# CES Musings

*Chronicling the Transition from Economic-Industrial*
*To Ecological-Cultural Societies*
*(September-October 2014)*

CENTER FOR ECOZOIC SOCIETIES
Seeking Well-Being in All Life Communities

**AT A GLANCE**

## CELEBRATING THE 100TH ANNIVERSARY OF THOMAS BERRY'S BIRTHDAY


**Thomas Berry, November 9, 1914 – June 1, 2009**

## THE IMPORTANCE OF THOMAS BERRY (a CES Foundational Paper)

Thomas Berry (1914-2009), was a cultural historian, philosopher, human ecologist, and a self-described geologian. He was among the first to observe that the effects of human activity have become so great that Earth is undergoing a change in geo-biological eras. He identified the "Great Work" of our time as the task of moving on from a terminal Cenozoic era to an emerging Ecozoic era . . . a task in which everyone is involved and no one is exempt, and one that is more difficult and complex than any ever before undertaken.

He gave an assessment that Earth's life systems are in grave peril and that ecological integrity provides the overarching context for meaningful action in the future. He gave an historical analysis of how the present crisis arose. He gave a cultural critique of the globalized Western civilization. He gave a vision of a viable future for humans and nature, guidelines for cultural and institutional reform, a new mythic story for people to understand their places in the scheme of things and to guide their activities in meaningful ways, and a sense of the spirituality of Earth.

He was a prophet, a visionary, a teacher, and an Earth saint.

Thomas Berry's primary contributions were made in the 20th century. His original contribution in the 21st century concerned Earth jurisprudence. He was among the greatest of people of his time. He affected the lives of thousands of people while he lived, many of whom changed the direction of their lives because of his teaching.

His work was singular and of enduring value. His original written works, as primary sources, need to be studied, widely taught, further-developed, and applied.

**Key Writings**

Berry's three key works are: *The Dream of the Earth* (San Francisco: Sierra Club Books, 1988), *The Universe Story* (co-authored with Brian Swimme) (San Francisco: HarperSanFrancisco, 1992), and *The Great Work* (New York: Bell Tower, 1999). *The Great Work* may provide the best introduction to Berry's work for new readers. *The Dream of the Earth* is important as the original, and most comprehensive, statement of Berry's thought.

Additional essays by Berry, sometimes heavily edited, are contained in *Evening Thoughts*, ed. Mary Evelyn Tucker (San Francisco: Sierra Club Books, 2006), *The Christian Future and the Fate of the Earth*, eds. Mary Evelyn Tucker and John Grim (Maryknoll, NY: Orbis Books, 2009), and *Sacred Universe,* ed. Mary Evelyn Tucker. (New York: Columbia University Press, 2009). A dialogue between Berry and Thomas Clarke, SJ, was published as *Befriending Creation* (Mystic CT: 23rd Publications, 1991)**.**

Early versions of many of Berry's published essays are contained in *Riverdale Papers, Volumes 1-11.* Berry's work on Earth jurisprudence is covered in *Evening*.

The Thomas Berry Archive is maintained in Environmental Science and Public Policy Archives. Harvard College Library

**Key Teachings**

Thomas Berry's primary teaching is that "the universe is a communion of subjects, not a collection of objects."

In *The Great Work*, Thomas Berry gave two basic observations about history. These are (1) the "central flaw" in human development is our "mode of consciousness that has established a radical discontinuity between the human and other modes of being and [has bestowed] all rights on the humans"; and (2) "[t]he historical mission of our times is to reinvent the human—at the species level, with critical reflection, within the community of life systems, in a time-developmental context, by means of story and shared dream experience."

## The Chronicle

**By Alice Loyd (through November 2, 2014)**

**CLIMATE**

It's all about climate.

**On Sunday, September 21, New York City saw what is being called the largest** mobilization against climate change in the history of the planet. The crowd, estimated at 400,000 people of all ages and from around the world, filled midtown Manhattan streets to demand action to avert catastrophic climate change. The People's Climate March represented a broad range of participants: environmental activists, elected officials, celebrities, nationwide community organizing groups, LGBT groups, members of indigenous communities, students, clergy members, scientists, private citizens and uncountable other concerned parties. More than 1,400 partner organizations signed onto the march.

**On Monday, September 22, several thousand activists gathered in the streets of New York City's financial district** under the "Flood-Wall-Street" banner. As reported in the *Wall Street Journal*, "protesters occupied Broadway for nearly eight hours, with at least two hundred staging a sit-in while several thousand others joined them in support. A total of 102 people were arrested for disobeying orders to disperse."

**Also on Monday, the Rockefeller Brothers Fund announced its divestment from fossil fuels.** Timed to precede the United Nations Climate Summit in New York City, the Fund's announcement conveyed that the $860-million philanthropic organization founded on the family's Standard Oil income will join the divestment movement aimed at reducing greenhouse gas emissions.

**On Tuesday, September 23, UN Secretary General Ban Ki-moon gathered world leaders in New York**, asking them to spell out their national action-plans for climate change. "Climate change is the defining issue of our times," Ban Ki-Moon has said over and over again, urging that "now is the time for action." At the summit, leaders pledged billions for a global climate fund to help developing nations, set specific targets to cut greenhouse gas emissions and promised greater use of clean energy. Business leaders were there as well, with many, including financial firms, pledging to cut carbon emissions from their operations and investment portfolios. President Obama made a speech that recognized the People's Climate March.

**Nice words, but U.S. emissions are up 2.9 percent**. As climate marchers were gathering on Sunday, Global Carbon Project reported carbon dioxide ($CO^2$) emissions from fossil fuel burning and cement production rose 2.3% worldwide in 2013. As published in the journal *Nature Geoscience*, global emissions are now 61% above 1990 emissions (the Kyoto Protocol reference year). Emissions are projected to increase by a further 2.5% in 2014. The summary says, "In 2013, the ocean and land carbon sinks respectively removed 27% and 23% of total CO2 (fossil fuel and land use change), leaving 50% of emissions in the atmosphere.

**On November 2 the Intergovernmental Panel on Climate Change (IPCC) issued its Synthesis Report** as the final part of the IPCC's Fifth Assessment Report (AR5). The document is based on the reports of the three Working Groups, including relevant Special Reports, and provides an integrated view of climate change.

From the "Summary for Policymakers" (with references to the sections of the Synthesis Report):

- Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems. {1}
- Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen. {1.1}
- Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the observed warming since the mid-20th century. {1.2, 1.3.1}
- Climate change will amplify existing risks and create new risks for natural and human systems. Risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development. {2.3}
- Many aspects of climate change and associated impacts will continue for centuries, even if anthropogenic emissions of greenhouse gases are stopped. The risks of abrupt or irreversible changes increase as the magnitude of the warming increases. {2.4}
- Adaptation and mitigation are complementary strategies for reducing and managing the risks of climate change. Substantial emissions reductions over the next few decades can reduce climate risks in the 21st century and beyond, increase prospects for effective adaptation, reduce the costs and challenges of mitigation in the longer term, and contribute to climate-resilient pathways for sustainable development. {3.2, 3.3, 3.4}

**The report is emphatic, but nevertheless cautious in its predictions.** To see other scientific data pointing to greater risks, see washingtonpost-theyre-too-conservative. To read the IPCC conclusions in less scientific language, see grist10-things-you-need-to-know-from-the-new-ipcc-climate-report/

**Another reason estimates of ocean warming may be lower than the reality.** Since the 1970s,

according to a new study by Paul J. Durack of Lawrence Livermore National Laboratory and others, the underestimation was the result of decades of spotty sampling of water temperatures in the Southern Hemisphere, home to three-fifths of the world's oceans. Until 2004, when a worldwide system of autonomous floats, called Argo (see Argo visualization of the movements of autonomous floats, left) became operational, there were relatively few temperature measurements south of the Equator. The study showed that the amount of heat absorbed by the top 2,200 feet of the oceans from 1970 to the mid-2000s may be as much as 58 percent higher than previously estimated.

**A historical survey shows the rise in sea levels over the past century unmatched by any period in the past 6,000 years.** Here's a report for sea-level-rise over millennia. The reconstruction of 35,000 years of sea level fluctuations finds that there is no evidence that levels changed by more than 20 centimeters in a relatively steady period that lasted between 6,000 years ago and about 150 years ago. This finding makes the past century extremely unusual in the historical record, when there has been a 20 centimeter rise since the start of the 20th century. Scientists have identified rising temperatures, which have caused polar ice to melt and thermal expansion of the sea, as the primary cause of the sea level increase. A two-decade-long collection of about 1,000 ancient sediment samples off Britain, North America, Greenland and the Seychelles formed the basis of the research, led by the Australian National University.

**U.S. military officials have long warned that changes in climate patterns**, resulting in increased severe weather events and coastal flooding, will have a costly impact on military operations. At a conference of military leaders in Arequipa, Peru, in October, Defense Secretary Chuck Hagel reiterated, "Our militaries' readiness could be tested, and our capabilities could be stressed." He called climate change "a threat multiplier that could exacerbate terrorism," and said that food and water shortages could fuel disputes and instability around the world. His statements reflect findings published in a US Department of Defense report on the issue: *2014 Climate Change Adaptation Roadmap*.

**As for example, U.S. pursuit of more high-risk fossil fuel extraction.** As early as next spring the oil and gas exploration will begin again off the East Coast. In a McClatchy Washington Bureau story that appeared on September 18, Mayor Bob Edwards of Nags Head, North Carolina, said

he's terrified about what the intense sound waves can do to dolphins and endangered North Atlantic right whales, of which only 500 remain.
The seismic surveys are done with compressed air guns that blast as loud as a howitzer under the sea, repeated every 10 seconds or so for weeks at a time. Echoes from the blasts are used to produce three-dimensional maps that help company geologists figure out whether sub-sea rock formations are likely to contain fossil fuels worth drilling.

**Which foods will become scarcer as the climate warms?** Some analysts have argued that an increase CO2 is a good thing for farming. David Lobell, deputy director of the Center on Food Security and the Environment at Stanford University, disagrees, noting, "There's a point at which adding more and more CO2 doesn't help." Factors such as the availability of water, the increasing occurrence of high and low temperature swings and the impact of stress on plant health may outweigh the benefits of a CO2 boost. Lobell observes that yield data from corn and wheat production indicates they are already being negatively affected by the changing climate.

Here's a list of favorite foods Lobell sees threatened by warm temperatures.

- Corn: A global rise in temperatures of just 1C (1.8F) would slow the rate of growth by 7%. Lower corn yields could mean higher meat prices, since many beef cattle are fattened on corn.
- Coffee: Coffee rust fungus and invasive species are hurting coffee production in Latin America, due to higher-than-average temperatures. In Africa, the number of regions suitable for growing coffee is predicted to fall anywhere from 65% to 100% as the climate warms.
- Chocolate: the International Center for Tropical Agriculture (CIAT) predicts rising temperatures and falling water supplies will make cacao beans, the raw ingredient in chocolate, less plentiful over the next few decades.
- Seafood: Ocean acidification threatens calcifying organisms such as oysters, and almost all fish are slow to adapt to acidification. Tropical fish are more susceptible to parasites in warmer water. Fish migrating to cooler waters are taking the food of native species that might otherwise survive.
- Maple syrup: Wetter winters and drier summers are putting more stress on sugar maples. The trees need freezing winter temperatures to fuel the expansion and contraction process that they use to produce the sap.
- Beans: Higher temperatures affect flowering and seed production in bean vines, reducing yields by as much as 25%. "Beans are very sensitive to climate," says CIAT's Jarvis. "High temperatures, especially at night, can significantly affect the productivity of the crop."
- Cherries: Stone fruits, particularly cherries, require chill hours to bear fruit; too few cold nights, and the trees are less likely to achieve successful pollination.
- Wine grapes: Fluctuations in temperature and moisture levels in Europe, Australia, North American, and South Africa will hit the wine industry hard. In Australia 73% of the land could be unsuitable for growing grapes by 2050, and in California the loss could be as much as 70%.

**INEQUALITY**

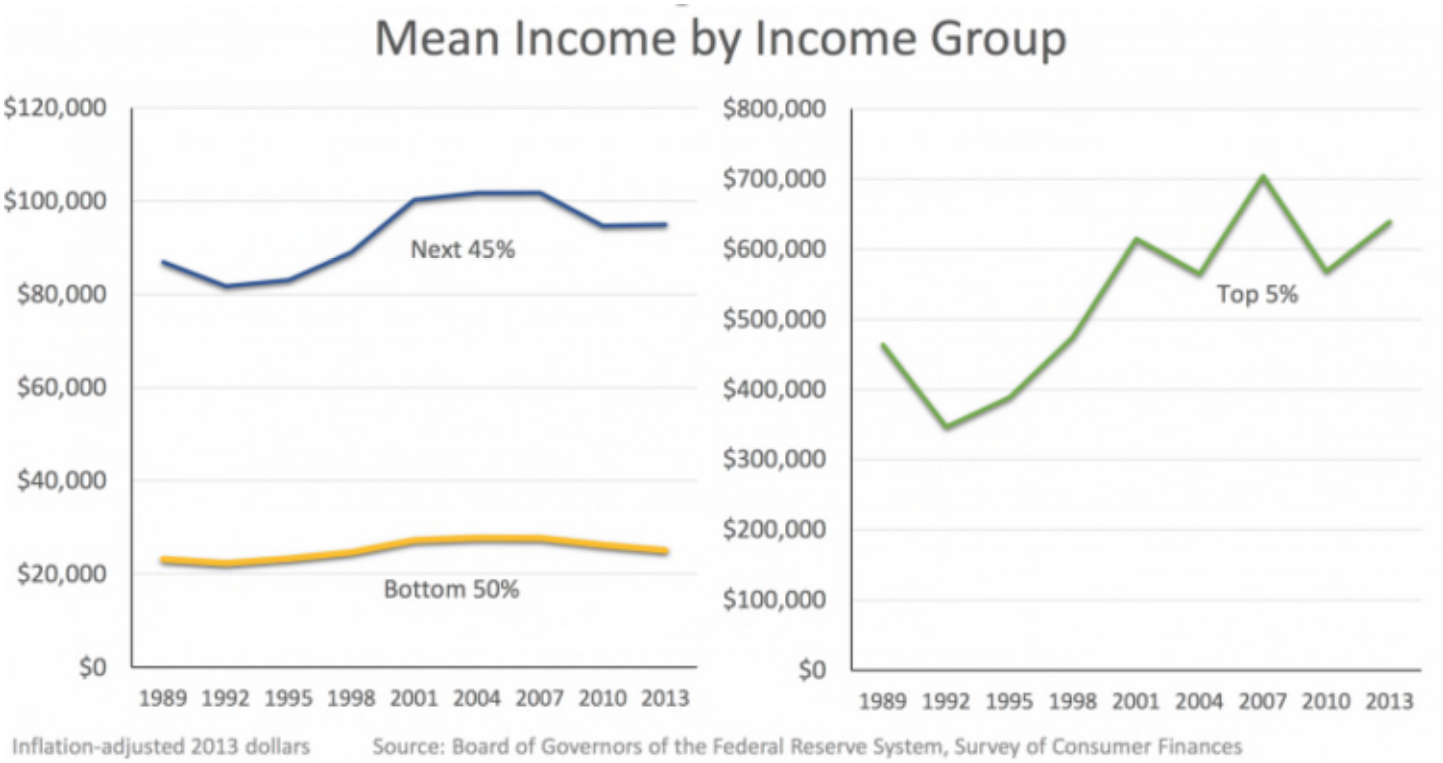
The companion issue to climate change is inequality. While the events cited below that concern economic and racial inequality don't explicitly make the connection, they are related. The richest 1% are getting richer from fossil fuel and other extraction industries that drive global warming, and people of color bear the brunt of injustice.

**Inequality grows as the wealthy share less of their wealth.** On October 5, The *Chronicle of Philanthropy* published figures that show the wealthiest Americans—those who earned $200,000 or more—reduced the share of income they gave to charity by 4.6 percent from 2006 to 2012. Middle- and lower-income Americans increased the share of income they donated to charity, even as they, on average, earned less, than they did six years earlier.

**On October 8 the World Bank and International Monetary Fund released its Global Monitoring Report 2014/2015**, monitoring progress on the Millennium Development Goals. The report notes that much success has been achieved in reducing extreme poverty—those living on less than a $1.25 a day. However, the number of extremely poor remains unacceptably high, at just over 1 billion people (14 percent of the world population) in 2011, compared with 1.2 billion (19 percent of the world population) in 2008. Kaushik Basu, Senior Vice President and Chief Economist of the World Bank Group, stated, "If it is shocking to have a poverty line as low as $1.25 per day, it is even more shocking that 1/7th of the world's population lives below this line." Forecasts in the report show that poverty will remain stubbornly high in the South Asia and Sub-Saharan Africa regions, where an estimated 377 million of the world's 412 million poor will likely reside in 2030. In 2011, the two regions were home to 814 million of the world's 1 billion extremely poor.

**On October 13 in St. Louis, the "Weekend of Resistance" rally looked at racial disparity**, with the younger speakers growing impatient with a series of speeches at St. Louis University that failed, in their view, to measure the problem. "The older generation has been too obsessed with being successful rather than being faithful to a cause that was zeroing in on the plight of the poor and working people," said one young speaker. Voices from the audience nearly broke up the formal gathering before the keynoter, intellectual and activist Cornel West, came to the podium. He agreed that "the older generation has been too obsessed with being successful rather than being faithful to a cause that was zeroing in on the plight of the poor and working people." The Sunday gathering was followed by a day of civil disobedience modeled on "Moral Monday" demonstrations launched over political policies in North Carolina. Churches ran a "faith in action mobilizing training" session on Sunday afternoon that included the occupation of a police station. At other sessions, volunteers were instructed in blocking traffic and sit down resistance.

**On October 17 Federal Reserve Chair Janet Yellen called inequality in America a serious problem** that strikes at the core of the country's social and economic values. She made her case through dramatic charts that she hopes will provide "a factual basis for further discussion."




**SHORTS**

**Scientists from Nanyang Technological University, Singapore, have developed a new battery that can be recharged up to 70 per cent in only 2 minutes.** The battery will also have a longer lifespan of over 20 years. Expected to be the next big thing in battery technology, this breakthrough has a wide-ranging impact on many industries, especially for electric vehicles which are currently inhibited by long recharge times of over 4 hours and the limited lifespan of batteries.

**Increasingly owners of electric vehicles are powering their cars with sunlight**. Solar panels installed on the roof of a home or garage can easily generate enough electricity to power an electric or plug-in gas-electric hybrid vehicle. No one knows exactly how many electric cars are being powered by solar energy, but the number of electric and plug-in hybrid cars in the U.S. is growing. Last year, 97,563 were sold in the U.S., according to Ward's AutoInfoBank, up 83 percent from the year before. Meanwhile, solar installations grew 21 percent in the second quarter of this year, and more than 500,000 homes and businesses now have them, according to the Solar Energy Industries Association.

**Scientists have declared animals have conscious awareness, just like we do.** A group of scientists attending the Francis Crick Memorial Conference on Consciousness in Human and Non-Human Animals has signed a declaration proclaiming their support for the idea that animals are conscious and aware to the degree that humans are. The open acknowledgement is big news, indicating that we cannot ignore the capacities of animals to "experience affective

states," to quote the language in the declaration. The declaration states, "Convergent evidence indicates that non-human animals have the neuroanatomical, neurochemical, and neurophysiological substrates of conscious states along with the capacity to exhibit intentional behaviors." Prominent signatories include Christ of Koch, David Edelman, Edward Boyden, Philip Low and Irene Pepperberg.

## MARY SOUTHARD, CSJ, TELLS THE UNIVERSE STORY EXQUISITELY THROUGH ART


Watch her video "Journey of Soul."

## THOMAS BERRY, 100-YEARS OF WISDOM AND A BIRTHDAY GIFT OF MY UNIVERSE STORY

**By Shirley Pevarnik**

*Excerpt from one of Thomas Berry's Riverdale Papers: The Spirituality of the Earth*

> *I am not speaking of a human spirituality with special reference to the planet Earth. I am speaking of a quality of the Earth itself. Earth is the maternal principle out of which we are born and whence we derive all that we are and all that we have. In our totality we come into being in and through Earth. We are earthlings. The Earth is our origin, our nourishment, our educator, our healer, our fulfillment.*
>
> *If there is no spirituality in the earth, then there is no spirituality in ourselves.*

*Excerpts from The Great Work by Thomas Berry*

> The great work before us, the task of moving modern industrial civilization from its present devastating influence on Earth to a more benign mode of presence, is not a role

> that we have chosen. It is a role given to us, beyond any consultation with ourselves. We did not choose. We were chosen by some power beyond ourselves for this historic task.
>
> *Yet we must believe that those powers that assign our role must in that same act bestow upon us the ability to fulfill this role.*

Thomas Berry 1914 – 2009 was born on November 9, 1914, 100 years ago. He was an eco-theologian, cultural historian, and self-proclaimed geologian – one who studies the spirit of Earth. He has been called the father of ecological spirituality and was described in 1989 by *Newsweek* as, "The most provocative figure among the new breed of eco-theologians." He was the author of *Riverdale Papers*, *Volumes I-XI*, now housed at the Harvard library, and many books including *The Dream of the Earth* and *The Great Work*. Berry taught at Seaton Hall University, St. Johns' University, Fordham University, and founded the Riverdale Center for Religious Research along the Hudson River in Riverdale, New York.

Berry was one of the first religious leaders to suggest that Earth's ecological crisis was primarily a spiritual crisis. He believed that we humans have come to see ourselves as above the natural world; indeed, he believed we have become autistic to it. He would also say that if we are spiritual, it is only because everything in the universe is spiritual. Most indigenous peoples recognize these spiritual connections and honor the "more than human world." Most modern humans, however, have a different story--one of separation that allows us to plunder the planet. Berry often said our real crisis was one of story. We need a new story, one that places us in a mutually enhancing relationship with Earth, our larger self.

Despite the seriousness of our environmental problems, Berry was hopeful and pointed out that a new story is beginning to be told all around the world by scientists who have studied the origin and evolutionary development of the universe. His book *The Universe Story, co-authored* with mathematical cosmologist Brian Swimme, celebrates this new story which describes the unfolding of the cosmos. This is the story he believed would bring the human/Earth relationship back to a communion relationship rather than a use relationship. When we understand that we humans fit into this unfolding story of the universe, that we are in relationship with everything, we begin to feel the sacredness of everything.

This year, 2014, communities around the world, in Australia, Great Britain, California, North Carolina, Connecticut and many other places are celebrating the centennial of the birth of Thomas Berry. Although Thomas passed five years ago, his groundbreaking work on human/Earth relationship has inspired thousands of academics, ecologists, religious leaders, and many people, like myself, who are simply trying to figure out why we are in the mess we are in on the planet.

I met Thomas in the summer of 1996, although I had fallen in love with him long before I met him. Friends had shared with me his books and tapes, and I felt like this great man had saved my life or at least my soul. I had been working in social services for many years, and after seeing the pain and poverty and the slow process of shift in our society's thinking, I had become frustrated and wondered about the very nature of human beings. Most of my peers had decided that humans were basically greedy and evil, but somehow that didn't feel right to me. So, when I finally heard Thomas talk about the crisis of our time being one of story, well, that made sense to me. It gave me hope again and changed my life. I pretty much gave up social work and went off to learn as much as I could about this new story. I was lucky enough to meet Thomas Berry at the Holy Cross Centre for Ecology and Spirituality in Canada where I worked for four summers. We became friends, and I started making a pilgrimage to North Carolina every summer to visit Thomas. He was a shaman, really, one who acts as a medium between the human world and the spirituality of the natural world. I would be changed forever.

*Here are a few stories about Thomas, I will share with you.*
Thomas was having lunch with a group of people one afternoon and was in deep conversation talking about his Buddhist soul and his Christian soul when the woman across the table abruptly interrupted. "Just what do you believe in, Thomas?" she demanded. He thought for a moment and replied, "I believe in everything, Madame, just tell me something, and I'll believe it." He might have added that we humans are the self-reflective species, the believing species, the story species, and when we limit what we believe, we limit our possibilities and separate ourselves from others with different beliefs. And, of course, he might have said, everyone naturally has a unique belief system.

* * *

When Thomas was a young man, 16 to 19, he became increasingly aware of the economically-driven, industrial destruction of the planet and the system that required everyone to participate. He said he had to think, think about this system and why it was the way it was. He said there were only two places one could really have the time and space to think: one was prison and the other a monastery. So he said he chose the latter.

* * *

Once when Thomas was visiting Canada and was being interviewed by their BBC, they asked him, "Thomas, you are getting old; where do you think you will go when you die?" (Thomas was a priest but never talked about heaven or hell.) He thought a moment and answered, "I will be where I have always been, in the universe."

* * *

Regarding the universe story, Thomas Berry often said, "To tell the story of anything you need to tell the story of everything."

There are millions of ways to tell any story; indeed this new creation story needs to be told a million times in a million ways.

Here's my birthday present to Thomas. My telling of the universe story:

> *Once upon the beginning of time and space, about 13 billion years ago (give or take a billion), there was a flaring forth. This is often referred to as the Big Bang, but that term is much too militaristic, too limited. The primordial fireball flared forth total energy, and in that energy was the potential of everything that would ever be. This pure energy was so thick and hot, no particles could emerge. But, after a while it cooled down enough for the first particles and then the first atoms of hydrogen. We might call these first material beings our first ancestors. Everything that would ever emerge in the universe would come from those first atoms of hydrogen!*
>
> *Well, hydrogen was very happy just floating around the universe. (Remember this is a story). However, because the universe is a self-organizing system, it began to pull that hydrogen into bundles and bundles of bundles. These bundles became the first stars and the first grouping of stars or galaxies. Now a star, a first generation star, is simply H (an atom with one electron) being pushed together so tightly fusion takes place. Two H atoms merge together to create an atom that has two electrons which is Helium. The energy that is given off in that process is a photon or light. When all the hydrogen in a star is used up, the star implodes with enough heat and energy to create the other atoms in our periodic table.*
>
> *Around 5 billion years ago (give or take a billion), our grandmother star or stars went supernova, imploded, and all of the atoms we now know in our solar system were spewed into space.*
>
> *Again, because we live in a self-organizing universe, atoms started to be pulled back into a second generation star – our SUN. (This has happened multiple times, billions of times around the*

universe; and this is how each solar system has been formed.) Other atoms that didn't make it back into the Sun self-organized and became the eight planets and the asteroid belt of our solar system. Our comfy home, the only living planet we know, our Earth was born. So we can say, with certainty, we are all stardust!

Shortly after this monumental event, life began on our planet around 4.5 billion years ago (give or take a million or so). The first cells probably ate the chemical soup that was being made as all of the atoms from the super nova were joining together to create molecules. The greatest one being H2O – water. This made life possible. We should have a holiday celebrating water! Anyway, after a few million years (give or take a million), life on earth had its first big crisis. It began running out of food. Too many single-cell beings and not enough chemical soup. So evolution happened yet again. Cells began to eat photons from our Sun, and photosynthesis began. This was no small feat. Scientists today still can't create photosynthesis, and those single cells didn't even have brains or college educations.

This photosynthesis was just fine for a few million years or so, but it led to another major life crisis. One of the byproducts of photosynthesis is oxygen – another amazing molecule we should have a holiday for. Too much oxygen is dangerous, however, because it is explosive, and so our ancestors, the first life on the planet, were literally burning up. Then another great evolutionary event occurred. One of the single-cell life forms evolved to deal with the oxygen, what we call today mitochondria. Other single cells learned how to take this cell into their own bodies, so they could deal with oxygen. Hence, every living cell in our bodies and all living bodies have a mitochondria cell inside of them with a different DNA. Deoxyribonucleic Acid – a better term might be "Divine Natural Abundance.

WOW, what creativity! Take in the cell that learned how to deal with your enemy, and you have the first eukaryotic cell that cannot only deal with oxygen, but is also the first cell that eats other cells--heterotrophy. Remember the first single cells on the

planet digested the chemical soup of the planet, the next learned how to use photosynthesis for energy, and now the eukaryote cell learned to eat its neighbor. Life seems determined to evolve new ways to get the energy it needs. The eukaryote cells also learned to live in communities and created the first multicellular beings. (Yes, for the first three billion years of life on the planet there were only single cell beings.)

Okay, now those eukaryotes get really wild. They are the first life forms to create meiotic sex which is no small creation because now two genetically different beings can come together and create a radically different being. Unfortunately, with sex came death. You see the first life on the planet, those single cells that were on the planet for so long, didn't have a life span. In fact, it is possible that some are still alive today. They didn't die of old age. That only started happening after sex began. Bummer!

Well multicellular beings did very well. It seems working in community really helped life explode on the planet. Not only did we get an amazing variety of plants and animals, life began to get very big. At first, we had life in the sea—flat worms and jellyfish, but then life went on land, and we had our first amphibians, insects, and trees around 400 million years ago (give or take a few million). Life kept evolving as it faced all the challenges of a planet that had extremely fluctuating temperatures, violent collisions with all the debris left over from the Super Nova, and the violent churning of our Earth's inner core. There were many extinctions, but always more and more adaptations and more variety.

Around 235 million years ago, life got really big and the first dinosaurs appeared, and along with them came the first flowers. Shortly after, came the first mammals who probably succeeded because of the nutritious flowers. Sixty-five million years ago, an asteroid hit Earth. This was also a time of great volcanic activity, and together these two things made Earth almost impossible to survive on. Some species did, and those little mammals were able to start on their evolutionary journey into primates. Earth entered into

its current geological era, the Cenozoic era, the most fecund time in Earth's history. So much variety and so much beauty!

It was as though Earth needed a species to appreciate this amazing beauty, and so it took a chance in creating a species that had self-reflective consciousness, a species that knew that it knew. The first hominids emerged around three million years ago, and homo sapiens sapiens around two hundred thousand years ago. A species that, because of this self-reflection, was able to adapt through learning and then teach its offspring rather than waiting for the genetic coding to evolve new ways to deal with Earth's ever changing challenges. We did this through our stories; we have problem solving strategies in our stories rather than in our genes. This self-reflective consciousness allowed us to see the future, to plan, to celebrate, but also to fear our suffering and death. Most tribal humans found strength in their relationship with the natural world, a spiritual world, to help them deal with human suffering. We modern humans, however, have sought to remove the painful elements of life by exercising control over the natural world. This separation from the more than human world has led us to the end of the Cenozoic era. We have changed the chemistry and biology of the planet so much, we are entering a new geological era with an uncertain future.

If we were to take the Universe Story and condense it into 100 years, humans would only appear the last second or so before midnight of the 100th year. We are young, and it took 13.7 billion years to make us. We can be forgiving of our hubris because we are such a young species. Any species with these gifts and challenges might do the same. This gift of self-reflection, however, has also given us the desire to discover where we came from and where we are to go. It has given us this new story that shows us we are not separate but connected to the whole. At a time when our planet is in crisis, we are given this astounding insight that we are part of the larger story and what we do matters.

Thomas Berry saw this as a "moment of grace," when humans have a choice in the era they are entering. As the Cenozoic is

*ending, we can pursue the Technozoic, where humans try to control the Earth even more with greater technology, or we can enter a new era of deep relationship with Earth and begin what he termed the Ecozoic. Yes, we will need technology, but we need to understand our reciprocity with Earth even more.*

*The psychic energy needed for this shift into the Ecozoic is in our new story: the Universe Story. When we see our connection with the larger story of the universe, it compels us to become our greater self. Who is that self?*

*Thomas might pause a moment and then say: WE ARE THE UNIVERSE BECOMING AWARE OF ITSELF! (It's a pretty big shift in perception. Take a moment and think about it. Thomas did.)*

HAPPY BIRTHDAY THOMAS!

Love,
*Shirley*

## COURSE SYLLABUS:
## THE ANTHROPOLOGY AND POLITICAL ECOLOGY OF CLIMATE CHANGE

(Fall 2014, Anthropology 490, University of North Carolina at Chapel Hill)
**Professor Arturo Escobar**

**Course Description**

This course is intended as an upper division seminar devoted to a study in contemporary anthropology and new directions in research or applications. There are few topics in the field that would fulfill this mandate with greater relevance as climate change. Not only has anthropological research in this field been growing steadily over the past decade, one can argue that anthropological contributions to the debate on the underlying causes of climate change and to envisioning the needed transformations to address them could be particularly enriching of the debates.

Although we will pay some attention to the science of climate change, the seminar will focus on the social, cultural, political, and policy dimensions of climate change. We start by reviewing some of the main scientific debates on the subject, relying chiefly on the most recent report by the Intergovernmental Panel on Climate Change. This is followed by a review of recent anthological approaches to the problem. On the social, economic, and political side, we will pay significant attention to the interrelations among capitalism, globalization, and global warming in particular; this includes a critical examination of the various proposals concerning so-called 'carbon trading' schemes and the 'green economy,' which currently constitute the main

strategies offered by mainstream institutions to the climate crisis. Culturally, we will ask critical questions about the ways in which climate change stems from particular ways of knowing and being, currently encompassed under the heading of "modernity." Finally, the policy side of the seminar will concentrate the processes by which decisions concerning climate change are taken internationally, with significant attention to policy-making at the United Nations level.

The seminar will emphasize collective learning and research. To this end, participants will be assigned to small groups at the end of Week III; these groups will identify, in conversation with the instructor, a particular research topic that the group will then will develop throughout the semester. Besides brief periodic in-class reports during the semester, we will hold a 'research workshop' during the last week of the semester where more formal research results will be presented.

Course meeting time: The class meets on Monday and Friday 11:00-12-15.

Course Evaluation: Class attendance and participation are very important (20% of the grade). Each participant will have the opportunity to do at least two presentations in class, either individually or in small groups. When presenting on the class readings, students will be expected to send in advance discussion questions based on the week's readings.

There will be three written assignments as follows:

(1) A succinct, initial statement on the current ecological crisis, intended to reflect your provisional understanding of the climate and sustainability crisis and its relation to culture, politics, and economics. You may base your statements on the readings as well as on your experience, feelings, and background (2-3 pages double space). Due after Week II (9/12). 15%

(2) A take-home midterm reflecting your learning process about the climate change frameworks reviewed in the first half of the semester. Due on Monday class right after Fall break (10/20)

(3) A final paper, between 8-12 double-spaced pages, based on your own perspective on the research you carried out with your group; this should reflect both the individual and collective learning process. 25%. Due on the scheduled final exam day (there will be no final exam).

(4) In addition, 15% of the grade will correspond to your collective research and oral report.

*Honor Code:* Students are expected to adhere to UNC's Honor Code.

**Required books:**

Orrin Pilkey and Keith Pilkey. 2011. *Global Climate Change: A Primer*. Durham: Duke University Press.

Patrick Bond. 2012. *Politics of Climate Justice. Paralysis Above, Movement Below*. Cape Town, South Africa: University of Kwa Zulu Natal Press.

Naomi Klein. 2014. *This Changes Everything: Capitalism vs. The Climate*. New York: Simon and Schuster.

Felix Dodds**,** Jorge Laguna-Celis and Liz Thompson. 2014. *From Rio+20 to a New Development Agenda: Building a Bridge to a Sustainable Future.* London: Routledge**.**

**Reading List:**

**Week I. Triggers: The politics and science of climate change (8/25, 8/29)**

Watch: "Welcome to the Anthropocene. Climate Change."
http://www.anthropocene.info/en/home

Watch: Statement by Kathy Jetnil-Kijiner, a 26-year old poet from the Marshall Islands, at United Nations Climate Summit, September 23, 2014.
https://www.youtube.com/watch?v=mc_IgE7TBSY

World Meteorological Organization. 2013. "A Summary of Current Climate Change Findings and Figures."
http://www.wmo.int/pages/mediacentre/factsheet/documents/ClimateChangeInfoSheet2013-03final.pdf

Bill McKibben. 2012. "Global Warming's Terrifying New Math." *Rolling Stone*, August 2.
http://www.rollingstone.com/politics/news/global-warmings-terrifying-new-math-20120719

Watch: http://www.commondreams.org/news/2014/08/17/changes-everything-trailer-naomi-kleins-coming-blockbuster

"Conversation with Naomi Klein." *Earth Island Journal* Autumn 2013.
http://www.earthisland.org/journal/index.php/eij/article/naomi_klein/

People's Climate March, 9/212014, NYC: http://peoplesclimate.org/march/

Orrin Pilkey and Keith Pilkey. 2011. *Global Climate Change: A Primer*, pp. 1-52.

Vandana Shiva. 2008. *Soil, Not Oil. Environmental Justice in an Age of Climate Crisis*. Cambridge: South End Press, pp. 1-8.

Susanne Moser. Forthcoming. "Getting Real About It: Meeting the Psychological and Social Demands of a World in Distress." *Sage Reference Handbook on Environmental Leadership*, http://susannemoser.com/documents/Moser_Getting_Real_About_It-preprint.pdf

**Part One: Science and Anthropology in the Climate Change Debates**

**Week II. Scientific aspects of climate change 1 (9/5; 9/8)**

Orrin Pilkey and Keith Pilkey. 2011. *Global Climate Change: A Primer*, pp. 52-109.

National Science Foundation. c. 2010. *Solving the Puzzle. Researching the Impacts of Climate Change Around the World*. Washington, DC: NSF (Read Introduction and skim one more chapter on a major topic: Sky, Sea, Ice, Land, Life, People).
http://www.nsf.gov/news/nsf09202/index.jsp

Look at: http://www.ipcc.ch/organization/organization.shtml

IPCC. 2014. "Summary for Policy Makers." IN: *Climate Change 2014: Synthesis Report (AR5)*
http://www.ipcc.ch/report/ar5/syr/

Earle Ellis. 2011. "Anthropogenic Transformation of the Terrestrial Biosphere." *Phil. Transactions of the Royal Society* 369: 1010-1035.
Look at:
http://thebreakthrough.org/index.php/journal/past-issues/online-content/is-modern-civilization-unsustainable
http://thebreakthrough.org/index.php/journal/debates/planet-of-no-return-a-breakthrough-debate/paradigm-of-no-return
http://ecotope.org/people/ellis/papers/brook_2013.pdf (Are there planetary tipping points?)

**Week III. Scientific aspects of climate change 2 (9/8; 9/12)**

IPCC. 2013. "Summary for Policymakers." In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.*
http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf

IPCC. 2014."Summary for Policymakers." In: *Climate Change 2014, Impacts, Adaptation and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.*
http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf

IPCC. 2014."Summary for Policymakers." In: *Climate Change 2014, Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* http://report.mitigation2014.org/spm/ipcc_wg3_ar5_summary-for-policymakers_approved.pdf

Anthony Barnosky, et. al. 2012. "Approaching a State Shift in Earth's Biosphere." *Nature* 486: 52-58 (7June).

**Week IV. Anthropological engagements with climate change (9/15; 9/19)**

Simon Bratterbury. 2008. "Anthropology and Global Warming: The Need for Environmental Engagement." *The Australian Journal of Anthropology*

Carla Roncoli, Todd Crane, and Ben Orlove. "Fielding Climate Change in Cultural Anthropology." In *Anthropology and Climate Change: From Encounters to Actions*, eds. Susan A Crate and Mark Nuttall (Editor) January 2009.

Susan Crate. 2011. "Climate and Culture: Anthropology in the Era of Contemporary Climate Change." *Ann. Rev. of Anthropology* 40: 175-194.

Daniel Sandweiss and Alice Kelley. 2012. "Archaeological Contributions to Climate Change Research: The Archaeological Record as a Paleoclimatic and Paleoenvironmental Archive." *Ann. Rev. of Anthropology* 41: 371-391.

Heather Lazrus. 2012. "Sea Change: Island Communities and Climate Change." *Ann. Rev. of Anthropology* 41: 285-301.

West, Colin. 2008. "Local Perceptions and Regional Climate Trends on the Central Plateau of Burkina Faso." *Land Degradation and Development*

West, Colin, and M. Vásquez-León. 2008. "Misreading the Arizona Landscape: Reframing Analyses of Environmental Degradation in Southeastern Arizona." *Human Organization* 67(4):373-383.

**Part Two: The Political Ecology of Climate Change**

**Week V. Introduction to the political economy of climate change (9/22, 9/29)**

Patrick Bond. 2012. *Politics of Climate Justice*, pp. x-51.

Watch: "The Bill" (by Germanwatch): https://www.youtube.com/watch?v=rWfb0VMCQHE

Nnimmo Bassey. 2012. *To Cook a Continent. Destructive Extraction and the Climate Crisis in Africa*. Cape Town: University of Kwa Zulu Natal Press, pp. 2-12, 100-116.

Patrick Bond. 2012. *Politics of Climate Justice*, pp. 52-142.

People's Agreement of Cochabamba: http://pwccc.wordpress.com/2010/04/24/peoples-agreement/

Via Campesina. 2009. *Small scale sustainable farmers are cooling down the earth*. http://viacampesina.net/downloads/PAPER5/EN/paper5-EN.pdf

Some web resources on climate, food, trade and technology (critical perspectives):

Vía Campesina: http://viacampesina.org
ETC Group: http://www.etcgroup.org/en/
Genetic Resources Action International, GRAIN: http://www.grain.org
Institute for Food and Development Policy: http://www.foodfirst.org/
Focus on the Global South: http://www.focusweb.org/
Oxfam: http://www.oxfam.org/en/
Grist. http://grist.org/
Global Exchange (San Francisco): http://www.globalexchange.org/
Third World Network: http://www.twnside.org.sg/
Indigenous Peoples and Community Conserved Territories and Areas, ICCA: http://www.iccaconsortium.org/

**Week VI. Market solutions to market problems? On carbon trading schemes (10/3, 10/6)**

The Story of Cap and Trade: https://www.youtube.com/watch?v=pA6FSy6EKrM

Tamra Gilbertson and Oscar Reyes. 2009. *Carbon Trading. How it works and why it fails.* Dag Hammarskjöld Foundation Critical Currents No. 7. http://www.thecornerhouse.org.uk/sites/thecornerhouse.org.uk/files/OscarTamCarbonTrade.pdf

Laura Rival. 2013. "From Carbon projects to Better Land-Use Planning: Three Latin American Initiatives." *Ecology and Society* 18(3): 1-17.

United Nations Environment Program: Green Economy
http://www.unep.org/greeneconomy/
(see, e.g.,
http://www.unep.org/greeneconomy/AboutGEI/WhatisGEI/tabid/29784/Default.aspx)

World Development Movement. c. Fall 2012. "Green Economy or Greedy Economy"
http://www.wdm.org.uk/greeneconomy (and watch short video with Hannah Griffiths)

Larry Lohmann. 2011. "The Endless Algebra of Climate Markets." *Capitalism, Nature Socialism* 22(4): 93-116
http://www.thecornerhouse.org.uk/resource/endless-algebra-climate-markets

**Week VII. The political economy of climate change 2: Capitalism vs. the climate (10/10, 10/13)**

Naomi Klein. 2014. *This Changes Everything: Capitalism vs. The Climate*, pp.

**Week VIII. "This changes everything": On climate change and grassroots politics (10/20, 10/24)**

Naomi Klein. 2014. *This Changes Everything: Capitalism vs. The Climate*, pp.

**Part Three. Issues in culture, policy, politics and culture in the era of the anthropocene**

**Week IX. The anthropocene (10/27, 10/31)**

Watch: "Welcome to the Anthropocene": http://www.anthropocene.info/en/home (and website)

"The Anthropocene. A Man-Made World." *The Economist* (May 26, 2011). http://www.economist.com/node/18741749 (and watch video at the end with Earl Ellis).

Zalasiewicz, Jan, Mark Williams and Colin Waters. In press. "The Anthropocene." In J. Adamson, ed. New York: NYU Press.

Anthony Barnosky, et. al. 2012. "Approaching a State Shift in Earth's Biosphere." *Nature* 486: 52-58 (7June).

Laura Ogden, et. al. 2013. "Global Assemblages, Resilience, and Earth Stewardship in the Anthropocene." *Frontiers Ecol. Environ 11(7): 341-347.*

Gisli Pálsson, et. al. 2013. "Reconceptualizing the 'Anthropos' in the Anthropocene: Integrating the Social Sciences and Humanities in Global Environmental Research." *Env. Science and Policy* 28: 3-13.

Raymond Clémençon. 2012. "Welcome to the Anthropocene: Rio + 20 and the Meaning of Sustainable Development." *Journal of Env. And Dev*. 21(3): 311-338.

Look at "AAURA: Aarhus U. Research on the Anthropocene," http://anthropocene.au.dk/

**Week X. What the UN is/not doing (11/3, 11/7)**

Rio + 20: Review http://www.uncsd2012.org/

Felix Dodds, Jorge Laguna-Celis and Liz Thompson. 2014. *From Rio+20 to a New Development Agenda: Building a Bridge to a Sustainable Future*, pp. 1-115.

UN Conference on Sustainable Development. *Outcome Document*. Rio de Janeiro, June 2012. http://sustainabledevelopment.un.org/futurewewant.html

United Nations Environment Program: Green Economy
http://www.unep.org/greeneconomy/
(see, e.g.,
http://www.unep.org/greeneconomy/AboutGEI/WhatisGEI/tabid/29784/Default.aspx)

Felix Dodds, Jorge Laguna-Celis and Liz Thompson. 2014. *From Rio+20 to a New Development Agenda,* pp. 133-225.

United Nations Open Working Group "Outcome Document" on the Post-2015 Development Agenda and the Sustainable Development Goals.
http://www.un.org/ga/search/view_doc.asp?symbol=A/68/970&Lang=E

**Week XI. The role of conservation and indigenous communities (11/10, 11/14)**

IUCN/ICCA Consortium. 2012. *Bio-cultural diversity conserved by indigenous peoples and local communities. Examples and analysis*. Geneva: IUCN.
http://www.iccaconsortium.org/wp-content/uploads/images/stories/Database/publications/biocultural_div_booklet_reprint.pdf

An ICCA proposal. c. 2014. "Coping with climate change and droughts: how the Abolhassani Indigenous Tribal Confederacy reinvented their natural resource management on their customary territory".

Ashis Kothari. 2014. "India 2100: Towards Radical Ecological Democracy." *Futures* 56: 62-72.

**Week XII. The contributions of ecological economics (11/17, 11/21)**

Paul Antunes, et. al. 2013. "Introduction: NGOs and ecological economics." In Hali Healy, Joan Martínez Alier, Leah Temper, Mariana Walter, and Julien Gerber, eds. *Ecological Economics from the Ground Up.* London: Routledge, pp. 1-32.

Leah Temper. 2013. "Let them eat sugar: life and livelihood in Kenya's Tana Delta." In *Ecological Economics from the Ground Up*, pp. 140-162.

Supriya Singh. 2013. "Payment for Ecosystems Services in India from the Bottom Up." In *Ecological Economics from the Ground Up*, pp. 390-402.

Beatriz Rodríguez Labajos and Joan Martínez Alier. 2013. "The economics of ecosystems biodiversity: when is money valuation appropriate?" In *Ecological Economics from the Ground Up*, pp. 488-512.

Joan Martínez-Alier, et al. 2014. "Between activism and science: grassroots concepts for sustainability coined by Environmental Justice organizations." *Journal of Political Ecology* 21: 19-60. http://jpe.library.arizona.edu/volume_21/Martinez-Alier.pdf

**Week XIII. Some statements on transitions to a post-carbon age (11/24, 12/1)**

Thomas Berry. 1999. *The Great Work: Our Way into the Future.* New York: Bell Tower, pp. 3-11

Joanna Macy. 2012. *Active Hope: How to Face the Mess We're in without Going Crazy* (Novato, CA: New World Library), pp. 1-41, 185-238.

Rob Hopkins. 2011. *The Transition Companion. Making Your Community More Resilient in Uncertain Times* (White River Junction, VT: Chelsea Green Publishing), pp. pp.13-53; 280-292

Llewellyn Vaughan-Lee. 2013. *Spiritual Ecology. The Cry of the Earth*. Point Reyes, CA: The Golden Sufi Center (Selections)

José Arguelles. 2011. *Manifesto for the Noosphere. The Next Stage in the Evolution of Human Consciousness*. Berkeley: Evolver Editions, 1-37.

Barbara Marx Hubbard. 2012. *Birth 2012 and Beyond. Humanity's Great Shift to the Age of Conscious Evolution*. USA: Shift Books, pp. xv-50.

*Review*:
Transition Network: http://www.transitionnetwork.org/blogs/rob-hopkins
Future Earth: http://www.icsu.org/future-earth
The New Earth Project: http://www.new-earth-project.org/

**Websites / internet resources on climate change/ sustainable development:**

**Triggers on climate change, sustainable development, and transitions:**
The Story of Cap and Trade: http://www.storyofstuff.org/movies-all/story-of-cap-trade/
People's Agreement of Cochabamba: http://pwccc.wordpress.com/2010/04/24/peoples-agreement/
Earth Charter: http://www.earthcharterinaction.org/content/pages/Read-the-Charter.html

**United Nations:**
UNFCCC: http://unfccc.int/2860.php
COP 17 (Durban): http://www.cop17-cmp7durban.com/
UN Environment Program, UNEP: http://www.unep.org/
Rio + 20: http://www.uncsd2012.org/rio20/index.php?menu=14
Intergovernmental Panel on Climate Change, IPCC: http://www.ipcc.ch/
UN Dept. of Economic and Social Affairs, DESA:
http://www.un.org/en/development/desa/climate-change/index.shtml
UN-DESA Div. of Sustainable Development (See CSD): http://www.un.org/esa/dsd/index.shtml
United Nations Development Program, UNDP: http://www.beta.undp.org/undp/en/home.html
Convention on Biological Diversity: http://www.cbd.int/
Agenda 21: http://www.un.org/esa/dsd/agenda21/
Millennium Ecosystems Assessment: http://www.maweb.org/en/index.aspx

**Critiques:**
Center for Civil Society, Durban: http://ccs.ukzn.ac.za/
Corner House: http://www.thecornerhouse.org.uk/
Climate Progress: http://thinkprogress.org/romm/issue/?mobile=nc
Climate and Capitalism: http://climateandcapitalism.com/
http://www.corpwatch.org/
Via campesina: http://viacampesina.org/en/
Indigenous Peoples and Community Conserved Territories and Areas, ICCA:
http://www.iccaconsortium.org/

**Mainstream conservation NGOs:**
Nature Conservancy: http://change.nature.org/cop17-durban/?gclid=CLezzLbY-6wCFYbd4AodLlnrNQ
World Wildlife Fund, WWF:
http://www.worldwildlife.org/who/media/press/2011/WWFPresitem25388.html
World Resources Institute, WRI: http://insights.wri.org/news/2011/12/reflections-cop-17-durban
Intl. Union for the Conservation of Nature, IUCN: http://www.iucn.org/what/tpas/climate/
Clean Energy Group: http://www.cleanegroup.org/

**Some critical NGOs/publications:**
Corner House: http://www.thecornerhouse.org.uk/
Friends of the Earth: http://www.foe.org/
Oilwatch: http://www.oilwatch.org/
Greenpeace: http://www.greenpeace.org/international/en/
Centro Latinoamericano de Ecología Social, CLAES: http://www.ambiental.net/claes/
Yasuní: http://www.sosyasuni.org/en/
Accion Ecológica (Quito): http://www.accionecologica.org/
Social network for sustainability: http://www.wiser.org/article/About

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