for its work on Climate Change). The more a nation goes above its limit, the more it has to pay per ton and in total for doing so, to the point that it cuts where it hurts: in the pocket or economics of the nation. This is not a simple economic transaction: it hurts to go above one's limit to the point that a nation could go bankrupt if it did. And it could lose its economic viability and therefore its political structure. In addition, the *carbon market is not a cap and trade system*. Yes: the carbon market is not the same as cap and trade. It is a market for user rights on a global public

good – the planet's atmosphere – and therefore the initial distribution of endowments must favor lower income nations to reach an efficient market solution. This is new and different – certainly it is not even contemplated by "cap and trade" systems like the Chicago SO2 market. In practice, within the Kyoto Protocol this became the "Clean Development Mechanism" that has transferred over $120Bn to developing nations for clean technology projects since 2005, when the carbon market was ratified and became international law. So the creation of new markets for the global commons (for the atmosphere, the hydrosphere and the biosphere) embodies a profound economic change, a change in the way we relate to nature and in the the value we give to humans and their survival. Is it possible that capitalism based on new property rights on the use of the global commons, as explained here, will change capitalism from within? Yes, this is possible. We already created the global carbon market and it is international law since 2005, the market I designed and wrote into the Kyoto Protocol, and this carbon market has been trading $175Bn/year as of 2012. And it is based on carbon emission limits, nation by nation and globally. According to the World Bank, the carbon market nations have reduced since their emissions by about 30%, while the others increased their emissions since the carbon market became international law in 2005. We could do the same with water and biodiversity. Wait: I don't mean "we could," I mean "we must". If we don't value water, air and biodiversity, which are goods needed for our survival, our species will not survive.

J. Polychroniou and Marcus Rolle: The Kyoto Protocol was the first major effort on the part of the world community to tackle the problem of climate change. Does it remain a viable climate change policy for the 21st century?

Heikki Patomaki: The Kyoto Protocol is far from a satisfactory solution to the 21st century problems. The 1997 Kyoto Protocol sets carbon dioxide emission quotas for countries. Quotas and caps can be seen as fixed, as they often are, but the Kyoto Protocol includes an emissions trading scheme that allows actors to trade their commitments. In other words, this system creates a market for carbon dioxide emissions, for a type of pollution. This has manifold moral and political implications. For instance, emission trading undermines the sense of shared sacrifice necessary to future global cooperation on the environment, while also encouraging an instrumental attitude towards nature.

The second Kyoto Protocol commitment period applies to emissions from

2013-2020. This system is far from being all-inclusive. The countries with binding targets in the second commitment period comprise only the members of the EU and a few other European states, such as Australia and Kazakhstan. Many of these countries are committed to reducing, by 2020, their emissions to 80% of their 1990 emissions. A problem of the second commitment period is that between 2005 and 2012, a number of countries saw their emissions cut by more than they had promised, so they now have a surplus of emissions permits. This was mostly because of the fall of industrial output due to the global recession of 2008-. If these emission permits were carried over into the second commitment period, it could render the whole exercise virtually pointless, as the extra permits would allow countries to continue emitting. Under the amendment "3.7ter", however, many of these permits will be cancelled by 2015. The second period can thus imply some new reductions in emissions, but encompasses only the EU and a few other countries.

By summer 2016, 66 states had accepted the Doha Amendment, while entry into force requires the acceptances of 144 states. Of the 37 countries with binding commitments, 7 have ratified.

Graciela Chichilnisky: Yes, it does. It's structure is working fine, but the limits on emissions that it harbors in its Appendix, nation by nation, must be extended to all nations and in time. Otherwise the carbon market cannot work. The carbon market trades rights to emits, and without limits there is nothing to trade. This is why the Paris Agreement has been called a "fraud" by James Hansen, the father of climate change science. The Paris Agreement has no mandatory limits. Can this be done? Can emission limits be successfully imposed? Definitely. Kyoto did it in 1997. As we saw October 14th 2016 at the UN climate meeting in Kigaly, Rwanda 170 nations are willing to cooperate and made HFC emission limits mandatory (they extended the Montreal Protocol to encompass HFCs, which did not require US Congress approval) and HFCs are greenhouse gases. So the carbon market can thrive and produce the global change in values that is absolutely needed right now. The main and almost the single obstacle is the US Congress and this is explained above. However most Americans disagree with their Congress representatives on the issue, but polls show that fossil fuel lobbying shifts the US Congress' vote away from the American voter. The situation may change due to new technologies that are carbon negative and make carbon reduction possible while increasing profits and economic gains today. These could and eventually

will turn US Congress around: the only question is how long this process will take. We are clearly running out of time with the North and the South Poles melting and the overwhelming damages caused by amplified draughts, floods and hurricanes caused by climate chance, which lead to millions of people migrating and costs of hundreds of billions of dollars worldwide. It can be done: the question is when.

J. Polychroniou and Marcus Rolle: One of you (Heikki Patomaki) has been arguing in favor of a global Keynesian approach to climate change and the environment in general. What distinguishes the Keynesian approach to climate change and environment related problems from mainstream environmental economics?

Heikki Patomaki: Differences between tax and cap-and-trade systems concern distributional implications; simplicity and related administrative and transaction costs; effective scope; and dynamic effects. A tax can generate substantial public revenue that can be used for purposes of common good and global redistribution, as defined through a democratic process, also to compensate for the effects of global warming. A carbon tax is also relatively simple and can thus be easily specified in a fairly short legal text, whereas cap-and-trade proposals are much more complicated. Setting up caps and emission certificates and their trading system – an administratively created synthetic market – involves many intricate technical issues (e.g. the proposal needs to determine how allowances will be created and distributed), entailing high administrative costs. Moreover, a system of tradable permits entails also significant transaction costs to the actors themselves, because they have to search for traders, engage in negotiations, seek approval for deals and take insurance.

What is more, cap-and-trade systems can only be implemented among private firms or countries. In contrast, taxes have broader effects. For instance, a carbon tax extends to all carbon-based fuel consumption, including gasoline, home heating oil and aviation fuels. The scope of greenhouse gas taxes is thus wider and covers comprehensively different sources of emissions. A further advantage of the tax is that it offers a permanent incentive to reduce emissions, whereas caps fix the preferred amount of decrease in emission, typically a result of compromise and lobbying.

At a deeper philosophical level, the idea of a global tax is part of a global-Keynesian approach that is more compatible with environmental concerns than

conventional economics. According to the holistic perspective of Keynesian economic theory, economic developments, and especially the formation of effective aggregate demand, are seen from the standpoint of all actors and countries at once. The conditions in which actions are taken form a whole in which the various parts are dependent on each other. Thus understood, Keynesian theory is consistent with a cosmopolitan moral perspective, as morality in general requires sufficient universalizability across different contexts, concerns and interests. The aim of various versions of the universalization principle is to help in locating norms that can be accepted by different parties irrespective of race, gender, age, nationality, world-view, or even present conditions. Valid norms may, and sometimes also must, take into account future generations. When connections across temporal (and spatial) distance are robust and when the effects of activities on nature or society will be enduring, as in the case of global warming, the effects must be considered from an ethical point of view.

Graciela Chichilnisky: Generally speaking, the Keynesian approach views the aggregate demand of an economy as a public good, which makes it therefore part and parcel of economic policy. This is generally correct, although sloppy implementation can lead to very bad consequences. To br sure, Keynesianism's good will and positive hopes do not suffice. But think of it this way: a financial policy that offers high income individuals shares in new technology companies that deploy and scale up carbon negative technologies can reverse climate change and is both Keynesian and conservative at the same time. It can be done. The critical thing now, as stated in the 5th Assessment Report of the IPCC and the Paris Agreement, is to remove the excess carbon that is already in the atmosphere which will remain otherwise for hundreds of years and will inexorably lead to irreversible climate change disaster. And no, adopting clean energy and recycling positively and emphatically do not suffice — there is not enough time for that, nor for the great policy of planting more trees that is critical for biodiversity. These policies are great, but, as demonstrated by UN studies, it will take decades and beyond this century to have an impact on climate change. Moreover, CO_2 already emitted stays in the atmosphere for hundreds of years and, if not removed right now, it will add up to additional layers of carbon dioxide which at this stage will overflow the glass. This means irreversible climate change. But carbon negative technologies that can clean the atmosphere today effectively and reverse climate change do exist, as reported by KPMG and Forbes Magazine in articles and videos two weeks ago, and they can use the carbon dioxide removed or

“farmed” from the air to generate billions of dollars from the sale of CO2 for the production of beverages, food, greenhouses, plastic and other building materials, carbon fibers that replace metals, synthetic gasoline, and water desalination. I am now reciting the business model of Global Thermostat www.globalthermostat.com whose proven technology is inexpensive and flexible, modular, and farms CO2 directly from the atmosphere while transforming it into dollar bills from the sale of the materials and goods just described. Of course this can be done. We need 15-20 years at $200Bn/year which the carbon market of the UN has already traded in 2012, in just one year. The process is low-cost and profitable, so the money is only project finance. We need, for example, to build 30,000 Global Thermostat plants removing 1MM tons of CO2 per year each, which is about 150 per nation. That is all. And while Global Thermostat is a visionary leader, other technologies and firms will emerge to imitate its business model and the economy – and all of us – will be better off for that. Let’s do it.

J. Polychroniou and Marcus Rolle: The Industrial Revolution, which eventually gave rise to a global industrial civilization, was based on a fossil-fuel economy. However, the very source of energy that created a new dawn for human civilization is now responsible for the global warming phenomenon which, if it continues unabated, could begin very soon to have an immensely catastrophic impact on global industrial civilization itself by creating new sources of conflict and instability and even leading eventually to the destruction of civil society as we know it in the western world. Do you agree with this assessment and, if so, what do you consider to be the most practical and realistic clean energy systems that can be adopted in a world under complex interdependence?

Heikki Patomaki: I believe industrialization is a universal condition for humanity – it could have happened in China earlier, or it could have been postponed and happened somewhere else than Europe, but it was bound to happen at some point somewhere. We can also talk about universal political economy stages can be defined in terms of the available forces of production and sources of energy. The development of humanity so far has proceeded through three different stages:
(1) The stage of hunter-gatherers, who can handle fi re and simple tools but have no other sources of energy than their own muscles and the heat of fire;
(2) The stage of agricultural civilization, where the main source of energy is human and animal muscle, although increasingly also wind, water flows and chemical explosives are being exploited;

(3) The stage of industrial civilization, based on the work of machines operated with external sources of energy, such as fossil fuels, wind or water flows which are transformed into electricity, and nuclear power. The problem with the stage (3) is precisely is that the use of fossil fuels or uranium is neither sustainable nor renewable.

Now we – the humanity – are facing an acute crisis and must move quickly to a new stage. The main source of all energy is the sun, although also Earth's internal heat can be a source of energy. The energy of the sun can be captured directly, but it also generates flows of air and water, which can be utilized too. In addition, hydrogen is a zero-emission fuel; and heat pumps can be used to save energy. And in principle we can also imitate the fusion processes of the sun on the Earth. These are all, at least in principle, either renewable energy sources or ways of saving energy, but no human system of harnessing of saving energy is ecologically, ethically or politically neutral.

Especially under the current politico-economic circumstances, I tend to favor decentralized solutions, such as household or factory based solar panels and heat pumps, although we need to invest in any possibilities that look at least potentially promising. Consider for instance using tidal energy for separating hydrogen from water. One of my favorite ideas is, however, really large-scale solar panels in space, the building of which might require also the use of a space elevator. A major problem with these kinds of solutions is, of course, that they could also be used as weapons. A global security community is a precondition for the feasibility of large-scale and centralized solutions – and even then it is not reasonable to put all one's eggs in one basket.

Graciela Chichilnisky: We need to build a large number of carbon negative power plants, which are already operating today: there is a Global Thermostat plant at SRI in Silicon Valley that is cleaning SRI's natural gas power plant — and with the residual heat it cleans inexpensively the atmosphere from additional CO2. This is possible, and the residual heat required can come from a solar plant, so GT can produce carbon negative power plants based on solar plants, thus accelerating the new and clean forms of energy. We need to build 30,000 such carbon negative plants, each producing electricity, while removing 1MM tons of CO2 per year, which amounts to about 150 plants per nation. This is completely manageable and can be implemented in a few years, as described above, starting right now.

J. Polychroniou and Marcus Rolle: It is becoming increasingly obvious that the reduction of emissions is not enough to combat the climate change threat as there is too much carbon dioxide already accumulated in the atmosphere, thereby ensuring that temperatures will continue rising even with noticeable reduction in future emissions and other greenhouse gases. In your view, why is there little interest so far in using gigaton-scale carbon dioxide removal technologies?

Heikki Patomaki: Carbon dioxide removal is considered costly for public budgets when most parties seem keen in their attempts to cut down their public budgets. It can also be a relatively slow method, whereas the prevailing time horizon of profit maximizers and politicians tends to be very short.

The best method by far would be reforestation and the leaving of as much forest-space as possible to its natural stage (for example, the contemporary Finnish forests contain only a fraction of wood that the old forests did). But as you indicate in your question, there are also technological solutions that can and must be considered and used. The cleaning and stabilization of the planet Earth will be a costly long-term project. The good news is that from a global-Keynesian perspective, these kinds of investments can also stimulate the economy and reduce unemployment.

Graciela Chichilnisky: The reluctance is based on lack of information and the fear of large cost mammoth-like failed examples of plants that have done carbon capture and sequestration (CCS) until now. All failed. None produced CO2 at a cost that could be sold for economic value. But Global Thermostat's new technology is completely different from our grandfather's CCS ("carbon capture and sequestration") which, as I mentioned, has failed and failed time and again, costing a lot of time and money loss in the process. How different? Global Thermostat's plants are small portable and modular, not huge mammoths. Each unit is about 12'x15'35' -that is all. To build a 1MM ton plant you put together several units. And Global Thermostat ' CO2 removal cost is very low because the CO2 is farmed from air that is free and the energy used by GT is residual heat from industrial facilities that costs nothing. Free inputs and free energy explains why the price is so low. And let's not forget that CCS buries the CO2, which is what "sequestration" means, so it is all cost. Instead, Global Thermostat sells the CO2 it removes from the air to a large and hungry market mentioned above, making the whole thing a commercially viable proposition. And no additional emissions are created since no electricity is used. GT does not fall into the

electrical cars trap, which use no gasoline but a lot of electricity, which is the worse emitter of CO2 in the world.

J. Polychroniou and Marcus Rolle: One final question. Why doesn't climate change trigger the moral judgment system as do some other social issues and problems?

Heikki Patomaki: Many scholars and movements are calling for new institutional responses to the risks and threats created by the processes of the originally European first modernization that has now become global. So it is not entirely true that climate change does not trigger the moral judgment system as do some other social issues and problems. Moreover, I would stress that there is something truly unique in this reflexive response to the problems we have ourselves created. For the first time in human history, we are systematically anticipating the next 50-200 years and trying to modify our practices and institutions accordingly. We are also increasingly aware of the politics of anticipation.

But there is a sense in which your question is well taken and right on the mark. It is of course difficult to orientate toward consequences that are hardly visible in one's everyday life. This practical difficulty of learning the lessons from what is happening can easily be combined with the prevailing mythology of liberal-capitalist market societies, A basic "mythologeme" of liberal-capitalist societies of the late-twentieth century and early-twenty-first century comprises of three temporal tiers:
(i) the first tier is constituted by cosmic myths of desperation, involving the Copernican principle — "we don't occupy a privileged position in the universe" — and various narratives about how the story of humanity will inevitably end up in death, at some scale of time;
(ii) sensibilities verging on cosmic desperation are then liable to fostering competitive ego- and ethnocentric short-termism, both compatible with Darwinist ideologies; and
(iii) belief in technological progress and economic growth, providing sources of welfare and pleasure to the growing human population at least in the coming decades (i.e., at least as long as I, or we, can expect to live). All this amount to saying nothing really matters; let's have fun here and now.

Against this worldview, I would like to propose an alternative, counter-hegemonic story. It is possible to outline an alternative story-line that revolves around life

rather than death. Those real cosmic risks that are relevant in the human-historical scales of time — from decades up to tens of thousands of years — can best be addressed by means of future-oriented planetary co-operation. From a long-term perspective, it is critically important to recognize that our universe is not only physical. It is also biological and cultural, and constantly changing. The emergent layers of life and culture may gradually assume an increasingly important role in the further developments of the universe. Biological reality is multi-layered, hierarchically organized and involves interdependent functional synergies and higher-level controls, making purposive behavior possible. Complex systems of life have shaped the chemical composition and development of planet Earth for more than three billion years, setting it on a path of development systematically off its thermodynamic and chemical "equilibrium". The Earth is blue because it is teeming with life.

Since the industrial revolution, human culture has started to shape developments on a planetary scale. Thus we are talking about the Anthropocene. The impact may have been problematic so far, as shown by the mass extinction of species and anthropogenic global warming, but the role of humanity may turn out to be more life-promoting and ethical in the future. We humans are now deeply involved in the future developments of the planet. By cautiously generalizing from the experiences of the Earth, it is conceivable that, in the future, life and consciousness will play a co-formative role in our galaxy and possibly also in the universe as a whole.

Perhaps, as the well-known physicist Freeman Dyson has proposed, the gradual greening of the galaxy will become an irreversible process, in which we are playing a role. The expansion of life over the universe and its evolvement qualitatively into new dimensions of mind and spirit would occur simultaneously. This scenario of the greening of the galaxy involves a future project for humanity; the expansion of life and culture into space may be one of the chief tasks awaiting humankind. But first we must make life on this planet sustainable in the very long run. This is the only haven of life we know so far. No matter what will happen in the future, this will remain the home for the bulk of humanity for a very long time to come. There is no escape to the space.

Graciela Chichilnisky: What moral judgment system? This sounds like a good idea, to paraphrase Mahatma Gandhi when he was asked what he thought of Western Civilization.

Paola Totaro ~ Dying For A Pee: Cape Town's Slum Residents Battle For Sanitation

CAPE TOWN, Oct 12 (Thomson Reuters Foundation) – Siphesihle Mbango was just six years old when her friend, Asenathi, begged her to go with her to the toilet then ran outside alone – and was never seen again.

Now 12, Mbango tells the story with an intense, unflinching gaze but her hands, fidgeting nervously as she speaks, show the trauma is still raw.
"We were at the crèche and she wanted me to go with her," but I told her I was busy, I was playing, I didn't want to go and she went out by herself," she said, at her home in a Cape Town slum.
"It was a long time she was away and when the teachers asked me, I told them she went to the toilet. They looked and looked for her for a long, long time. But then we lost hope. We never saw her again."

Read more: http://www.thisisplace.org/

Revisiting The New Deal: Lessons

For A World In Dire Need Of Sustainable Social Change And Economic Development

C. J. Polychroniou

Few policies and programs designed to promote economic recovery and social reform have attracted as much attention as those associated with President Franklin D. Roosevelt's *New Deal* during the 1930s when the U.S. economy had plunged into its worst economic crisis in its history. And with good reason: the New Deal programs, although initially opposed by the major financial and corporate interests of the country, partly out of horror that they represented a step towards "socialism" and partly out of fear that they would pose an obstacle to their profit-maximizing pursuits by narrowing the scope of labor exploitation, kept capitalism alive and staved off social unrest and rebellion. The New Deal planners achieved this by abandoning the myth of pro-market solutions to economic crises and relying instead on a set of massive government interventions.

Among other things, the New Deal programs centralized planning (National Industrial Recovery Act) and funded under this plan the construction of large-scale public works (Public Works Administration) as a means of providing employment for millions of jobless workers, reformed the banking system with the *Glass–Steagall Act*, provided integrated solutions to the needs of the economies of several depressed Southern state (Tennessee Valley Authority) and set up a

federally-guaranteed pension system (Social Security Act).

The New Deal programs provide a glowing example of how powerful the role of government can be in rescuing an economy from complete collapse, delivering relief to millions of lives tossed aside by a socio-economic system with an inherent tendency to treat people as if there were things, and reducing the gap between rich and poor.

The New Deal wasn't a revolution, but it did save many people's lives. It did not end the depression, but it might have (although this is still highly debatable) if FDR hadn't decided in 1937 to cut back stimulus because of his concerns about inflation and the federal deficit. The New Deal also laid the basis for what could have been very positive changes in the years that followed, had it not been beaten back by the bitter class war fought by what Noam Chomsky calls the highly class conscious business classes,[i] assisted by the powerful weapon of anti-communist hysteria.

Thus, the New Deal is widely seen as one of the greatest experiments of active state intervention under capitalism, so it's little wonder why the political thinking behind the New Deal-era projects is also regarded by many as an ideal model to inform policy intervention in today's world as the advanced capitalist economies are once again in the throes of a serious economic and social crisis marked by stagnant or anemic growth, rising unemployment and social exclusion, extreme levels of inequality, and rapidly declining standards of living.

While far from being thoroughly Keynesian, some of the New Deal projects fall firmly into counter-cyclical demand management schemes, especially some of the second New Deal programs such as the Works Progress Administration (1935-1943), and it is primarily these aspects of the New Deal experimental programs (including the Civil Conservation Corps) that serve as a guide to the call of many progressive and non-orthodox economists for the adoption of a New Deal for the 21st Century.[ii]

However, aside from the obvious question as to whether it is feasible to resurrect the reformist zeal of the New Deal in today's world, there are some annoying facts about active state intervention under capitalism as well as some disturbing realities about capitalism itself which cannot be overlooked or ignored by those committed to an alternative social order.

First and foremost, the *raison d'être* of active state intervention in a capitalist regime is none other than to save capitalism itself. The recent bailouts of the financial system both in the United States and in Europe constitute the most blatant form of active state intervention for the purpose of saving capitalism from collapse. Indeed, when the collapse of the capitalist system seems imminent, suddenly "socialism" is a great idea. In this case, active state intervention in the form of bank bailouts and quantitative easing is socialism for the rich. Same goes for the outrageous taxpayer subsidies to business, which has led to the creation of an enormous corporate welfare state.[iii]

Second, it has always been the case that most of those seeking to reform capitalism are committed to doing so because they reject any alternative to private wealth accumulation and are in fact blatantly against schemes advocating the creation of a socioeconomic system whereby collective ownership–either at the national or community level– and participatory democracy constitute the principal elements of the new social order.

While this is not to suggest by any stretch of the imagination that reform is undesirable or useless (the New Deal experience should have dispelled such narrow-minded views long ago), reforms by those committed to an alternative social order must necessarily be assessed on grounds for laying the basis for the transcendence of capitalism and eventually the emergence of a new socio-economic order that provides hope for an end to the waste of resources and of workers lives and a future based on ecologically sustainable development. Lest we forget, capitalism is an inherently crisis-prone socio-economic system and thus much more needs to be done than temporarily taming the appetites of the beast for waste, exploitation, inequality, ecological degradation, dispossession, and violence. Even under the New Deal programs, millions of people were still without jobs and the Great Depression ends only with the outbreak of WW II and the full incorporation of the U.S. economy into the war effort. Moreover, the New Deal programs did not seek to end exploitation or give workers a greater say in decision making. In this context, it is instructive for a world in dire need of radical social change and sustainable and equitable economic development to attempt to draw the proper lessons from the New Deal experience. Any economic doctrine advocating abstract growth and/or relying on policies that aim to attain continuous economic growth under the current system (as the old-fashioned Keynesians are still striving for in a constant attempt to save capitalism from its

own contradictions)) needs to be completely rejected if there is to be hope for an end to the waste of resources and of workers lives and a future based on ecologically sustainable development. At this point in the evolution of society [iv], a successful economy without the drive for continuous economic growth via capital accumulation should be both very much possible and desirable.[v]

The Ultimate Effects of the Great Depression and the Raison D'être of the New Deal-era Programs

Just like the financial crisis of 2007-08 that was initiated with the collapse of Lehman Brothers, the collapse of the U.S. stock market in October 1929 which led to the Great Depression of the 1930s took capitalists by surprise, although there were clear signs that the American economy was in trouble several years before the crash, as the late economic historian Charles Kindleberger has shown in his now classic work The World in Depression, 1929-1939. As he writes in this book, March was the peak of automobile production, which fell from 622,000 in that month to 416,000 in September, at the height of the stock market. The industrial production index fell after June, and the decline in industrial production, prices and personal income from August to October was at annual rates of 20, 7 ½ and 5 percent.[vi] The agricultural sector, still quite important in terms of its impact on the U.S. economy, had been in a state of depression since 1920 and farm incomes ceased to rise after 1925.[vii] Residential and nonresidential construction had been in a state of slump since the early 1920s and begun to decline after 1925 as well.[viii] Just like the contemporary era and prior to the outbreak of the financial crisis of 2007-08, income inequality in the United States was growing at a tremendous pace throughout the 1920s. Between 1920 and 1929, the top 5% of the population increased its share of the national income from 24% to 34%.[ix] The collapse of thousands of banks before the crash pointed to a severe malfunction in the U.S. banking and financial system.

Following the collapse of the stock market, the U.S. economy took a rapid and catastrophic nose-dive. As the depression set in, nearly forcing capitalists to close shop for good, industrial production fell by over 50% in 1932, salaries decreased by 40%, manufacturing wages shrank by 60%, over 200 banks closed and one-fourth of the labor force was unemployed.[x] Between 1929 and 1933, the national income dropped by 54%.[xi] Gross domestic investment declined by 89%.[xii] Between 1930 and 1941, actual GNP was nearly 25% below the economy s potential.[xiii] Farmers suffered the most extensive damage because

of the Depression as gross farm income dropped from $11.9 billion in 1929 to $5.3 billion in 1933.[xiv]

The figures cited above should provide a vivid picture of the catastrophic state of the U.S. economy in the early 1930s because of the Great Depression[xv] Thus, that something had to be done about it was not in question, although it was far from clear what should be done to get the economy and the country out of this horrendous situation. Socialism was certainly not on the agenda. The voices calling for radical economic change were always few and far in between throughout the modern history of the United States, and the labor movement had experienced an abrupt decline in union membership and activities throughout the 1920s, partly as a result of the red scare of the late 1910s and early 1920s which not only made joining a union seem un-American but helped to wreck the momentum of labors wartime gains,[xvi] partly as a result of anti-union ruling by U.S. courts in the 1920s, and partly as a result of the booming economy of the 1920s which reduced substantially the number of strikes throughout the nation as it made workers feel secure about their job and their income. All that remained therefore was some type of Keynesian state capitalism or some variation of fascism inspired by the ideologies of Mussolini and Hitler.[xvii]

Herbert Hoover had been in office only a few months before the Wall Street crash of 1929 and his approach to the Great Depression that followed has ensured him a measure of notoriety which may or may not be justified. No doubt, Hoovers economic policies were of no help in dealing with the destructive effects of the Great Depression, but at the same time they have been the victim of a rather caricaturist treatment in comparison with the policies of his successor, Franklin Delano Roosevelt. Indeed, the truth of the matter is that FDRs early economic policy for dealing with the Great Depression consisted in many respects of the mere expansion of Hoovers policies while the New Deal programs that eventually came into being embodied no single approach to political management of the economy.[xviii]

For starters, while it is true that Hoover believed in and preached the ideology of laissez-faire capitalism, and also seemed to be convinced that what had taken place in October 1929 was something of a natural market readjustment, his actual economic policies were in favor of protectionism and actually led the government into terrain that would normally be off-limits.[xix] (Decades later there would be yet another U.S. president who would adopt a similar posture i.e.,

preaching the virtues of free market capitalism while practicing the most blatant form of protectionism, i.e., Ronald Reagan). Hoover did oppose calls for federal intervention even when the economy had hit rock bottom, but his administration created government agencies — such as the Reconstruction Finance Corporation — to combat the Great Depression, sought to establish a harmonious relationship between business and labor and even adopted a high wage policy, tried to foster a close collaboration between state government and the private sector, and promoted (though on a very limited scale) public works projects *(*San Francisco Bay Bridge, Los Angeles Aqueduct, and Hoover Dam).

While a believer in a balanced budget (Hoover increased taxes on high earners in 1931 and 1932), the fact of the matter is that federal spending increased significantly during his administration (although it was clearly not enough to make not one iota of a difference): according to the historical tables of the Office of Management and Budget, spending in 1929 was $3.1 billion, up from $2.9 billion the year before. In 1930 it was $3.3 billion. In 1931, Hoover raised spending to $3.6 billion. And in 1932, he opened the taps to $4.7 billion, where it basically stayed into 1933 (most of which was a Hoover budget). As a percentage of GDP, spending rose from 3.4% in 1930 to 8% in 1933–an increase larger than the increase under FDR, though of course thankfully under FDR, the denominator (GDP) had stopped shrinking.[xx]

If this is hard to believe, given the still prevailing view of Hoover as a president who stood by idly, doing nothing to stop the free fall of the American economy, consider the fact that FDR, lo and behold, was attacking Hoover during the 1932 campaign for overspending as well as for advocating an interventionist economy. For the doubting Thomases, in an address at Sioux City, Iowa, on September 29, 1932, this is what the next president of the United States and the man whose reform policies would change forever the relationship between government and the economy had to say about Hoover's economic policies: I accuse the present Administration of being the greatest spending Administration in peace times in all our history. It is an Administration that has piled bureau on bureau, commission on commission, and has failed to anticipate the dire needs and the reduced earning power of the people. Bureaus and bureaucrats, commissions and commissioners have been retained at the expense of the taxpayer.[xxi]

FDR was a shrewd politician, so it is possible that what he was saying in public in 1932 and what he knew that had to be done once in office in order to stop the

hemorrhage of the American economy and the immense suffering of millions of working people may be two different things. However, it is more likely, given FDR's background, that he also believed in 1932 that the Great Depression would soon come to an end if orthodox fiscal economics were pursued with rigor and consistency. How else to explain the fact that he was advocating a balanced budget even in his 1932 campaign? Indeed, there is evidence that FDR believed in balanced budgets even after he took office and that he considered the expenditure for work and relief programs as separate from normal government outlays.[xxii]

In this context, FDR's economic thinking was in all likelihood not very different from that of Herbert Hoover. They both espoused conventional views on fiscal policy and were staunch supporters of capitalism and firm believers in the individual capitalist ethos. It is also beyond doubt that both Hoover and FDR begun to advance public works programs because they feared working class rebellions, which could have made any effort to restoring capitalism a vain undertaking.[xxiii] In fact, aside from mob looting that first took place once unemployment became widespread, "farmers and unemployed workers took direct action against what they saw as the causes of their plight"[xxiv] and political demonstrations running into tens of thousands, with people marching under Communist Party banners with slogans such as "*Fight" Don't Starve*," became a common feature of the early years of the Great Depression in many cities throughout the United States.[xxv]

All of the above assumptions seem to carry considerable validity as the first hundred days of the Roosevelt administration were marked by rather moderate undertakings, the most important of which was the establishment of the Civilian Conservation Corps (CCC), a project that provided work in the national forests for some 2.5 million predominantly white men. The Federal Emergency Relief Administration (FERA) was also created during the first one hundred days, but the relief programs proved to be quite inadequate.

Traditionally, the New Deal has been divided into two parts. The first part covers the period between 1933 to 1934, and it is associated with lukewarm attempts to address some of the problems caused by the Crash of 1929. The second part covers the period between 1935 to 1937, and involves the reform measures undertaken to solve the deep, structural social problems caused by the Great Depression.[xxvi] Tacking unemployment on a grand scale and providing a social

welfare system are part of the second New Deal and form the great legacy that FDR left behind.

However, even the most ambitious New Deal programs to tackle unemployment, such as the Works Project Administration (WPA), established in 1935 by executive order and employing nearly three and a half million by 1936, fall way short of eliminating unemployment. Nor did they manage to eliminate poverty or provide a major boost to long-term economic growth.[xxvii] There were 15 million unemployed people in the United States in 1933 and the number of the unemployed was still over 10 million in 1938. And, by 1939, U.S. GDP (at $85 billion) still remains way below the 1928 levels (at $100 billion), although there was of course significant economic improvement between 1933 and 1939.[xxviii]

At the same time, though, it is also important to point out that the U.S. economy experiences a sharp decline between 1937-1938 as a result of FDR's growing concerns with inflation and the federal deficit, which goes on to show what would have been the result had the recovery of the US economy from the devastating effects of the Great Depression relief purely on the ability of the private sector and the alleged magic of the market forces to turn things around. Nonetheless, it is ultimately the outbreak of World War II that pushes the US economy out of the Great Depression as all economic resources are being mobilized towards war production. Indeed, it the New Deal programs saved capitalism from collapse, World War II not only brought to an end the biggest economic crisis that had ever faced the US economy but set the stage for the consolidation of the rise of the United States as a global superpower a process that had been under way since the end of the First World War with the onset of the crisis of colonial empires.

Is a Global New Deal Possible in Today's Capitalist Environment?
While the New Deal experiment continues to fascinate growth-oriented economists and progressive minded people in general, today's economic, political and social environment is hardly conducive for the undertaking of such a project by any national government in the western world.

In the age of globalization and the financialization of the economy, where neoliberalism reigns supreme, organized labor is in deep retreat, and public debt has shot through the roof in all major advanced economies and thereby producing an ideological convergence among conservatives and most social democrats on fiscal affairs, the undertaking of an economic program along the lines of FDR's

New Deal is neither politically nor economically realistic. Moreover, a new New Deal will do nothing to solve the underlying problems of capitalism and, most likely, delay the need to combat climate change through its emphasis on boosting growth via a new era of state capitalism.

No doubt, what the world needs today is not a return to traditional economics of rescuing capitalism but a new global economic model based on new economic values, balanced growth, and the introduction of cooperative economics. A reversal of today's globalization trends may also be necessary for the realistic transition into a new economic model, one that breaks free from a political economy paradigm which, as I have argued elsewhere, "revolves around finance capital, is based on a savage form of free market fundamentalism and thrives on a wave of globalizing processes and global financial networks that have produced global economic oligarchies with the capacity to influence the shaping of policymaking across nations."29

The economic environment of contemporary capitalism is shaped by three interrelated forces: financialization, neoliberalism and globalization. It is the combined effects of these three forces that have given rise to a new form of predatory capitalism in late twentieth and early twenty-first centuries. As such, anyy project driven by New Deal aspirations needs to implement political processes that will undermine and bring to a halt all three of the above forces.

Having said that, it would be at least naive to think that the proponents of a New Deal, which tend to be nostly of social democratic ilk and remain firmly committed to a capitalist socio-economic order, have the political will to engage in such an undertaking. Indeed, their arguments for a New Deal for Europe and the United States rest on convincing the current economic elite that such a project would be best for the future of capitalism itself. Indeed, New Dealers do not call for the re-organization of the economy nor do they advocate anything resembling economic democracy.

The answers to the problems confronting today's advanced capitalist economies and societies cannot come from within the logic of the very system that is responsible for causing massive unemployment, constantly widening the gap between haves and have-nots, and producing social malaise, alienation, violence, and social marginalization while at the same time destroying the environment and threatening the end of human civilization as we know it with the phenomenon of

global warming, which is not simply caused by human activity but by the dynamics of a specific system of economic and social organization which thrives of capital accumulation.

The answers to the problems of unemployment, inequality, poverty, violence, and environmental degradation can come only through the end of capitalism and its replacement by democratically run forms of economic and social organization, which probably mandate a return to the nation-state and probably to economic localization.

In this context, putting an end to global free trade regimes, reversing the globalization trends of the last 40 years, resisting corporate takeovers and the privatization of national economies, and creating new networks of political activism based on class-politics and centered around a vision of democratic socialism — instead of political activism revolving around the politics of identity and multiculturalism, phenomena akin to contemporary capitalism and whose demands and claims mainstream power readily accommodates—is the only way to put an end to capitalist barbarism.

Whether today's Left is up for that task is however another story.

NOTES

[i] The phrase is encountered in Noam Chomsky's address at the Riverside Church in New York City on June 12, 2009, sponsored by The Brecht Forum and bearing the title "*Crisis and Hope: Theirs and Ours.*"

[ii] See, for example, the work of Heiki Patomaki, *The Great Eurozone Disaster*: *From Crisis to Global New Deal*. London: Zed Books, 2013, while a more recent attempt to make a case for the implementation of a New Deal in the eurozone is made by French economist Thomas Piketty in "A New Deal for Europe," New York Review of Books (February 25, 2016).

[iii] For the case of the U.S. corporate welfare state, see David Cay Johnston, "*The shocking numbers behind corporate welfare.*" Al Jazeera America (February 25, 2014); for the British corporate welfare state, see Aditya Chakraborty, "*Cut Benefits? Yes, let's start with our own £85bn corporate welfare handout.*" The Guardian.com (October 6, 2014).

[iv] For a rather unique even if highly controversial review of human and societal evolution, see Bela H. Banathy, *Guided Evolution of Society: A Systems View*. New York: Springer Publishing Company, 2010.

[v] See Herman E. Daly and John B. Cobb Jr., *For The Common Good: Redirecting the Economy toward Community, the Environment, and a Sustainable Future.* Boston: Beacon Press, 1994.

[vi] Charles Kindleberger, *The World in Depression, 1929-1939*. Berkeley, CA.: University of California Press, 1973, p. 117, quoted in A. G. Kenwood and A. L. Lougheed, *The Growth of the International Economy, 1820-1990*, 3rd ed. New York: Routledge, 1992, p. 225.

[vii] Kenwood and Lougheed, *The Growth of the International Economy, 1820-1990*, p. 224

[viii] Ibid.

[ix] Richard B. Duboff, *Accumulation & Power: An Economic History of the United States*. Armonk, N.Y.: M. E. Sharpe, 1989, p. 87.

[x] Arthur S. Link, William A. Link, and William B. Catton, *American Epoch*: *A History of the United States Since 1900*, Vol. 1, 6th ed. New York: Alfred A. Knopf, 1987, pp. 228-30.

[xi] Lester V. Chandler, *America's Greatest Depression, 1929-1941*. New York: Harper & Row, 1970, p. 25.

[xii] Ibid., p. 20.

[xiii] Ibid., p. 4.

[xiv] Ibid., p. 229.

[xv] The discussion of the impact of the Great Depression on the U.S. economy that just followed has drawn freely from a book chapter written by the author of the present article and published under the title "The Political Economy of U.S. Imperialism: From Hegemony to Crisis" for a co-edited volume that was put together by Chronis Polychroniou and Harry R. Targ titled *Marxism Today*: *Essays on Capitalism, Socialism and Strategies for Social Change*. Westport, Conn.: Praeger 1992, pp. 39-70.

[xvi] Robert H. Zieger and Gall J. Gilbert, *American Workers, American Unions*: *The Twentieth Century*. Johns Hopkins University Press, 3rd. ed., 2002, p. 42

[xvii] A BBC Radio 4 investigation claims evidence of a planned coup in the U.S. in the 1930s by a group of wealthy industrialists and bankers with the aim of toppling FRD and imposing a fascist dictatorship. BBC, The Whitehouse Coup, July 23, 2007 at http://www.bbc.co.uk/radio4/history/document/document_20070723.shtml

[xviii] Eric Rauchway, The Great Depression & the New Deal: A Very Short Introduction, New York: Oxford University Press, 2008, p.4

[xix] William J. Barber, "FDR's Big Government Legacy." Federal Reserve Bank of Boston, *Regional Review*, Vol. 7. No. 3 (Summer 1997). http://www.bostonfed.org/economic/nerr/rr1997/summer/barb97_3.htm

[xx] Cited in Megan McArdle, "Hoover was no Budget Cutter." *The Atlantic*, July 6, 2011. http://www.theatlantic.com/business/archive/2011/07/hoover-was-no-budget-cutter/241665/#disqus_thread

[xxi] Franklin D. Roosevelt, Pubic Papers of the Presidents of the United States: F. D. Roosevelt, 1928-1932, Volume 1, "Campaign Address on Agriculture and Tariffs at Sioux City, Iowa. September 29, 1932." p. 761.

[xxii] Franklin D. Roosevelt Presidential Library and Museum, "FDR: From Budget Balancer to Keynesian: A President's Evolving Approach to Fiscal Policy in Times of Crisis" at http://www.fdrlibrary.marist.edu/aboutfdr/budget.html

[xxiii] This point is made with much conviction by Nancy E. Rose in her book *Put to Work: The WPA and Public Employment in the Great Depression*, New York: Monthly Review Press, 2nd ed. 2009.

[xxiv] Mary Beth Norton, Jane Kamensky, Carol Sheriff, David W. Blight, Howard P. Chudacoff, Fredrik Logevall, and Beth Bailey. *A People and a Nation*, Volume II: Since 1865, 10th ed.. Stamford, CT: Cengage Learning, 2014, p. 655.

[xxv] See Frances Fox Piven and Richard Cloward, *Poor People's Movements: Why They Succeed, How They Fail.* New York: Vintage Books, 1979, Chapter 2.

[xxvi] Neil A. Wynn, *The A to Z of the Roosevelt-Truman Era*. Lanham, MD.: Scarecrow Press, 2009, p. 354.

[xxvii] An extremely well balanced account of the effects of the New Deal programs and their actual impact on American economy and society can be found in William E. Leuchtenburg, *Franklin D. Roosevelt and the New Deal: 1932-1940.* New York: Harper Perennial, 2009).

[xxviii] Unemployment and GDP figures for the periods cited are derived from http://www.historylearningsite.co.uk/New_Deal_success.htm

About the author

J. Polychroniou is a political economist and international relations scholar who has taught and worked in universities and research centers in both Europe and the United States. His primary research interests are in European economic integration, globalization, the environment and climate change, the political economy of the foreign policy of the United States, and the deconstruction of neoliberalism. He has published several books and hundreds of articles and

essays, many of which have appeared in several foreign languages. His next book is slated to appear in the Spring of 2017 by Haymarket Books and is titled *Optimism Over Despair: Interviews With Noam Chomsky on Capitalism, Empire, and Social Change.*

Removing Carbon Dioxide From The Air To Fix Climate Change: An Interview With Graciela Chichilnisky And Peter Wadhams

Peter Wadhams

Climate change and global warming, caused by greenhouse gas emissions, pose a grave threat to humanity — even greater perhaps than that of nuclear weapons. Yet, just like with nuclear weapons, political inertia stands on the way of tackling the massive problem of climate change in an effective and meaning way. Moreover, the challenge of averting a climate change catastrophe can be met at the present juncture with the aid of carbon negative technology that can suck CO2 from the atmosphere and thus stabilize and even begin reversing the warming of the planet.

Indeed, in the interview that follows, leading economist and climate change authority *Graciela Chichilnisky*, author and architect of the Kyoto Protocol Carbon Market and CEO and cofounder of Global Thermostat, and *Peter Wadhams*, Professor of Ocean Physics at Cambridge University and UK's most experienced sea ice scientist, highlight the necessity of sucking carbon dioxide from the air as the only way available right now to save the planet from the threat of climate change and global warming.

Graciela Chichilnisky

J. Polychroniou with Marcus Rolle: Climate change poses a massive threat to the world economy, to human civilization and to the planet on the whole, yet little seems to be done by the world community to break cultural and political inertia. What's your explanation for climate change inertia?

Graciela Chichilnisky: Climate change involves extraordinary and unprecedented risks that people and organizations are ill equipped to deal with. Put simply, most people do not know what can be done about it, and they do not even know how to think about climate change. This paralyzes them from action. In addition, there is an erroneous perception that the economic costs of taking action against climate change are too high making action impossible in economic terms, which is untrue. The global scope and complexity of the issue defies standard knowledge and paralyzes most people, and this couples with economic interests of groups and businesses that are invested in conventional energy sources such as fossil fuels. About 45% of all global emissions come from electricity plants, which are a $55

trillion global infrastructure that is 87% run by fossil fuels.

Exxon Mobil is facing several law suits after allegedly misleading the public about the risks of climate change caused by burning fossil fuels, the source of their revenues, and presenting obstacles for solutions. Dated economic interests couple with denial, ignorance and fear, and cause climate change inertia. Because the issue is complex, even well-meaning people and organizations can be confused or ill informed. For example, the United Nations Framework Convention on Climate Change (UNFCCC), which is the single global organization responsible for preventing climate change, and its Green Climate Fund created recently to make funding available to avert climate change, focus on "adaptation and mitigation" towards climate change, particularly in the developing nations that will suffer the worst damages. This would be a natural reaction to disasters such as earthquakes, droughts or tornados, which are of a smaller magnitude. The situation is quite different with climate change. It is not possible for human societies to adapt or mitigate the global damages caused by catastrophic climate change, and we should be focused on resolving the problem rather than in adapting to it, or mitigating it after the fact. The North and the South poles are melting, raising the world's oceans ravaging coastal areas around the world and eventually submerging under the swollen seas 43 island nations that make up about 20% of the UN vote. Very little can be done to "adapt and mitigate" the human damages in a nation that is quickly and inexorably submerging under the oceans. There is no way to adapt to the chaos and destruction in large cities like New York as they face several disasters a year of the scope of hurricane Sandy, severing access to electricity and drinking water and to law and order, making transportation and working conditions impossible, with cars and vehicles floating in the flooded streets.

Rather than well-meaning but illusory adaptation and mitigation to catastrophic climate change, what is needed is to resolve the problem. We need to reverse climate change and to do it now. This is possible with existing technologies and it can be done within reasonable costs and conditions. This requires action right away since the costs increase rapidly the longer we wait. The action required was summarized in a 2014 UN IPCC 5th Assessment Report that states (page 101) that what is needed is massive removal of CO2 from the atmosphere to avert catastrophic climate change. The IPCC is the world's leading scientific authority on this area, and was awarded the Nobel Peace Prize for its work in documenting

climate change. I used to be the US lead author of the IPCC and know that it no longer suffices to reduce emissions because CO2 remains in the atmosphere for hundreds of years and we are dangerously close to the *carbon budget* that our atmosphere will tolerate before irreversible and catastrophic changes occur. We need to remove the CO2 emitted by humans in the process of industrialization based on burning fossil fuels. There is hope if we act fast: there are now proven technologies to achieve these removals within manageable costs. Indeed, the project can itself create jobs and increase exports, providing a dramatic boost to innovation in the world economy. Why is this not already done? Most people have difficulties with innovation and in conceiving new solutions as the IPCC indicates are needed. But it is possible and indeed desirable for economic as well as environmental reasons. Existing technologies can provide an extraordinary stimulus to the world economy; they are mild and safe, providing low cost solutions that increase energy available and help overcome poverty.

*Peter Wadham*s: There are several reasons, I think. One is the chronic failure by a mean, cowardly and corrupt press to bring climate issues to public notice and to press for action. Very often this is because the press is owned by fossil fuel interests (e.g. Murdoch). This is compounded by the placid, indeed complacent, approach of the Intergovernmental Panel on Climate Change (IPCC) which underplays really serious threats (methane emission from tundra and offshore, accelerated sea level rise from ice sheet melt) which require immediate action. The scientists involved with IPCC are themselves often complacent as they tend to be Government scientists who don't want to see their careers threatened by making waves. Finally, and most important I think, is the personal view held by many, or most people, that 'this is too horrible to think about. If I don't think about it, it might go away' (similar to the response to Hitler's initial aggressions in the 1930s). That is bound up with the undeniable fact that our society, our cities, our communications, our industrial and economic system, are all bound up with fossil fuel consumption and it is hard to imagine how we can live without it. Green organizations haven't helped because they stress the moral need to reduce CO2 emissions and cast shame on people for their lifestyles, while in fact we now know that we cannot achieve climatic goals by CO2 emission reduction alone, but must make heroic efforts to develop methods to actually take CO2 out of the atmosphere. This would solve the problem.

Polychroniou with Rolle: What about the scientific community itself? Is it living up

to its responsibility in warning the world of the actual threat that climate change poses to the future?

Chichilnisky: Yes, but only to a certain extent. Science is handicapped from achieving its potential because climate change lies in the nowhere land between two types of sciences that do not communicate well with each other: the social and the physical sciences. Indeed, economics is the *cause* of climate change. Fossil fuels are mostly emitted to produce energy and advance industrialization. Yet the *effects* of climate change are physical: atmospheric concentration of CO2, melting of ice bodies, rising of the oceans, intensity and frequency of draughts and storms. The causes are economic, and the effects are physical. Since the effects are physical, economists do not measure them well. Since they causes are economic, there is little that physicists can do to solve the problem. The long standing division between the social and the physical sciences must be overcome: they should collaborate to solve the problem. Furthermore market economics does not measure the damages caused by climate change. A recent MIT study identified the true cost of gasoline when negative externalities are included and it is over $15 per gallon. The current GDP measure of economic progress we use is dated, and global markets for the atmosphere, the hydrosphere and the biosphere is needed to change prices and align them with true values.

Wadhams: No, as I indicated above, the scientific community is not living up to its responsibilities, with certain exceptions. It is partly the result of overspecialization, even a climate change scientist might feel unqualified to make general remarks on climate change. And partly fear of losing career prospects.

Polychroniou with Rolle: How does the melting ice affect the environment, and is it too late to save Arctic ice?

Chichilnisky: The world's major physical systems are all connected. As CO2 levels increase, the polar ice melts, the oceans rise because melted ice expands, and most life forms will go extinct with catastrophic climate change, possibly including our own human species. The atmosphere, the oceans, and the biosphere are a single global system. We are already in the midst of the 6th largest episode of extinction on planet Earth, comparable only to the one when the nightly dinosaurs disappeared. This time it can be us. Human extinction is indeed a likely outcome unless we take action. And, as humans, we have a unique capacity for

awareness and to take action. It is possible as explained above, and must be done now before it is too late. Will we do it?

Wadhams: It is more or less too late. Melting ice causes many feedbacks that accelerate change: (1) albedo feedback due to ice melt and loss of snow area in the Northern Hemisphere, equivalent (as I show in my book) to increasing the quantity of greenhouse gas output by 50%; (2) sea level feedback, due to warmer air causing Greenland ice sheet to melt; (3) methane feedback, the increasing rate of emission of methane from Arctic coastal sediments due to warming of the water after sea ice removal; (4) weather feedback, where sea ice retreat changes shape of jet stream bringing extreme cold or warmth to food growing areas.

Polychroniou with Rolle: While reducing greenhouse gas emissions by moving away from a fossil-fuel based economy seems to be a necessary and critical step in Averting a climate change catastrophe, a case is being made recently for the removal of carbon dioxide already accumulated in the air. Why is this important or necessary?

Chichilnisky: It is necessary because, once emitted, CO2 stays in the atmosphere for centuries. It does not decay like other forms of pollution, such as particulates. It stays there for a very long time. And we have used most of our carbon budget. We delayed taking action for too long, and we are very close to CO2 levels that create a blanket, preventing the sun's heat from escaping and thereby causing irreversible heating and permanent change in climate that will kill the complex web of species that makes life on Earth. We are part of that web of life and our survival is at stake. The difference between us and the dinosaurs is that we know what is happening and what needs to be done about it. Will we do it?

Wadhams: It is important because of the persistence of CO2 in the atmosphere. There is already more than enough CO2 in the atmosphere to eventually cause a warming that exceeds 2 C, even if no more is emitted. So we have to take it out of the atmosphere instead.

Polychroniou with Rolle: There are plants already in existence, such as Global Thermostat in the Silicon Valley, which possess the technology to remove carbon from the atmosphere. The question here is twofold: firstly, what do we do with the carbon dioxide once it has been captured and, secondly, how many plants might be needed to clean up the air on a global scale.

Chichilnisky: Once CO2 is removed from the atmosphere, Global Thermostat sells it as 99% pure CO2 to be used for commercial products such as classic carbonated beverages — for example Coca Cola and Pepsi — for refrigeration since CO2 is in fact dry ice, for building materials such as degradable plastics made from CO2 and carbon fibers that favorably replace metals, for synthetic fuels that are identical to gasoline but carbon neutral, and for water desalination. There is a huge CO2 market on earth. In terms of numbers: we can build 30,000 Global Thermostat plants that capture each one million tons of CO2 per year, thereby removing all the CO2 that humans emit right now, which is about 30 gigatons. This process will take about 15-20 years using conventional measures of technology adoption and deployment, where capacity can be doubled every 12-18 months. The cost is about $200Bn/year, which can be covered by the UN carbon market that I designed and wrote into the Kyoto Protocol, which by 2012 was trading $175Bn/year according to the World Bank. Each dollar traded by the carbon market can be used for this purpose. We can build carbon negative power plants that provide energy for developing nations while cleaning the atmosphere. Think of it this way: Global Thermostat "farms" the atmosphere. A bit over a hundred years ago, oil barons opened holes in the ground and out came very valuable petroleum. We burned it, and it became atmospheric CO2. Now we farm the skies bringing down the CO2. It can be easier to bring down the CO2 than it was to bring the petroleum up. We need $200 BN/ year for fifteen years – a total of US$1 trillion over fifteen years — to clean the planet's atmosphere and avert climate change. Actually, the upfront money is recuperated in two years by selling the CO2 that the plants produce. We can build "carbon negative power plants"(TM), these are Global Thermostat plants that clean the atmosphere while they produce electricity – one such plant is in Silicon Valley at SRI in Menlo Park, where the Internet was created. Building Global Thermostat modular plants produces profits, creates jobs and increases exports: it leads to innovation and economic progress. There is every reason to adopt this or related technologies and avert catastrophic climate change while helping the economy grow.

Once carbon is removed from the atmosphere, climate will stabilize and temperatures will stop rising. On this note, let me also add some technical aspects about the plants like Global Thermostat using carbon negative technology: Each plant unit is 12′ by 16′ by 40′ and you put several units together to make a larger plant. Each single unit can remove between 100 tons and 25,000 tons of CO2 per year and they last 20 years. To make a GT plant removing 1,000,000 tons/year we

simply put several units together.

Wadhams: Any development of the kind that Graciela Chichilnisky has just described with Global Thermostat is highly promising.

Polychroniou with Rolle: Assuming that we possess the ability to reverse climate change, how do we go about doing away with political inertia?

Chichilnisky: The business sector implemented the Montreal Protocol and overcame acid rain once the limits on CFC's emissions were established by international law. Similarly, we need to continue the mandatory CO2 emission limits created by the UN Kyoto Protocol which is international law since 2005. These limits are then traded by the UN carbon market, which was trading already US$175 Bn/year by 2012. With national CO2 emission limits in place, the business sector has a price on carbon emissions to guide its actions. Six of the world□s largest oil companies already support a price on carbon. Businesses can now use carbon negative technologies that don't emit CO2. Indeed, there are reasonable robust and proven technologies that reverse climate change as Forbes Magazine and KPMG validated in recent publications and videos. The CO2 removed from the atmosphere can be sold at a profit. The UN carbon market has shown it can provide enough funding to build all the necessary carbon negative power plants in developing nations, resolving poverty and the climate change problem together, at once. The road is clear. The tools we need to resolve climate change are in our hands. We just need to choose the right path and move to action, and we need to do it right now.

Wadhams: We just keep plugging away! Or else demonstrate that CO2 removal methods are not only economically acceptable but may even be profitable.

The School Of Life ~ Sociology –

Alexis De Tocqueville

Alexis de Tocqueville was a 19th century French aristocrat with some crucial things to tell us about the strengths and weaknesses of that once-new and now widespread political system: democracy. Please subscribe here: http://tinyurl.com/o28mut7
If you like our films take a look at our shop (we ship worldwide): http://www.theschooloflife.com/shop/all/