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### Observation 1 is the status quo

#### Current and future regulations will collapse the gas industry

**Hunt ‘12**

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**Federal Rules Threaten to Suffocate the Fracking Industry**

In Medieval times one form of dispatching miscreants was called “pressing”. The punishment involved piling stones on top of the offender one at a time slowly suffocating him from the weight on his chest. Not only did this rid the kingdom of troublemakers but it had a ”crucify him” like effect on the gathered witnesses lest they forget who is in charge. Fast forward and today we are seeing Federal agency after agency pressing forward with new rules on hydraulic fracturing: DOI BLM Fracking Rule. **The Interior Department proposed new rules for hydraulic fracturing on lands controlled by the** Bureau of Land Management (**BLM**). (May 4th – 60 day comment period). **The proposed rules impose new well-bore integrity assurance requirements to verify that fluids used do not escape during fracturing operations. Public disclosure of chemicals used during hydraulic fracturing are required to be posted after fracturing operations is done. Oil and gas operators would also be required to have a water management plan for fracturing fluids that flow back to the surface.** EPA Safe Drinking Water Fracking Rule. US EPA proposed rules on diesel fuel use in hydraulic fracturing under the Safe Drinking Water Act covering both federal and private lands. (May 4th – 60 day comment period) EPA NSPS Rule. **US EPA Administrator** Lisa Jackson signed **final** New Source Performance Standards **(NSPS). Under this rule EPA will for the first time regulate air emissions from natural gas wells using hydraulic fracturing**. (April 17 – final NSPS rule at 40 C.F.R. Part 60, Subpart OOOO) EPA NESHAPs. National Emission Standards for Hazardous Air Pollutants (**NESHAPs) covers emission sources associated with exploration, production, processing, and transportation of oil and natural gas for upstream and midstream oil and gas industries**. (April 17 – Final Rule at 40 C.F.R. Subparts HH (covering the oil and natural gas production sector) and HHH (covering the natural gas transmission and storage). Interagency Rules Working Group. President **Obama** **issued an executive order** April 17th **creating an interagency working group to coordinate policy efforts among the federal agencies that oversee different components of the “development of unconventional domestic natural gas resources.”** My purpose here is not to review the details of each of these proposed rules. But **when the President creates a committee to choreograph the rule making process across Federal agencies you can be assured that “pressing” is about to begin.** Why? **To date hydraulic fracturing has been regulated largely by the states**. **This made sense since it was used in a few states where there was a growing body of experience with the players and techniques**. **State regulation has a vastly different character to it since there has generally been a much better balancing of interests between environmental and economic concerns in protecting the public interest.** So North Dakota, for example, can adopt rules and supervise field operations to protect public health and safety while also assuring that the state’s interest in economic growth is not harmed by irresponsible operators. **For more than twenty years this approach has worked without any significant environmental or other problems. Even US EPA Administrator** Lisa **Jackson was forced to admit there is very little evidence of environmental problems with fracking to warrant Federal intervention**. **That was music to the ears of the states, but it does not appear it will save them from a wave of new Federal regulation over fracking that almost surely will duplicate, preempt or interfere with the states.** On Federal lands the issue is different since much less drilling has been permitted. Federal rules on federal lands are more wrapped up in the politics environmental issues especially in an election year. So what should we make of this?

• Being FOR domestic energy production while being AGAINST it. The Obama Administration is trying to have it both ways in an election year. It must seem responsive to its environmental base that opposes hydraulic fracturing because it leads to more domestic energy production and use of fossil fuels. Yet it must seem responsive to labor and business interests and the public perception that domestic energy production of oil and gas is good for job creation, good for the economy and good for our national security.

• The Law of Creeping Federal Preemption. **The Federal Government is engaging in an age old turf war with the states using Federal rules to progressively lay the ground work for arguing that the Federal rules preempt state rules in conflict**. The rules proposed and adopted so far play this game with precision narrowly citing Federal statutory authority yet being generously flexible in their application and implementation to avoid raising too much fuss especially before the election. But **make no mistake this battle of Feds vs States is coming.**

• The Death of a Thousand Fracking Rules. **For operators,** investors**, and the rest of the oil and gas industry** just trying to do their jobs, make a living and do some good by developing America’s domestic energy potential, **new Federal rules are a mixed blessing**. On the one hand **the** uncertainty **about future rules imposes** enormous unquantifiable risk in a politically charged election year and beyond. On the other hand, **the piling on of Federal rules on top of state rules drives up the costs and can undermine the economics of many projects**. **The worst fear is that rulemaking will be used at the Federal level to achieve a policy outcome that likely cannot be won in Congress.**

The growth of domestic energy production from North America’s unconventional oil and gas potential is remaking our future and our economy. The decisions facing the country revolve around how to responsibly develop that potential for our economic revival and growth while balancing it against our broadly held desire to protect the environment for our children and grandchildren. Rules that clarify ambiguities and promote best practices are good for the industry and good for the country. **Rules that drive up the costs, delay operations, create conflict and confusion are, in fact, the modern version of “pressing”.**

### Thus the plan

***The United States federal government should substantially reduce restrictions on natural gas production in the United States by repealing the Environmental Protection Agency’s New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews for natural gas production. The United States federal government should issue a moratorium on further federal restrictions on natural gas production in the United States.***

### Observation 2 is Coal

***US CO2 emissions are dropping rapidly as natural gas replaces coal --- but regulations will reverse this***

**Zakaria, 10-25** (Fareed, PhD Poli Sci @ Harvard, Zakaria, Editor of Newsweek, The Nation (AsiaNet), 2012, “The new oil and gas boom,” lexisnexis, ts)

**The environmental impact of the natural-gas boom is already clear and positive**. **The USA's *g*reen*h*ouse-*g*as emissions in 2011 were 9 percent lower than in 2007**. **That's a larger drop than in the *E*uropean *U*nion, with all its focus on renewables**. Why? A slow recovery and lagging demand is one answer. But **the main reason is that** **natural gas is replacing coal** everywhere as an energy source, **and gas emits half as much carbon dioxide as coal**. **This point is crucial**. **The conversation about** **natural gas cannot be had in isolation from the alternative. If we shut down all** **fracking and stop using shale gas, we will get all that energy by burning coal, which is the world's dirtiest fossil fuel and is associated with mining deaths and respiratory illnesses as well.**

***Restrictions will cause a price spike that shifts us back to coal***

**Brady ‘12**

Phil Brady, 6-6-12, the Opportune Time, Chesapeake: Turning Point or Point of No Return? <http://www.theopportunetime.com/news/online/Chesapeake-Turning-Point-or-Point-of-No-Return.php>, jj

**With the current price situation, there may be an opportunity for natural gas to replace coal** in the long term. **Not only does natural gas provide more energy than coal, but natural gas does so at significantly lower prices**. **As a matter of fact, we are already seeing the switch from coal to natural gas take place in power plants, and in entire states**. For example, Pennsylvania’s leading environmental advocacy organization, PennFuture, plans on replacing coal plants with natural gas plants. **However, keep in mind that power plants**, like Penn Future, **understand the cyclical nature of commodities.** **Consequently, *the plants will be prepared to have the retired coal-fired units ready to be used again when natural gas prices spike***. Interestingly, **if low costs are not enough to cause a price spike down the road, then perhaps new regulations on fracking will**. In April of 2012, the **U.S. Energy Secretary**, Steven **Chu, called for more stringent fracking regulations**. **If the legislation passes, we may see the now abundant supply of natural gas bottleneck, which would send prices back up**. If natural gas drillers simply slow down production, and sell natural gas to coal-users, they can shift the supply curve lower and increase demand, causing natural gas prices to increase and possibly reach levels seen in early 2008.

#### Continued reliance on coal kills 13,000 people every year and spreads hazardous pollution

Zelman 11 Joanna, The Huffington Post, "Power Plant Air Pollution Kills 13,000 People Per Year, Coal-Fired Are Most Hazardous: ALA Report", 3/15, www.huffingtonpost.com/2011/03/14/power-plant-air-pollution-coal-kills\_n\_833385.html

The American Lung Association (ALA) recently released a new report on the dramatic health hazards surrounding coal-fired power plants.¶ The report, “Toxic Air: The Case For Cleaning Up Coal-Fired Power Plants,” reveals the dangers of air pollution emitted by coal plants.¶ One of the starkest findings in the report claims, “Particle pollution from power plants is estimated to kill approximately 13,000 people a year.”¶ So what's the biggest culprit?¶ “Coal-fired power plants that sell electricity to the grid produce more hazardous air pollution in the U.S. than any other industrial pollution sources.” According to the report details, over 386,000 tons of air pollutants are emitted from over 400 plants in the U.S. per year. Interestingly, while most of the power plants are located in the Midwest and Southeast, the entire nation is threatened by their toxic emissions.¶ An ALA graph shows that while pollutants such as acid gases stay in the local area, metals such as lead and arsenic travel beyond state lines, and fine particulate matter has a global impact. In other words, while for some workers the pollution may be a tradeoff for employment at a plant, other regions don’t reap the same benefits, but still pay for the costs to their health.¶ The report connected specific pollutants with their health effects. According to the ALA, 76% of U.S. acid gas emissions, which are known to irritate breathing passages, come from coal-fired power plants. Out of all industrial sources, these plants are also the biggest emitter of airborne mercury, which can become part of the human food chain through fish and wildlife -- high mercury levels are linked to brain damage, birth defects, and damage to the nervous system. Overall, air pollutants from coal plants can cause heart attacks, strokes, lung cancer, birth defects, and premature death.¶ The American Lung Association isn’t the only group to connect coal plants with death and illness. A recent study released in the Annals of the New York Academy of Sciences found that, due in large part to health problems, coal costs the U.S. $500 billion per year. Specifically, the study found that the health costs of cancer, lung disease, and respiratory illnesses connected to pollutant emissions totaled over $185 billion per year.

***Coal is the greatest threat to survival***

**Hansen 9** - Director of Nasa's Goddard Institute for Space Studies [James Hansen (Professor of Earth and Environmental Sciences @ Columbia University and Ph.D. in Physics from the University of Iowa), “Coal-fired power stations are death factories. Close them,” The Observer, Sunday 15 February 2009, pg. http://www.guardian.co.uk/commentisfree/2009/feb/15/james-hansen-power-plants-coal]

A year ago, I wrote to Gordon Brown asking him to place a moratorium on new coal-fired power plants in Britain. I have asked the same of Angela Merkel, Barack Obama, Kevin Rudd and other leaders. The reason is this **- *coal is the single greatest threat to civilisation and all life on our planet***. **The climate is nearing tipping points**. Changes are beginning to appear and **there is a potential for explosive changes, effects that would be irreversible**, **if we do not rapidly slow fossil-fuel emissions over the next few decades**. **As Arctic sea ice melts, the darker ocean absorbs more sunlight and speeds melting. As the tundra melts, methane, a strong greenhouse gas, is released, causing more warming**. **As species are exterminated by shifting climate zones, ecosystems can collapse, destroying more species.** The public, buffeted by weather fluctuations and economic turmoil, has little time to analyse decadal changes. How can people be expected to evaluate and filter out advice emanating from those pushing special interests? How can people distinguish between top-notch science and pseudo-science? Those who lead us have no excuse - they are elected to guide, to protect the public and its best interests. They have at their disposal the best scientific organisations in the world, such as the Royal Society and the US National Academy of Sciences. Only in the past few years did the science crystallise, revealing the urgency. **Our planet is in peril. If we do not change course, we'll hand our children a situation that is out of their control. One ecological collapse will lead to another, in amplifying feedbacks.** The amount of carbon dioxide in the air has already risen to a dangerous level. The pre-industrial carbon dioxide amount was 280 parts per million (ppm). Humans, by burning coal, oil and gas, have increased this to 385 ppm; it continues to grow by about 2 ppm per year. Earth, with its four-kilometre-deep oceans, responds only slowly to changes of carbon dioxide. So the climate will continue to change, even if we make maximum effort to slow the growth of carbon dioxide. Arctic sea ice will melt away in the summer season within the next few decades. **Mountain glaciers, providing fresh water for rivers that supply hundreds of millions of people, will disappear - practically all of the glaciers could be gone within 50 years - if carbon dioxide continues to increase at current rates. Coral reefs, harbouring a quarter of ocean species, are threatened. The greatest danger hanging over our children and grandchildren is initiation of changes that will be irreversible on any time scale that humans can imagine. If coastal ice shelves buttressing the west Antarctic ice sheet continue to disintegrate, the sheet could disgorge into the ocean, raising sea levels by several metres in a century. Such rates of sea level change have occurred many times in Earth's history in response to global warming rates no higher than those of the past 30 years. Almost half of the world's great cities are located on coastlines. The most threatening change**, from my perspective**, is extermination of species**. **Several times in Earth's history, rapid global warming occurred**, apparently spurred by amplifying feedbacks**. In each case, more than half of plant and animal species became extinct. New species came into being over tens and hundreds of thousands of years. But these are time scales and generations that we cannot imagine. If we drive our fellow species to extinction, we will leave a far more desolate planet for our descendants than the world we inherited from our elders. Clearly, if we burn all fossil fuels, we will destroy the planet we know.** Carbon dioxide would increase to 500 ppm or more. We would set the planet on a course to the ice-free state, with sea level 75 metres higher. Climatic disasters would occur continually. The tragedy of the situation, if we do not wake up in time, is that the changes that must be made to stabilise the atmosphere and climate make sense for other reasons. They would produce a healthier atmosphere, improved agricultural productivity, clean water and an ocean providing fish that are safe to eat. Fossil-fuel reservoirs will dictate the actions needed to solve the problem. Oil, of which half the readily accessible reserves have already been burnt, is used in vehicles, so it's impractical to capture the carbon dioxide. This is likely to drive carbon dioxide levels to at least 400 ppm. But **if we cut off the largest source of carbon dioxide - coal - it will be practical to bring carbon dioxide back to 350 ppm,** lower still if we improve agricultural and forestry practices, increasing carbon storage in trees and soil. **Coal is not only the largest fossil fuel reservoir of carbon dioxide, it is the dirtiest fuel. Coal is polluting the world's oceans and streams with mercury, arsenic and other dangerous chemicals.** The dirtiest trick that governments play on their citizens is the pretence that they are working on "clean coal" or that they will build power plants that are "capture-ready" in case technology is ever developed to capture all pollutants.

#### Warming is real and anthropogenic- newest studies

Romm 10-15

Joe, Fellow at American Progress and is the editor of Climate Progress, “Ten Charts That Make Clear The Planet Just Keeps Warming” ThinkProgress

<http://thinkprogress.org/climate/2012/10/15/1014151/ten-charts-that-make-clear-the-planet-just-keeps-warming/>

“The decadal land-surface average temperature using a 10-year moving average of surface temperatures over land. Anomalies are relative to the Jan 1950 – December 1979 mean. The grey band indicates 95% statistical and spatial uncertainty interval.” A Koch-funded reanalysis of 1.6 billion temperature reports finds that “essentially all of this increase results from the human emission of greenhouse gases.” Via BEST. Still warming, though that’s just a chart of land-surface temperatures. In fact, the land has received only a tiny fraction of the manmade warming in recent years as the scientific literature — captured in this great Skeptical Science infographic — makes clear: Components of global warming for the period 1993 to 2003 calculated from IPCC AR4 5.2.2.3. Now, if you actually read the scientific literature, you find the oceans have been rapidly warming in recent decades (see “Hottest Decade on Record Would Have Been Even Hotter But for Deep Oceans“): “Total Earth Heat Content [anomaly] from 1950 (Murphy et al. 2009). Ocean data taken from Domingues et al 2008.” And no, the ocean didn’t stop warming in the middle the last decade, as a chart from yet another scientific study makes clear (see “Search for ‘Missing Heat’ Ends Myth Global Warming Has Ended“): Revised estimate of global ocean heat content (10-1500 mtrs deep) for 2005-2010 derived from Argo measurements. The 6-yr trend accounts for 0.55±0.10Wm−2. Error bars and trend uncertainties exclude errors induced by remaining systematic errors in the global observing system. See Von Schuckmann & Le Traon (2011). Via Skeptical Science. Still warming. You may have noticed in the infographic that Arctic sea ice has seen 0.8% of global warming — nearly two-fifths of the warming the continents have received. I wonder what has been happening in the Arctic: Arctic Sea Ice is melting much, much faster than even the best climate models had projected. The reason is most likely unmodeled amplifying feedbacks. Image via Arctic Sea Ice Blog. Oh, right, it’s in a death spiral — and that’s just the two-dimensional sea ice extent. Let’s remember that “Experts Warn Of ‘Near Ice-Free Arctic In Summer’ In A Decade If Volume Trends Continue.” Finally we have the Greenland and Antarctic ice sheets, which each have been getting a mere 0.2% of the warming. Let’s check in on those: Nature: “Dynamic thinning of Greenland and Antarctic ice-sheet ocean margins is more sensitive, pervasive, enduring and important than previously realized” JPL: Polar ice sheet mass loss is speeding up, on pace for 1 foot sea level rise by 2050 Greenland Ice Sheet Melt Nearing Critical ‘Tipping Point’ Large Antarctic glacier thinning 4 times faster than it was 10 years ago: “Nothing in the natural world is lost at an accelerating exponential rate like this glacier.” Still warming. That’s ten charts, enough for now, but there are many other physical indicators of continued warming (see “How Can It Be Warming When It’s (Almost) Always Cooling?“)

#### Reducing emissions is the only way to prevent catastrophic warming tipping points

Nuccitelli 9-1

Dana Nuccitelli is an environmental scientist at a private environmental consulting firm in the Sacramento, California area. This piece was originally published at Skeptical Science and was reprinted with permission. “Realistically What Might The Future Climate Look Like?” ThinkProgress http://thinkprogress.org/climate/2012/09/01/784931/realistically-what-might-the-future-climate-look-like/

Clearly our CO2 emissions have not yet peaked – in fact they increased by 1 billion tonnes between 2010 and 2011 despite a continued global economic recession; therefore, the green curve is no longer an option. There has also been little progress toward an international climate accord to replace the Kyoto Protocol, which suggests that the blue curve does not represent a likely scenario either – in order to achieve peak emissions in 2015 we would have to take serious steps to reduce emissions today, which we are not. The red curve seems the most likely, but the required cuts are so steep that it is unlikely we will be able to achieve them, which means we are indeed likely to surpass the 2°C target. Thus it is worth exploring the question, what would a world with >2°C global surface warming look like? Global Warming Impacts The 2007 IPCC Fourth Assessment Report (AR4) summarizes the magnitudes of impact of various degrees of warming here, and graphically in Figure 2, relative to ~1990 temperatures (~0.6°C above late 19th Century temperatures). Some adverse impacts are expected even before we reach the 2°C limit, for example hundreds of millions of people being subjected to increased water stress, increasing drought at mid-latitudes (as we recently discussed here), increased coral bleaching, increased coastal damage from floods and storms, and increased morbidity and mortality from more frequent and intense heat waves (see here), floods, and droughts. However, by and large these are impacts which we should be able to adapt to, at a cost, but without disastrous consequences. Once we surpass the 2°C target, the impacts listed above are exacerbated, and some new impacts will occur. Most corals will bleach, and widespread coral mortality is expected ~3°C above late 19th Century temperatures. Up to 30% of global species will be at risk for extinction, and the figure could exceed 40% if we surpass 4°C, as we continue on the path toward the Earth’s sixth mass extinction. Coastal flooding will impact millions more people at ~2.5°C, and a number of adverse health effects are expected to continue rising along with temperatures. Reasons for Concern Smith et al. (2009) (on which the late great Stephen Schneider was a co-author) updated the IPCC impact assessment, arriving at similar conclusions. For example, “There is medium confidence that ~20–30% of known plant and animal species are likely to be at increased risk of extinction if increases in global average temperature exceed 1.5 °C to 2.5 °C over 1980–1999″ “increases in drought, heat waves, and floods are projected in many regions and would have adverse impacts, including increased water stress, wildfire frequency, and flood risks (starting at less than 1 °C of additional warming above 1990 levels) and adverse health effects (slightly above 1 °C)” “climate change over the next century is likely to adversely affect hundreds of millions of people through increased coastal flooding after a further 2 °C warming from 1990 levels; reductions in water supplies (0.4 to 1.7 billion people affected with less than a 1 °C warming from 1990 levels); and increased health impacts (that are already being observed” Smith et al. updated the 2001 IPCC report ‘burning embers’ diagram to reflect their findings (Figure 3). On this figure, white regions indicate neutral or low impacts or risks, yellow indicates negative impacts for some systems or more significant risks, and red indicates substantial negative impacts or risks that are more widespread and/or severe. They have grouped the various climate change consequences into ‘reasons for concern’ (RFCs), summarized below. Figure 3: Risks from climate change, by reason for concern (RFC). Climate change consequences are plotted against increases in global mean temperature (°C) after 1990. Each column corresponds to a specific RFC and represents additional outcomes associated with increasing global mean temperature. The color scheme represents progressively increasing levels of risk and should not be interpreted as representing ‘‘dangerous anthropogenic interference,’’ which is a value judgment. The historical period 1900 to 2000 warmed by 0.6 °C and led to some impacts. It should be noted that this figure addresses only how risks change as global mean temperature increases, not how risks might change at different rates of warming. Furthermore, it does not address when impacts might be realized, nor does it account for the effects of different development pathways on vulnerability. Risk to Unique and Threatened Systems addresses the potential for increased damage to or irreversible loss of unique and threatened systems, such as coral reefs, tropical glaciers, endangered species, unique ecosystems, biodiversity hotspots, small island states, and indigenous communities. Risk of Extreme Weather Events tracks increases in extreme events with substantial consequences for societies and natural systems. Examples include increase in the frequency, intensity, or consequences of heat waves, floods, droughts, wildfires, or tropical cyclones. Distribution of Impacts concerns disparities of impacts. Some regions, countries, and populations face greater harm from climate change, whereas other regions, countries, or populations would be much less harmed—and some may benefit; the magnitude of harm can also vary within regions and across sectors and populations. Aggregate Damages covers comprehensive measures of impacts. Impacts distributed across the globe can be aggregated into a single metric, such as monetary damages, lives affected, or lives lost. Aggregation techniques vary in their treatment of equity of outcomes, as well as treatment of impacts that are not easily quantified. Risks of Large-Scale Discontinuities represents the likelihood that certain phenomena (sometimes called tipping points) would occur, any of which may be accompanied by very large impacts. These phenomena include the deglaciation (partial or complete) of the West Antarctic or Greenland ice sheets and major changes in some components of the Earth’s climate system, such as a substantial reduction or collapse of the North Atlantic Meridional Overturning Circulation. All of these reasons for concern enter the red (substantial negative impact, high risk) region by 4°C. Aggregate impacts are in the red region by 3°C, and some types of concerns are in the red region by 1°C. For more details we also recommend Mark Lynas’ book Six Degrees, which goes through the climate impacts from each subsequent degree of warming, based on a very thorough review of the scientific literature. A brief review of the book by Eric Steig and summary of some key impacts is available here. National Geographic also did a series of videos on the Six Degrees theme, which no longer seem to be available on their websites, but which can still be found on YouTube. This is Why Reducing Emissions is Critical We’re not yet committed to surpassing 2°C global warming, but as Watson noted, we are quickly running out of time to realistically give ourselves a chance to stay below that ‘danger limit’. However, 2°C is not a do-or-die threshold. Every bit of CO2 emissions we can reduce means that much avoided future warming, which means that much avoided climate change impacts. As Lonnie Thompson noted, the more global warming we manage to mitigate, the less adaption and suffering we will be forced to cope with in the future. Realistically, based on the current political climate (which we will explore in another post next week), limiting global warming to 2°C is probably the best we can do. However, there is a big difference between 2°C and 3°C, between 3°C and 4°C, and anything greater than 4°C can probably accurately be described as catastrophic, since various tipping points are expected to be triggered at this level. Right now, we are on track for the catastrophic consequences (widespread coral mortality, mass extinctions, hundreds of millions of people adversely impacted by droughts, floods, heat waves, etc.). But we’re not stuck on that track just yet, and we need to move ourselves as far off of it as possible by reducing our greenhouse gas emissions as soon and as much as possible. There are of course many people who believe that the planet will not warm as much, or that the impacts of the associated climate change will be as bad as the body of scientific evidence suggests. That is certainly a possiblity, and we very much hope that their optimistic view is correct. However, what we have presented here is the best summary of scientific evidence available, and it paints a very bleak picture if we fail to rapidly reduce our greenhouse gas emissions. If we continue forward on our current path, catastrophe is not just a possible outcome, it is the most probable outcome. And an intelligent risk management approach would involve taking steps to prevent a catastrophic scenario if it were a mere possibility, let alone the most probable outcome. This is especially true since the most important component of the solution – carbon pricing – can be implemented at a relatively low cost, and a far lower cost than trying to adapt to the climate change consequences we have discussed here (Figure 4).

#### Prefer these peer-reviewed studies- evidence to the contrary is flawed

Stephens ’11(Home » Vol 21 No 22 > Bad week for Pell and climate change deniers ENVIRONMENT Bad week for Pell and climate change deniers TIM STEPHENS NOVEMBER 06, 2011 Dr Tim Stephens is Director of the Sydney Centre for International Law, at the Faculty of Law, University of Sydney and a parishioner at St Joan of Arc, Haberfield, NSW. He holds a masters degree in geography from the University of Cambridge, a doctorate in international environmental law from the University of Sydney, and writes on climate change science, policy and law. His latest book, co-authored with Donald R Rothwell, is The International Law of the Sea.

The last couple of weeks have not been a good time to be a climate change sceptic. On 20 October the Berkeley Earth Surface Temperature Project (BEST), led by self-described climate change sceptic Professor Richard Muller, reported the conclusions of its independent assessment of land temperature records. Muller's team, which included fellow sceptic Professor Judith Curry, found that the BEST results agreed with those published by other groups such as NASA and the Hadley Centre in the UK which have found that global land temperatures have increased by a remarkable 1 degree Celsius in just 60 years. In an opinion piece in the Wall Street Journal Muller concluded that 'global warming is real. Perhaps our results will help cool this portion of the climate debate.' A week after the BEST team released its findings, Cardinal George Pell, Archbishop of Sydney, delivered a much-publicised lecture on climate change science to the Global Warming Policy Foundation, a think-tank in London that aggressively pushes climate change denialism. Although titled 'One Christian Perspective on Climate Change' the lecture had precious little theological content. Instead the lecture was centrally concerned with climate science. Pell criticised those who lazily defer to the consensus of scientists and set about himself to explain climate science, leaving the impression that he sees himself as a modern Galileo fighting against the scientific establishment. Yet what followed demonstrated a misunderstanding of the fundamentals not only of climate science but the scientific method and the history of modern science. Pell's misuse of chaos theory and the invocation of the late Professor Edward Lorenz is particularly galling, given that Lorenz's insight that chaotic behaviour (such as the weather) may have predictable outcomes (climate) is at the heart of climate modelling. Even if we take at face value Pell's claim that it is a matter for the layperson to decide himself what the science says, surely as part of that decision-making one ought to consider what the mainstream science has to say, even if only to dismiss it. Pell does not refer to, for example, Professor David Archer's excellent book Global Warming: Understanding the Forecast (one of several used in science courses worldwide to teach climatology), or to any one of the many hundreds of articles on climate change published in the world's leading scientific journals such as Science or Nature. Rather, he simply repeats the sceptical talking points of prominent climate change contrarians Professors Ian Plimer and Bob Carter, and Christopher Monckton, only one of whom, Carter, has published a peer-reviewed article on climate science. All three have been repeatedly shown to have no credibility in climate science, frequently making wild and inaccurate claims. The response by Australian climate scientists to Pell's speech was understandably scathing. Dr Karl Braganza, Manager of Climate Monitoring at the Bureau of Meteorology, told Crikey the Cardinal's argument 'that climate science lacks empirical evidence is specious. There is lots of observational evidence for the greenhouse effect, and the enhanced greenhouse effect.' Lest you think this assessment of Pell harsh, bear in mind he has accused climate scientists of having 'fiddled with the evidence' in a reference to United Kingdom researchers whose conduct was confirmed to be entirely proper and scientific. Regrettably Pell seems entirely uninterested in the mainstream science. Not even the BEST conclusions merited a mention in his lecture, allowing him to repeat the untruth that global warming has stopped. His lecture is a collage of climate denial talking points that one finds on the weirder conspiracy sites on the internet. Reading between the lines, it is apparent from Pell's lecture that it is not an informed scientific view that is driving his understanding, but rather his politics. He clearly dislikes the Greens; I am with him on this for various reasons, including the fact that they support abortion and oppose nuclear energy. But ideology is no guide to physical reality, and political views should not drive scientific ones. Whether one is left or right on the political spectrum the same laws of physics apply, and it is those laws of nature that determine what is happening to the world's climate. Climate change science is like any other area of science, although it is one where there has been very considerable attention for a considerable period by a considerable number of scientists. The near unanimity of the conclusions reached on the rate and cause of recent warming is remarkable. In a 2010 paper in the Proceedings of the National Academy of Sciences by Professor William Anderegg et al., it was found that around **97 per cent of climate scientists actively publishing in the peer-reviewed literature supported the thesis that human activities are causing climate change**. It is no surprise then that every major science academy including the Vatican Academy of Sciences have warned that the world is warming and that we are causing it. Other Church leaders have accepted this reality; the Archbishop of San Salvador, Msgr Jose Luis Escobar Alas, declared last week that climate change is the most serious problem confronting humanity. **Climate science is complex and not explainable in sound-bites. Of necessity the layperson must defer to the experts**. If Pell had offered views on neuroscience, quantum computing, immunology, the geology of Mars or any of the other topics covered in the latest issue of Nature we would rightly be scratching our heads at his intervention, unless he truly were a polymath of Galilean standing. But **the discourse of climate change has become so debased and post-modern that any views, however bizarre, can be given an airing. Like homeopathy and astrology, Pell's pseudo-science should be ignored, and the scientific method allowed to continue**, however unpalatable the conclusions may be.

#### Warming causes extinction

**Deibel ‘7** (Terry L. Deibel, professor of IR at National War College, Foreign Affairs Strategy, “Conclusion: American Foreign Affairs Strategy Today Anthropogenic – caused by CO2”)

Finally, **there is one major existential threat** to American security (as well as prosperity) of a nonviolent nature, which, though far in the future, demands urgent action. **It is the threat of global warming to the stability of the climate upon which all earthly life depends**. Scientists worldwide have been observing the gathering of this threat for three decades now, **and what was once a mere possibility has passed through probability to near certainty.** Indeed not one of more than 900 articles on climate change published in refereed scientific journals from 1993 to 2003 doubted that anthropogenic warming is occurring. “In legitimate scientific circles,” writes Elizabeth Kolbert, “it is virtually impossible to find evidence of disagreement over the fundamentals of global warming.” Evidence from a vast international scientific monitoring effort accumulates almost weekly, as this sample of newspaper reports shows: an international panel predicts “brutal droughts, floods and violent storms across the planet over the next century”; climate change could “literally alter ocean currents, wipe away huge portions of Alpine Snowcaps and aid the spread of cholera and malaria”; “glaciers in the Antarctic and in Greenland are melting much faster than expected, and…worldwide, plants are blooming several days earlier than a decade ago”; “rising sea temperatures have been accompanied by a significant global increase in the most destructive hurricanes”; “NASA scientists have concluded from direct temperature measurements that 2005 was the hottest year on record, with 1998 a close second”; “Earth’s warming climate is estimated to contribute to more than 150,000 deaths and 5 million illnesses each year” as disease spreads; “widespread bleaching from Texas to Trinidad…killed broad swaths of corals” due to a 2-degree rise in sea temperatures. “The world is slowly disintegrating,” concluded Inuit hunter Noah Metuq, who lives 30 miles from the Arctic Circle. “They call it climate change…but we just call it breaking up.” From the founding of the first cities some 6,000 years ago until the beginning of the industrial revolution, carbon dioxide levels in the atmosphere remained relatively constant at about 280 parts per million (ppm). At present they are accelerating toward 400 ppm, and by 2050 they will reach 500 ppm, about double pre-industrial levels. Unfortunately, atmospheric CO2 lasts about a century, so there is no way immediately to reduce levels, only to slow their increase, we are thus in for significant global warming; the only debate is how much and how serous the effects will be. As the newspaper stories quoted above show, we are already experiencing the effects of 1-2 degree warming in more violent storms, spread of disease, mass die offs of plants and animals, species extinction, and threatened inundation of low-lying countries like the Pacific nation of Kiribati and the Netherlands at a warming of 5 degrees or less the Greenland and West Antarctic ice sheets could disintegrate, leading to a sea level of rise of 20 feet that would cover North Carolina’s outer banks, swamp the southern third of Florida, and inundate Manhattan up to the middle of Greenwich Village. Another catastrophic effect would be the collapse of the Atlantic thermohaline circulation that keeps the winter weather in Europe far warmer than its latitude would otherwise allow. Economist William Cline once estimated the damage to the United States alone from moderate levels of warming at 1-6 percent of GDP annually; severe warming could cost 13-26 percent of GDP. But the most frightening scenario is runaway greenhouse warming, based on positive feedback from the buildup of water vapor in the atmosphere that is both caused by and causes hotter surface temperatures. Past ice age transitions, associated with only 5-10 degree changes in average global temperatures, took place in just decades, even though no one was then pouring ever-increasing amounts of carbon into the atmosphere. Faced with this specter, the best one can conclude is that **“humankind’s continuing enhancement of the natural greenhouse effect is akin to playing Russian roulette with the earth’s climate and humanity’s life support system**. At worst, says physics professor Marty Hoffert of New York University, “**we’re just going to burn everything up**; we’re going to het the atmosphere to the temperature it was in the Cretaceous when there were crocodiles at the poles, and then everything will collapse.” During the Cold War, astronomer Carl Sagan popularized a theory of nuclear winter to describe how a thermonuclear war between the Untied States and the Soviet Union would not only destroy both countries but possible end life on this planet. **Global warming is the post-Cold War era’s equivalent of nuclear winter at least as serious and considerably better supported scientifically.** Over the long run it puts dangers form terrorism and traditional military challenges to shame. **It is a threat** not only to the security and prosperity to the United States, but potentially to **the continued existence of life on this planet.**

***There’s no comparison --- natural gas is far cleaner than coal***

**Lu et al. ‘12**

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Implications of the Recent Reductions in Natural Gas Prices for Emissions of CO2 from the US Power Sector

Environmental Science & Technology201246 (5), 3014-3021, jj

Howarth et al.(24) have suggested that emissions of CH4 associated with the fracking process involved in the production of natural gas from shale, combined with release of CH4 in the gas transportation system, could largely offset the climate related advantages occasioned by the additional sources of low cost gas (CH4, the major component of natural gas, is a significantly more effective greenhouse gas than CO2). An earlier study by Lelieveld and Crutzen(25) quantitatively analyzing the indirect effects of methane on climate warming on the basis of available estimates of fossil-fuel-related leaks of methane, suggested that **switching from coal and oil to natural gas as an energy source would reduce climate warming.** They further concluded that considering the global warming potential (GWP) on a time scale of ten years, **the fractional natural gas leakage should be less than 4.3–5.7% to ensure a reduction in climate forcing associated with switching from coal to gas. The advantages of natural gas are even more favorable if the potential climate impact is assessed on time scales much longer than a decade**. **Jiang et al.(**26) **evaluated the** greenhouse gas (**GHG) emissions resulting from the use of gas extracted from the Marcellus shale considering the entire life cycle of the gas**. They offered a comparison with the average emissions resulting from US natural gas produced in 2008, prior to any significant development of the Marcellus system. Their results suggested that **the GHG emissions from shale gas over the entire life cycle including the final combustion process are at most 3% higher than emissions associated with production and consumption of conventional sources of gas**. They argued further, in contrast to Howarth et al.,(24) that **the climate impact of the greenhouse gases emitted in conjunction with exploitation of the Marcellus shale source to produce electricity are significantly lower than those associated with the production of power using coal**. They concluded that **relatively straightforward measures could be implemented to minimize the potential release of greenhouse gases associated with the extraction of gas from shale**.(26) A more recent study by Hultman et al.(27) adopting a transparent and consistent approach to comparing the GHG footprints of conventional natural gas, shale gas, and coal concluded that **in terms of electricity generation the GHG impacts of shale gas are 11% higher than those for conventional gas** (higher than the value reported by Jiang et al.) **but only 56% of the impact expected for coal.**

#### Prefer our evidence – overwhelmingly backed by non-partisan data – Negative evidence is ideologically suspect

Jon Entine is a journalist focusing on sustainability, science and public policy and senior research fellow at the Center for Health & Risk Communication and STATS at George Mason University. “Future energy: natural gas fracking--who blew up the 'bridge to the future'?”, Dec 13th 2011, http://www.aei.org/article/energy-and-the-environment/conventional-energy/natural-gas/who-blew-up-the-bridge-to-the-future/

What if wealthy donors are deploying their money to manipulate public opinion and support research whose conclusions often conflict with science? That in a nutshell is the media rationale for scrutinizing public relations efforts by Big Business. Journalists should be truth vultures. Expose the puppeteers. But the corrupting power of money and the ego enhancing romance of influence have no ideological limits. That’s the story unfolding in New York’s Tompkins County in the middle of the vast Marcellus shale formation. In this case, however, the key actors are not industry apologists but ‘white as snow’ philanthropists, NGOs and journalists. Over the last two years, Cornell University has emerged as the locus of academic study challenging the benefits of shale gas drilling. Research by a select group of scholars—oddly, none is considered experts in this field, even at Cornell—has been ballyhooed around the world, with the New York Times, consciously or unconsciously, playing the leading role of megaphone. In April 2011, the Times helped transform Cornell professor Robert Howarth into the ideological rock star of anti-shale gas activism. It ran a report and blog promoting a short article Howarth and Anthony Ingraffea had just published in Climactic Change Letters, a journal that had never before addressed the shale gas phenomenon. The authors claimed that shale gas generates more greenhouse gas emissions than the production and use of coal. It would be difficult to overstate the influence of this paper, which generated thousands of news reports around the world and was even debated in the British parliament and the European Union. “There is a lot of money invested in shale gas development,” Howarth told me. Our research is threatening that, which makes it political.” If the debate has become sharply contentious, Howarth is at least partly responsible. He often describes himself in ways that create the impression he has been researching fossil fuel issues his entire career. “I’ve worked on the water quality effects of oil and gas development for 35 years off and on,” he said recently. His training is in oceanography, with his primary concentration in marine science, particularly coastal marine ecosystems. Until his published letter, he had never published any university level research into natural gas, let alone shale gas. Howarth and his wife, Roxanne Marino, a biochemist at Cornell and partner at his lab, are well-known long-time environmental activists and outspoken opponents of developing shale gas reserves. Just months before the release of his letter, Howarth appeared in a YouTube video wearing an anti-fracking button at an anti-natural gas rally outside an Environmental Protection Agency meeting in Binghamton, NY, saying, “All this talk that it’s a clean fuel, as some say, is not based on any scientific analysis.” He continues to passionately and publicly lobby against shale gas. Marino is the town supervisor in Ulysses, a small town in Tompkins County. For more than a year, often with Howarth at her side, she oversaw the implementation of an anti-fracking law through the local town council. “Industrial-scale hydraulic fracturing as proposed in the shale formations of the Finger Lakes and Southern Tier is a land, water, and chemical-intensive activity that poses unacceptable risks to human health and safety and environmental degradation,” Marino is quoted as saying, months before the publication of Howarth’s article. It’s particularly curious that the Times and other publications go out of their way to portray Howarth’s analysis as definitive. Each time the Times and anti-shale activists cite his letter, they make a make a point of mentioning that it was peer reviewed. But that’s misleading. It did not undergo classic double blind review. The editor, Princeton astrophysicist Michael Oppenheimer, acknowledged that neither of the two reviewers—classic peer review has three—had backgrounds in natural gas or geology, which they would have needed to make an informed evaluation. With only a few exceptions, Howarth’s paper has been widely criticized by scientists across the ideological spectrum. The Department of Energy’s National Energy Technology Laboratory reviewed the same data, concluding that natural gas, even from shale, results in far less emissions than coal. But that study did not make it into the NYT. In August, scientists at Carnegie Mellon University, in a study partly funded by the Sierra Club, concluded that shale gas has significantly less impact on global warming than coal, a direct rebuke of the Cornell study. “We don’t think they [Howath et al] are using credible data and some of the assumptions they’re making are biased. And the comparison they make at the end [that the development of shale gas generates more greenhouse gas emissions than the production and use of oil or coal], my biggest problem, is wrong,” wrote lead researcher Paula Jaramillo. That same month, independent researchers from the University of Maryland also published a peer-reviewed response to the Howarth study, again to no notice in the popular media. “[A]rguments that shale gas is more polluting than coal are largely unjustified,” they concluded. The article was received skeptically even by liberal experts at EDF and the NRDC, but their comments got little play. As the Worldwatch Institute wrote, “Despite differences in methodology and coverage, all of the recent studies except Howarth et al. estimate that life-cycle emissions from natural gas-fired generation are significantly less than those from coal-fired generation.” It’s unusual for an article to spark such consistently negative reaction. Even more striking, most articles on this controversy, particularly in the New York Times, seem to present Howarth’s study as definitive. Howarth’s colleagues at Cornell, Lawrence Cathles, Larry Brown and Andrew Hunter, with years of expertise in this area, have written a stinging response accepted for publication in January’s Climactic Change Letters. They characterised it as “seriously flawed,” more ideology than science, noting, “the assumptions used by Howarth et al are inappropriate and … their data, which the authors themselves characterise as ‘limited,’ do not support their conclusions.” When asked his reaction to the spate of anti-fracking cheering in the media ignited by Howarth’s study, editor Oppenheimer volunteered almost apologetically that he hoped it would be part of an ongoing search for truth. “That’s the way academic research progresses,” he told me, noting Cathles’ upcoming response. Michael Levi of the Council on Foreign Relations was not so charitable. “I worry what this paper says about the peer review process and the way the web treats it,” he wrote in a summary rebuttal. Web of connections Much of the anti-fracking research at Cornell, including Howarth’s modest burst of scholarship, is possible because of the generous support of the Park family of Ithaca, through its well-endowed trust, the Park Foundation. Its president, Adelaide Park Gomer, and her daughter, Alicia Park Wittink, are openly antagonistic of natural gas development. And they’ve found ideological soul mates at Cornell and at dozens of influential NGOs, from Friends of the Earth to the Coalition for Environmentally Responsible Economies (CERES) that receive contributions from Park. The foundation funded the totemic video of the anti-shale gas movement, Gasland, the cinematically engaging but scientifically questionable documentary that made the rounds at Sundance, Berlin, Tokyo and Cannes, jumpstarting the backlash against shale gas. Park has sponsored anti-shale gas shareholder resolutions at the annual meetings of Chevron, ExxonMobil and Ultra Petroleum in alliance with the NGO, As You Sow, which Park also supports and which reliably churns out anti-shale gas propaganda. Wittink is on the board of the Environmental Working Group, Mother Jones magazine and the Center for a New American Dream, all charity recipients noted for their anti-shale gas vehemence. Gomer, a vocal shale gas opponent, has signed several anti-fracking petitions, this one in September 2010: Hydrofracking will turn our area into an industrial site. It will ruin the ambience, the beauty of the region. But, moreover it will poison our aquifers. We can live without gas, but we cannot live without water. As a cancer survivor, I am especially concerned about the health repercussions! It is obvious that the 600+, as yet undivulged, chemicals that are used to extract the gas will not promote long healthy lives. Gomer is also on the board of trustees of Ithaca College, which to an even greater extent than Cornell depends upon the largesse of the Park family. Its leading voice is biologist Sandra Steingraber, who, like the foundation, believes shale gas should be the litmus issue for progressives. “I have come to believe that extracting natural gas from shale using the newish technique called hydrofracking is the environmental issue of our time,” she wrote. The Park foundation lists assets of $320 million, guaranteeing that its views will be well represented. In 2010, it contributed $19m to various causes, more than $3.5m to seed dozens of anti-shale gas projects. Mother Jones, Earth Island Institute and Yes! Magazine among numerous media organisations have exclusively carried articles sharply critical of shale gas. They each received sizable donations from Park in 2010, $144,000 to Mother Jones. Park also funded a widely circulated YouTube video on “Fracking Hell?” produced by Link Media’s Earth Focus. It also donated $50,000 to support distribution of the the influential Public Media radio program in the US hosted by Dick Gordon that regularly pilloried shale gas." Curious about the recent sudden explosion in “grassroots” uprisings opposing shale gas? Southern Environmental Law Center received $125,000; Food and Water Watch banked $150,000; Community Environmental Legal Defense Fund operating in 110 municipalities got $35,000. The list goes on and on. Park has injected millions of dollars into anti-shale gas education campaigns across the country, including $158,000 donated to Ithaca College for the development of “training kits” to ensure that children are exposed to only one side of this issue. It even funds the Green Guerrillas Youth Media Tech Collective, a group of teenage minorities getting job training in exchange for making an anti-fracking movie. Park also provided $100,000 to seed a separate anti-Marcellus project at Cornell’s Department of City and Regional Planning, resulting in a paper and webinar contending that the benefits of shale drilling is overstated and will ultimately lead to an economic collapse in the region. The department has produced 13 “working papers” and “policy briefs” with the kind of narrow ideological conclusions one expects from an industry-funded “research center” generating propaganda for hire. Yet another Park-funded project is the anti-shale gas Cornell Cooperative Extension Natural Gas Resource Center, which has created an “Online Toolkit for Municipal Officials and Community Leaders” to develop expertise in battles against shale gas development. Of course, philanthropists of any ideological stripe have a right to support any cause of their choosing. But big money raises conflict of interest issues, no different than the potential for corruption posed when industries fund lobbying against policies they find objectionable. Journals and researchers that receive funds should be disclosing conflicts and the media should be reporting about them. But that’s not happening. The public is usually only presented with one side of the story—anti-industry. For example, on November 25, the Times ran a front page investigation noting that “energy companies have been pouring millions of dollars”—$3.2m over two years—in support of shale gas, but has ignored the easily discoverable fact that organized anti-shale gas groups, led by Park, have poured more than twice as much into media and public lobbying efforts. The Park Foundation has not responded to requests for an interview. Professor Howarth told me, “$35,000 won’t buy my opinion,” a reference to the first of two grants he has received from Park. He also expressed confidence that his analysis and conclusions are “solid” and that large environmental NGOs, with which he remains in close contact, will turn against shale in due time. “They’re still heavily invested in their prior statements that shale gas is a win-win solution,” he said. “It will take them some time to come to grips with the new data and move towards a new position. Science moves slowly.” Zero sum myopia With the shale boom radically altering the energy chessboard, panicked ideologues are resorting to a tired ploy: pitting natural gas against alternative sources as if generating energy is a zero-sum game. In a fact free tirade against the shale gas industry published in November, Princeton University economist and Times columnist Paul Krugman made it seem as if the industry gets a free pass on externalities—the health and environmental impact from natural gas production—and seeks exemption from environmental and safety standards—“special treatment for fracking” he puts it—that would amount to a public subsidy. Cost benefit analysis has shown that hydro, wind and solar create as many if not more externalities than natural gas. And even at this early stage in the shale gas revolution, regulators and industry are partnering to develop oversight regimes so that fracking, though not totally free from consequences, will be safer. New York has a web of state of the art restrictions in place or ready to be instituted on waste disposal, well construction and water production. “In a number of areas these regulations are more stringent than in other states,” said Kate Sinding, a senior attorney with the NRDC. In Pennsylvania, Chesapeake Energy has spent more than $90 million to repair 160 miles of state roads damaged by the company’s trucks. The state’s Department of Environmental Protection has gotten industry cooperation to increase permitting fees to hire field inspectors. Pennsylvania’s cautious embrace of shale gas has already led to an economic revival in once depressed areas. “[Unconventional natural gas] is unstoppable,” Jesse Ausubel, an ecologist at Rockefeller University in New York, said recently. Gas, he says, will be the world’s dominant fuel for most of the next century. Coal and renewables will have to give way to economic realities, oil will be used mainly for transport and the need for nuclear will be delayed for decades. In its desperate effort to slow down this train, anti-shale gas advocacy groups are forging unlikely alliances. Their new allies include the Russians and the Iranians who thought they awere going to corner the gas market in the coming decades, and factions of the oil, coal and even the nuclear industry, whose higher cost models may be as vulnerable to competition from natural gas as alternative energy. The most intriguing question lying ahead is whether politics—the forces lining up against unconventional sources of natural gas—will trump the science. The key is how reporters and university researchers who the public depends upon for a fair accounting of the consequences of innovation handle their responsibilities. The signs are not promising. Not too long after the Times public editor blasted his own reporter, Ian Urbina, for questionable reporting, Urbina was invited to Cornell to discuss his anti-fracking reporting. The event was billed as the “Kops Freedom of the Press” forum. Robert Howarth's anti-shale gas perspective was well represented. No journalist or scientist with long-standing established credentials in this research area—almost none of whom would have agreed with Urbina’s or Howarth’s perspective—were invited to participate in this celebration of academic ‘dialogue’ and journalistic ‘integrity’.

***Natural gas makes the transition to renewables effective***

**Frank et al ‘09**

Matthew Frank, Jenna Goodward, Sarah Ladislaw, and Kate Zyla, May 2009, CSIS, Crossing the Natural Gas Bridge, <http://csis.org/files/publication/090626_final_crossing_gas_bridge.pdf>, jj

Addressing climate change will require extensive changes in the ways that we produce, transport and use energy. **Given the scope, scale and complexity of the current energy system, the transition to a low carbon energy future will take time, significant investment and carefully crafted polices**. **During the transition, it is important for policymakers and the private sector to balance the need for aggressive action to reduce emissions with the need for reliable and affordable energy supplies**. **Natural gas can play a critical role in “building a bridge” to a secure, low-carbon energy system**. **It is the least carbon intensive fossil fuel** (burning gas emits less carbon dioxide than burning coal or oil), **and there are readily available supplies**, both within and outside of the United States. **New natural gas power generation facilities can be brought online quickly compared to other low-carbon sources such as nuclear power**. **They also enable more renewable energy by providing baseload power generation to complement the intermittent nature of renewables like wind and solar power**. There is already a great deal of existing infrastructure –from electric power plants and home furnaces to pipelines and ports – that is able to store, transport, and use natural gas.

***Bridge fuels key --- renewables can’t come close to displacing fossil fuels in the near term***

**Tour et al. ‘10**

James M. Tour, Carter Kittrell and Vicki L. Colvin are in the Department of Chemistry, Department of Mechanical Engineering and Materials Science, and the Green Carbon Center, Rice University. Nature Materials 9,871–874(2010), Green carbon as a bridge to renewable energy, <http://www.nature.com.proxy.lib.wayne.edu/nmat/journal/v9/n11/full/nmat2887.html>, jj

**A green use of carbon-based resources that minimizes the environmental impact of carbon fuels could allow a smooth transition from fossil fuels to a sustainable energy economy.** Carbon-based resources (coal, natural gas and oil) give us most of the world's energy today, but the energy economy of the future must necessarily be far more diverse. **Energy generation through solar, wind and geothermal means is developing now, but not fast enough to meet our expanding global energy needs.** **We advocate that 'green carbon'**, which enables us to use carbon-based sources with high efficiency and in an environmentally friendly manner**, will provide our society time to develop alternative energy technologies and markets without sacrificing environmental or economic quality**. Green carbon will help to reduce the loss of our precious carbon resources, which are better reserved for high-value chemicals, and it will ensure that those hydrocarbons used for fuels will minimize carbon emissions. Through intensive research and development in green carbon, our society can guarantee an energy future that uses carbon strategically, without smokestacks, greenhouse gases and extensive environmental damage. Building a solid bridge **There is a chasm between the diminutive proportions of renewable energy currently available and our overwhelming dependence on fossil fuels that currently propel society**. The energy policy review of the Obama administration makes this soberingly clear: “**The use of renewable energy today and even in the next 5 to 10 years is still extremely limited when put into the context of total world use of fossil fuels**. For example, **the world used the equivalent of 113,900 terawatts hours** [TWh] **of fossil energy to fuel** economic activity, human mobility, and global telecommunications, among other modern day **activities in 2007**. **Replacing those terawatts hours with non-fossil energy would be the equivalent of** constructing an extra 6,020 nuclear plants across the globe or 14 times the number of nuclear power plants in the world today. In renewable energy terms, it is **133 times the amount of solar, wind and geothermal energy currently in use on the planet.**”1 Barring a huge reduction in our global standard of living, **we will need to rely on carbon-based energy for some time**. Whether this will last for several decades or into the next century is unclear, but what is apparent is that renewable approaches to energy generation are increasing at an annual rate of 7.2% compared with 1.6% for non-renewable growth2, and the continued growth of renewables will demand sustained government support. **During this transition we propose a green carbon bridge that minimizes the environmental impact of carbon fuels and lowers our reliance on these resources for primary energy generation**. Ultimately, green carbon will use hydrogen from renewable sources, while at the same time producing basic chemical feedstocks.

### Observation 3 is Framing

#### Role of the ballot’s to simulate enactment of the plan – only way to create effective change in energy policy

Hager 92 Carol J, Professor of political science at Bryn Mawr College, “Democratizing Technology: Citizen & State in West German Energy Politics, 1974-1990” Polity, Vol. 25, No. 1, p. 45-70

During this phase, the citizen initiative attempted to overcome its defensive posture and **implement an alternative politics.** The strategy of legal and technical challenge might delay or even prevent plant construction, but it would not by itself accomplish the broader goal on the legitimation dimension, i.e., democratization. Indeed, it worked against broad participation. The activists had to find a viable means of achieving change. Citizens had proved they could contribute to a **substantive policy discussion.** Now, some **activists turned to the parliamentary arena as a** possible **forum for** an **energy dialogue.** Until now, parliament had been conspicuously absent as a relevant policy maker, but if parliament could be reshaped and activated, citizens would have a forum in which to address the broad questions of policy-making goals and forms. They would also have an **institutional lever** with which to pry apart the bureaucracy and utility. None of the established political parties could offer an alternative program. Thus, local activists met to discuss forming their own voting list. These discussions provoked internal dissent. Many citizen initiative members objected to the idea of forming a political party. If the problem lay in the role of parliament itself, another political party would not solve it. On the contrary, parliamentary participation was likely to destroy what political innovations the extraparliamentary movement had made. Others argued that a political party would give the movement an institutional platform from which to introduce some of the grassroots democratic political forms the groups had developed. Founding a party as the parliamentary arm of the citizen movement would allow these groups to play an active, critical role in institutionalized politics, participating in the policy debates while retaining their outside perspective. Despite the disagreements, the Alternative List for Democracy and Environmental Protection Berlin (AL) was formed in 1978 and first won seats in the Land parliament with 7.2 percent of the vote in 1981.43 The founders of the AL were encouraged by the success of newly formed local green parties in Lower Saxony and Hamburg,44 whose evolution had been very similar to that of the West Berlin citizen move-ment. Throughout the FRG, unpopular administrative decisions affect-ing local environments, generally in the form of state-sponsored indus-trial projects, prompted the development of the citizen initiative and ecology movements. The groups in turn focused constant attention on state planning "errors," calling into question not only the decisions themselves, but also the conventional forms of political decision making that produced them.45 Disgruntled citizens increasingly aimed their critique at the established political parties, in particular the federal SPD/ FDP coalition, which seemed unable to cope with the economic, social, and political problems of the 1970s. Fanned by publications such as the Club of Rome's report, "The Limits to Growth," the view spread among activists that the crisis phenomena were not merely a passing phase, but indicated instead "a long-term structural crisis, whose cause lies in the industrial-technocratic growth society itself."46 As they broadened their critique to include the political system as a whole, many grassroots groups found the extraparliamentary arena too restrictive. Like many in the West Berlin group, they reasoned that the **necessary change would require a degree of political restructuring that could only be accomplished through their direct participation** **in parliamentary politics**. Green/alternative parties and voting lists sprang up nationwide and began to win seats in local assemblies. The West Berlin Alternative List saw itself not as a party, but as the parliamentary arm of the citizen initiative movement. One member explains: "the starting point for alternative electoral participation was simply the notion of achieving a greater audience for [our] own ideas and thus to work in support of the extraparliamentary movements and initia-tives,"47 including non-environmentally oriented groups. The AL wanted to avoid developing structures and functions autonomous from the citizen initiative movement. Members adhered to a list of principles, such as rotation and the imperative mandate, designed to keep parliamentarians attached to the grassroots. Although their insistence on grassroots democracy often resulted in interminable heated discussions, the participants recognized the importance of experimenting with new forms of decision making, of not succumbing to the same hierarchical forms they were challenging. Some argued that the proper role of citizen initiative groups was not to represent the public in government, but to mobilize other citizens to participate directly in politics themselves; self-determination was the aim of their activity.48 Once in parliament, the AL proposed establishmento f a temporary parliamentaryco mmissiont o studye nergyp olicy,w hichf or the first time would draw all concernedp articipantst ogetheri n a discussiono f both short-termc hoicesa nd long-termg oals of energyp olicy. With help from the SPD faction, which had been forced into the opposition by its defeat in the 1981 elections, two such commissions were created, one in 1982-83 and the other in 1984-85.49T hese commissionsg ave the citizen activists the forum they sought to push for modernizationa nd technicali nnovation in energy policy. Although it had scaled down the proposed new plant, the utility had produced no plan to upgrade its older, more polluting facilities or to install desulfurizationd evices. With proddingf rom the energyc ommission, Land and utility experts began to formulate such a plan, as did the citizen initiative. By exposing administrative failings in a public setting, and **by producing a** modernization **plan itself**, the combined citizen initiative and AL forced bureaucratic authorities to push the utility for improvements . They also forced the authorities to consider different technological solutions to West Berlin's energy and environmental problems. In this way, the activists served as technological innovators. In 1983, the first energy commission submitted a list of recommendations to the Land parliament which reflected the influence of the citizen protest movement. It emphasized goals of demand reduction and efficiency, noted the value of expanded citizen participation and urged authorities to "investigate more closely the positive role citizen participation can play in achieving policy goals."50 The second energy commission was created in 1984 to discuss the possibilities for modernization and shutdown of old plants and use of new, environmentally friendlier and cheaper technologies for electricity and heat generation. Its recommendations strengthened those of the first commission.51 Despite the non-binding nature of the commissions' recommendations, the public discussion of energy policy **motivated policy makers** to take stronger positions in favor of environmental protection. III. Conclusion The West Berlin energy project eventually cleared all planning hurdles, and construction began in the early 1980s. The new plant now conforms to the increasingly stringent environmental protection requirements of the law. The project was delayed, scaled down from 1200 to 600 MW, moved to a neutral location and, unlike other BEWAG plants, equipped with modern desulfurization devices. That the new plant, which opened in winter 1988-89, is the technologically most advanced and environmen-tally sound of BEWAG's plants is due entirely to the long legal battle with the citizen initiative group, during which nearly every aspect of the original plans was changed. In addition, through the efforts of the Alter-native List (AL) in parliament, the Land government and BEWAG formulated a long sought modernization and environmental protection plan for all of the city's plants. The AL prompted the other parliamentary parties to take pollution control seriously. Throughout the FRG, energy politics evolved in a similar fashion. As Habermas claimed, underlying the objections against particular projects was a reaction against the administrative-economic system in general. One author, for example, describes the emergence of two-dimensional protest against nuclear energy: The resistance against a concrete project became understood simul-taneously as resistance against the entire atomic program. Questions of energy planning, of economic growth, of understanding of democracy entered the picture. . . . Besides concern for human health, for security of conditions for human existence and protec-tion of nature arose critique of what was perceived as undemocratic planning, the "shock" of the delayed public announcement of pro-ject plans and the fear of political decision errors that would aggra-vate the problem.52 This passage supports a West Berliner's statement that the citizen initiative began with a project critique and arrived at Systemkritik.53 I have labeled these two aspects of the problem the public policy and legitima-tion dimensions. In the course of these conflicts, the legitimation dimen-sion emergd as the more important and in many ways the more prob-lematic. Parliamentary Politics In the 1970s, energy politics began to develop in the direction Offe de-scribed, with bureaucrats and protesters avoiding the parliamentary channels through which they should interact. The citizen groups them-selves, however, have to a degree reversed the slide into irrelevance of parliamentary politics. Grassroots groups overcame their defensive posture enough to begin to formulate an alternative politics, based upon concepts such as decision making through mutual understanding rather than technical criteria or bargaining. This new politics required new modes of interaction which the old corporatist or pluralist forms could not provide. Through the formation of green/alternative parties and voting lists and through new parliamentary commissions such as the two described in the case study, some members of grassroots groups attempted to **both operate within the political system and fundamentally change it,** to restore the link between bureaucracy and citizenry. Parliamentary politics was partially revived in the eyes of West German grassroots groups as a legitimate realm of citizen participation, an outcome the theory would not predict. It is not clear, however, that strengthening the parliamentary system would be a desirable outcome for everyone. Many remain skeptical that institutions that operate as part of the "system" can offer the kind of substantive participation that grass-roots groups want. The constant tension between institutionalized politics and grassroots action emerged clearly in the recent internal debate between "fundamentalist" and "realist" wings of the Greens. Fundis wanted to keep a firm footing outside the realm of institutionalized politics. They refused to bargain with the more established parties or to join coalition governments. Realos favored participating in institutionalized politics while pressing their grassroots agenda. Only this way, they claimed, would they have a chance to implement at least some parts of their program. This internal debate, which has never been resolved, can be interpreted in different ways. On one hand, the tension limits the appeal of green and alternative parties to the broader public, as the Greens' poor showing in the December 1990 all-German elections attests. The failure to come to agreement on basic issues can be viewed as a hazard of grass-roots democracy. The Greens, like the West Berlin citizen initiative, are opposed in principle to forcing one faction to give way to another. Disunity thus persists within the group. On the other hand, the tension can be understood not as a failure, but as a kind of success: grassroots politics **has not been absorbed into the bureaucratized system;** it retains its critical dimension, both in relation to the political system and within the groups themselves. The lively debate stimulated by grassroots groups and parties keeps questions of democracy on the public agenda. Technical Debate In West Berlin, **the two-dimensionality of the energy issue forced citizen activists to become both participants in and critics of the policy process**. In order to defeat the plant, **activists engaged in technical debate.** They won several decisions in favor of environmental protection, often **proving to be more informed than bureaucratic experts** themselves. The case study demonstrates that grassroots groups, far from impeding techno-logical advancement, can actually serve as technological innovators. The activists' role as technical experts, while it helped them achieve some success on the policy dimension, had mixed results on the legitimation dimension. On one hand, it helped them to challenge the legitimacy of technocratic policy making. They turned back the Land government's attempts to displace political problems by formulating them in technical terms.54 By demonstrating the fallibility of the technical arguments, activists forced authorities to acknowledge that energy demand was a political variable, whose value at any one point was as much influenced by the choices of policy makers as by independent technical criteria. Submission to the form and language of technical debate, however, weakened activists' attempts to introduce an alternative, goal-oriented form of decision making into the political system. Those wishing to par-ticipate in energy politics on a long-term basis have had to accede to the language of bureaucratic discussion, if not the legitimacy of bureaucratic authorities. They have helped break down bureaucratic authority but have not yet offered a viable long-term alternative to bureaucracy. In the tension between form and language, goals and procedure, the legitima-tion issue persists. At the very least, however, **grassroots action challenges critical theory's notion that technical discussion is inimical to democratic politics**.55 Citizen groups have raised the possibility of a dialogue that is both technically sophisticated and democratic. In sum, although the legitimation problems which gave rise to grass-roots protest have not been resolved, citizen action has worked to counter the marginalization of parliamentary politics and the technocratic character of policy debate that Offe and Habermas identify. The West Berlin case suggests that the solutions to current legitimation problems may not require total repudiation of those things previously associated with technocracy.56 In Berlin, the citizen initiative and AL continue to search for new, more legitimate forms of organization consistent with their principles. No permanent Land parliamentary body exists to coordinate and con-solidate energy policy making.57 In the 1989 Land elections, the CDU/ FDP coalition was defeated, and the AL formed a governing coalition with the SPD. In late 1990, however, the AL withdrew from the coali-tion. It remains to be seen whether the AL will remain an effective vehi-cle for grassroots concerns, and whether the citizenry itself, now includ-ing the former East Berliners, will remain active enough to give the AL direction as united Berlin faces the formidable challenges of the 1990s. On the policy dimension, grassroots groups achieved some success. On the legitimation dimension, it is difficult to judge the results of grass-roots activism by normal standards of efficacy or success. Activists have certainly not radically restructured politics. They agree that democracy is desirable, but troublesome questions persist about the degree to which those processes that are now bureaucratically organized can and should be restructured, where grassroots democracy is possible and where bureaucracy is necessary in order to get things done. In other words, grassroots groups have tried to remedy the Weberian problem of the marginalization of politics, but it is not yet clear what the boundaries of the political realm should be. It is, however, the act of calling existing boundaries into question that keeps democracy vital. In raising alternative possibilities and encouraging citizens to take an active, critical role in their own governance, the contribution of grassroots environmental groups has been significant. As Melucci states for new social movements in general, these groups mount a "symbolic" challenge by proposing "a different way of perceiving and naming the world."58 Rochon concurs for the case of the West German peace movement, noting that its effect on the public discussion of secur-ity issues has been tremendous.59 The effects of the legitimation issue in the FRG are evident in increased citizen interest in areas formerly left to technical experts. Citizens have formed nationwide associations of environmental and other grassroots groups as well as alternative and green parties at all levels of government. The level of information within the groups is generally quite high, and their participation, especially in local politics, has raised the awareness and engagement of the general populace noticeably.60 Policy concessions and new legal provisions for citizen participation have not quelled grassroots action**.** The **attempts of** the **established** political **parties to coopt "green" issues have** also **met with limited success.** Even green parties themselves have not tapped the full potential of public support for these issues. The persistence of legitima-tion concerns, along with the growth of a culture of informed political activism, will ensure that the search continues for a space for a delibera-tive politics in modern technological society.61

#### Public advocacy of climate solutions key to change governmental policy---individual change insufficient

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This short advisory paper collates a set of recommendations about how best to shape mass public communications aimed at increasing concern about climate change and motivating commensurate behavioural changes.¶ Its focus is not upon motivating small private-sphere behavioural changes on a piece-meal basis. Rather, it marshals evidence about how best to motivate the ambitious and systemic behavioural change that is necessary – including, crucially, greater public engagement with the policy process (through, for example, lobbying decision-makers and elected representatives, or participating in demonstrations), as well as major lifestyle changes. ¶ Political leaders themselves have drawn attention to the imperative for more vocal public pressure to create the ‘political space’ for them to enact more ambitious policy interventions. 1 While this paper does not dismiss the value of individuals making small private-sphere behavioural changes (for example, adopting simple domestic energy efficiency measures) it is clear that such behaviours do not, in themselves, represent a proportional response to the challenge of climate change. As David MacKay, Chief Scientific Advisor to the UK Department of Energy and Climate change writes: “Don’t be distracted by the myth that ‘every little helps’. If everyone does a little, we’ll achieve only a little” (MacKay, 2008).¶ The task of campaigners and communicators from government, business and non-governmental organisations must therefore be to motivate both (i) widespread adoption of ambitious private-sphere behavioural changes; and (ii) widespread acceptance of – and indeed active demand for – ambitious new policy interventions.¶ Current public communication campaigns, as orchestrated by government, business and non-governmental organisations, are not achieving these changes. This paper asks: how should such communications be designed if they are to have optimal impact in motivating these changes? The response to this question will require fundamental changes in the ways that many climate change communication campaigns are currently devised and implemented. ¶ This advisory paper offers a list of principles that could be used to enhance the quality of communication around climate change communications. The authors are each engaged in continuously sifting the evidence from a range of sub-disciplines within psychology, and reflecting on the implications of this for improving climate change communications. Some of the organisations that we represent have themselves at times adopted approaches which we have both learnt from and critique in this paper – so some of us have first hand experience of the need for on-going improvement in the strategies that we deploy. ¶ The changes we advocate will be challenging to enact – and will require vision and leadership on the part of the organisations adopting them. But without such vision and leadership, we do not believe that public communication campaigns on climate change will create the necessary behavioural changes – indeed, there is a profound risk that many of today’s campaigns will actually prove counter-productive. ¶ Seven Principles¶ 1. Move Beyond Social Marketing¶ We believe that too little attention is paid to the understanding that psychologists bring to strategies for motivating change, whilst undue faith is often placed in the application of marketing strategies to ‘sell’ behavioural changes. Unfortunately, in the context of ambitious pro-environmental behaviour, such strategies seem unlikely to motivate systemic behavioural change.¶ Social marketing is an effective way of achieving a particular behavioural goal – dozens of practical examples in the field of health behaviour attest to this. Social marketing is really more of a framework for designing behaviour change programmes than a behaviour change programme - it offers a method of maximising the success of a specific behavioural goal. Darnton (2008) has described social marketing as ‘explicitly transtheoretical’, while Hastings (2007), in a recent overview of social marketing, claimed that there is no theory of social marketing. Rather, it is a ‘what works’ philosophy, based on previous experience of similar campaigns and programmes. Social marketing is flexible enough to be applied to a range of different social domains, and this is undoubtedly a fundamental part of its appeal.¶ However, social marketing’s 'what works' status also means that it is agnostic about the longer term, theoretical merits of different behaviour change strategies, or the cultural values that specific campaigns serve to strengthen. Social marketing dictates that the most effective strategy should be chosen, where effective means ‘most likely to achieve an immediate behavioural goal’. ¶ This means that elements of a behaviour change strategy designed according to the principles of social marketing may conflict with other, broader goals. What if the most effective way of promoting pro-environmental behaviour ‘A’ was to pursue a strategy that was detrimental to the achievement of long term pro-environmental strategy ‘Z’? The principles of social marketing have no capacity to resolve this conflict – they are limited to maximising the success of the immediate behavioural programme. This is not a flaw of social marketing – it was designed to provide tools to address specific behavioural problems on a piecemeal basis. But it is an important limitation, and one that has significant implications if social marketing techniques are used to promote systemic behavioural change and public engagement on an issue like climate change. ¶ 2. Be honest and forthright about the probable impacts of climate change, and the scale of the challenge we confront in avoiding these. But avoid deliberate attempts to provoke fear or guilt. ¶ There is no merit in ‘dumbing down’ the scientific evidence that the impacts of climate change are likely to be severe, and that some of these impacts are now almost certainly unavoidable. Accepting the impacts of climate change will be an important stage in motivating behavioural responses aimed at mitigating the problem. However, deliberate attempts to instil fear or guilt carry considerable risk. ¶ Studies on fear appeals confirm the potential for fear to change attitudes or verbal expressions of concern, but often not actions or behaviour (Ruiter et al., 2001). The impact of fear appeals is context - and audience - specific; for example, for those who do not yet realise the potentially ‘scary’ aspects of climate change, people need to first experience themselves as vulnerable to the risks in some way in order to feel moved or affected (Das et al, 2003; Hoog et al, 2005). As people move towards contemplating action, fear appeals can help form a behavioural intent, providing an impetus or spark to ‘move’ from; however such appeals must be coupled with constructive information and support to reduce the sense of danger (Moser, 2007). The danger is that fear can also be disempowering – producing feelings of helplessness, remoteness and lack of control (O’Neill and Nicholson-Cole, 2009). Fear is likely to trigger ‘barriers to engagement’, such as denial2 (Stoll-Kleemann et al., 2001; Weber, 2006; Moser and Dilling, 2007; Lorenzoni, Nicholson-Cole & Whitmarsh, 2007). The location of fear in a message is also relevant; it works better when placed first for those who are inclined to follow the advice, but better second for those who aren't (Bier, 2001).¶ Similarly, studies have shown that guilt can play a role in motivating people to take action but can also function to stimulate defensive mechanisms against the perceived threat or challenge to one’s sense of identity (as a good, moral person). In the latter case, behaviours may be left untouched (whether driving a SUV or taking a flight) as one defends against any feelings of guilt or complicity through deployment of a range of justifications for the behaviour (Ferguson & Branscombe, 2010). ¶ Overall, there is a need for emotionally balanced representations of the issues at hand. This will involve acknowledging the ‘affective reality’ of the situation, e.g. “We know this is scary and overwhelming, but many of us feel this way and we are doing something about it”.¶ 3. Be honest and forthright about the impacts of mitigating and adapting to climate change for current lifestyles, and the ‘loss’ - as well as the benefits - that these will entail. Narratives that focus exclusively on the ‘up-side’ of climate solutions are likely to be unconvincing. While narratives about the future impacts of climate change may highlight the loss of much that we currently hold to be dear, narratives about climate solutions frequently ignore the question of loss. If the two are not addressed concurrently, fear of loss may be ‘split off’ and projected into the future, where it is all too easily denied. This can be dangerous, because accepting loss is an important step towards working through the associated emotions, and emerging with the energy and creativity to respond positively to the new situation (Randall, 2009). However, there are plenty of benefits (besides the financial ones) of a low-carbon lifestyle e.g., health, community/social interaction - including the ‘intrinsic' goals mentioned below. It is important to be honest about both the losses and the benefits that may be associated with lifestyle change, and not to seek to separate out one from the other.¶ 3a. Avoid emphasis upon painless, easy steps. ¶ Be honest about the limitations of voluntary private-sphere behavioural change, and the need for ambitious new policy interventions that incentivise such changes, or that regulate for them. People know that the scope they have, as individuals, to help meet the challenge of climate change is extremely limited. For many people, it is perfectly sensible to continue to adopt high-carbon lifestyle choices whilst simultaneously being supportive of government interventions that would make these choices more difficult for everyone. ¶ The adoption of small-scale private sphere behavioural changes is sometimes assumed to lead people to adopt ever more difficult (and potentially significant) behavioural changes. The empirical evidence for this ‘foot-in-thedoor’ effect is highly equivocal. Some studies detect such an effect; others studies have found the reverse effect (whereby people tend to ‘rest on their laurels’ having adopted a few simple behavioural changes - Thogersen and Crompton, 2009). Where attention is drawn to simple and painless privatesphere behavioural changes, these should be urged in pursuit of a set of intrinsic goals (that is, as a response to people’s understanding about the contribution that such behavioural change may make to benefiting their friends and family, their community, the wider world, or in contributing to their growth and development as individuals) rather than as a means to achieve social status or greater financial success. Adopting behaviour in pursuit of intrinsic goals is more likely to lead to ‘spillover’ into other sustainable behaviours (De Young, 2000; Thogersen and Crompton, 2009).¶ People aren’t stupid: they know that if there are wholesale changes in the global climate underway, these will not be reversed merely through checking their tyre pressures or switching their TV off standby. An emphasis upon simple and painless steps suppresses debate about those necessary responses that are less palatable – that will cost people money, or that will infringe on cherished freedoms (such as to fly). Recognising this will be a key step in accepting the reality of loss of aspects of our current lifestyles, and in beginning to work through the powerful emotions that this will engender (Randall, 2009). ¶ 3b. Avoid over-emphasis on the economic opportunities that mitigating, and adapting to, climate change may provide. ¶ There will, undoubtedly, be economic benefits to be accrued through investment in new technologies, but there will also be instances where the economic imperative and the climate change adaptation or mitigation imperative diverge, and periods of economic uncertainty for many people as some sectors contract. It seems inevitable that some interventions will have negative economic impacts (Stern, 2007).¶ Undue emphasis upon economic imperatives serves to reinforce the dominance, in society, of a set of extrinsic goals (focussed, for example, on financial benefit). A large body of empirical research demonstrates that these extrinsic goals are antagonistic to the emergence of pro-social and proenvironmental concern (Crompton and Kasser, 2009).¶ 3c. Avoid emphasis upon the opportunities of ‘green consumerism’ as a response to climate change.¶ As mentioned above (3b), a large body of research points to the antagonism between goals directed towards the acquisition of material objects and the emergence of pro-environmental and pro-social concern (Crompton and Kasser, 2009). Campaigns to ‘buy green’ may be effective in driving up sales of particular products, but in conveying the impression that climate change can be addressed by ‘buying the right things’, they risk undermining more difficult and systemic changes. A recent study found that people in an experiment who purchased ‘green’ products acted less altruistically on subsequent tasks (Mazar & Zhong, 2010) – suggesting that small ethical acts may act as a ‘moral offset’ and licence undesirable behaviours in other domains. This does not mean that private-sphere behaviour changes will always lead to a reduction in subsequent pro-environmental behaviour, but it does suggest that the reasons used to motivate these changes are critically important. Better is to emphasise that ‘every little helps a little’ – but that these changes are only the beginning of a process that must also incorporate more ambitious private-sphere change and significant collective action at a political level.¶ 4. Empathise with the emotional responses that will be engendered by a forthright presentation of the probable impacts of climate change. ¶ Belief in climate change and support for low-carbon policies will remain fragile unless people are emotionally engaged. We should expect people to be sad or angry, to feel guilt or shame, to yearn for that which is lost or to search for more comforting answers (Randall, 2009). Providing support and empathy in working through the painful emotions of 'grief' for a society that must undergo changes is a prerequisite for subsequent adaptation to new circumstances.¶ Without such support and empathy, it is more likely that people will begin to deploy a range of maladaptive ‘coping strategies’, such as denial of personal responsibility, blaming others, or becoming apathetic (Lertzman, 2008). An audience should not be admonished for deploying such strategies – this would in itself be threatening, and could therefore harden resistance to positive behaviour change (Miller and Rolnick, 2002). The key is not to dismiss people who exhibit maladaptive coping strategies, but to understand how they can be made more adaptive. People who feel socially supported will be more likely to adopt adaptive emotional responses - so facilitating social support for proenvironmental behaviour is crucial.¶ 5. Promote pro-environmental social norms and harness the power of social networks¶ One way of bridging the gap between private-sphere behaviour changes and collective action is the promotion of pro-environmental social norms. Pictures and videos of ordinary people (‘like me’) engaging in significant proenvironmental actions are a simple and effective way of generating a sense of social normality around pro-environmental behaviour (Schultz, Nolan, Cialdini, Goldstein and Griskevicius, 2007). There are different reasons that people adopt social norms, and encouraging people to adopt a positive norm simply to ‘conform’, to avoid a feeling of guilt, or for fear of not ‘fitting in’ is likely to produce a relatively shallow level of motivation for behaviour change. Where social norms can be combined with ‘intrinsic’ motivations (e.g. a sense of social belonging), they are likely to be more effective and persistent.¶ Too often, environmental communications are directed to the individual as a single unit in the larger social system of consumption and political engagement. This can make the problems feel too overwhelming, and evoke unmanageable levels of anxiety. Through the enhanced awareness of what other people are doing, a strong sense of collective purpose can be engendered. One factor that is likely to influence whether adaptive or maladaptive coping strategies are selected in response to fear about climate change is whether people feel supported by a social network – that is, whether a sense of ‘sustainable citizenship’ is fostered. The efficacy of groupbased programmes at promoting pro-environmental behaviour change has been demonstrated on numerous occasions – and participants in these projects consistently point to a sense of mutual learning and support as a key reason for making and maintaining changes in behaviour (Nye and Burgess, 2008). There are few influences more powerful than an individual’s social network. Networks are instrumental not just in terms of providing social support, but also by creating specific content of social identity – defining what it means to be “us”. If environmental norms are incorporated at this level (become defining for the group) they can result in significant behavioural change (also reinforced through peer pressure).¶ Of course, for the majority of people, this is unlikely to be a network that has climate change at its core. But social networks – Trade Unions, Rugby Clubs, Mother & Toddler groups – still perform a critical role in spreading change through society. Encouraging and supporting pre-existing social networks to take ownership of climate change (rather than approach it as a problem for ‘green groups’) is a critical task. As well as representing a crucial bridge between individuals and broader society, peer-to-peer learning circumnavigates many of the problems associated with more ‘top down’ models of communication – not least that government representatives are perceived as untrustworthy (Poortinga & Pidgeon, 2003). Peer-to-peer learning is more easily achieved in group-based dialogue than in designing public information films: But public information films can nonetheless help to establish social norms around community-based responses to the challenges of climate change, through clear visual portrayals of people engaging collectively in the pro-environmental behaviour.¶ The discourse should be shifted increasingly from ‘you’ to ‘we’ and from ‘I’ to ‘us’. This is starting to take place in emerging forms of community-based activism, such as the Transition Movement and Cambridge Carbon Footprint’s ‘Carbon Conversations’ model – both of which recognize the power of groups to help support and maintain lifestyle and identity changes. A nationwide climate change engagement project using a group-based behaviour change model with members of Trade Union networks is currently underway, led by the Climate Outreach and Information Network. These projects represent a method of climate change communication and engagement radically different to that typically pursued by the government – and may offer a set of approaches that can go beyond the limited reach of social marketing techniques.¶ One potential risk with appeals based on social norms is that they often contain a hidden message. So, for example, a campaign that focuses on the fact that too many people take internal flights actually contains two messages – that taking internal flights is bad for the environment, and that lots of people are taking internal flights. This second message can give those who do not currently engage in that behaviour a perverse incentive to do so, and campaigns to promote behaviour change should be very careful to avoid this. The key is to ensure that information about what is happening (termed descriptive norms), does not overshadow information about what should be happening (termed injunctive norms). ¶ 6. Think about the language you use, but don’t rely on language alone¶ A number of recent publications have highlighted the results of focus group research and talk-back tests in order to ‘get the language right’ (Topos Partnership, 2009; Western Strategies & Lake Research Partners, 2009), culminating in a series of suggestions for framing climate-change communications. For example, these two studies led to the suggestions that communicators should use the term ‘global warming’ or ‘our deteriorating atmosphere’, respectively, rather than ‘climate change’. Other research has identified systematic differences in the way that people interpret the terms ‘climate change’ and ‘global warming’, with ‘global warming’ perceived as more emotionally engaging than ‘climate change’ (Whitmarsh, 2009).¶ Whilst ‘getting the language right’ is important, it can only play a small part in a communication strategy. More important than the language deployed (i.e. ‘conceptual frames') are what have been referred to by some cognitive linguists as 'deep frames'. Conceptual framing refers to catchy slogans and clever spin (which may or may not be honest). At a deeper level, framing refers to forging the connections between a debate or public policy and a set of deeper values or principles. Conceptual framing (crafting particular messages focussing on particular issues) cannot work unless these messages resonate with a set of long-term deep frames.¶ Policy proposals which may at the surface level seem similar (perhaps they both set out to achieve a reduction in environmental pollution) may differ importantly in terms of their deep framing. For example, putting a financial value on an endangered species, and building an economic case for their conservation ‘commodifies’ them, and makes them equivalent (at the level of deep frames) to other assets of the same value (a hotel chain, perhaps). This is a very different frame to one that attempts to achieve the same conservation goals through the ascription of intrinsic value to such species – as something that should be protected in its own right. Embedding particular deep frames requires concerted effort (Lakoff, 2009), but is the beginning of a process that can build a broad, coherent cross-departmental response to climate change from government.¶ 7. Encourage public demonstrations of frustration at the limited pace of government action¶ Private-sphere behavioural change is not enough, and may even at times become a diversion from the more important process of bringing political pressure to bear on policy-makers. The importance of public demonstrations of frustration at both the lack of political progress on climate change and the barriers presented by vested interests is widely recognised – including by government itself. Climate change communications, including government communication campaigns, should work to normalise public displays of frustration with the slow pace of political change. Ockwell et al (2009) argued that communications can play a role in fostering demand for - as well as acceptance of - policy change. Climate change communication could (and should) be used to encourage people to demonstrate (for example through public demonstrations) about how they would like structural barriers to behavioural/societal change to be removed.

#### Policy-Making is the only choice for engaging in environmental debate. Any alternative fails and cedes the political

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The first of these puts forward the necessarily militant component of environmental ethics in its role as an emerging field of research. In this respect, there are only two possible outcomes: **either environmental ethicists genuinely aim to guide policies by subjecting them to relatively rational rules, in which case their failure to achieve this objective so far should encourage them to consider**, firstly, **what it is in their way of expressing and dealing with problems that has prevented them from succeeding, and** secondly**, to** adapt their discursive strategy to the realities of politics**; or else the theorists of environmental ethics choose to pursue their metaphysical wrangles over the status of the intrinsic value of natural entities, over the possibility of considering ecosystems from a moral standpoint** and other issues such as the number of angels who can dance on the head of a pin, **in which case** they need to decide once and for all whether they really care about the current ecological crisis**.** **According to Norton**, what actually mattersas regards the environment, is **not so much taking principled stances, but rather developing** rational **aids to** decision-making,so that **the various** actors can agree on **what should be done and develop the** concrete policy measures which need to be implemented**. In this sense, petty in-fighting between anthropocentrists and non-anthropocentrists, humanists and ecocentrists, "shallow" and "deep ecologists",** etc., **are all the more damaging that they divide environmental ethicists and stifle efforts for concerted and effective action.** The second argument makes the point that the **discussion between anthropocentrists and non-anthropocentrists is particularly futile insofar as the major concept of "human interests**" (or human utility), **on which the whole discussion focuses, is left very much undefined**. The fact that **satisfying human interests does not necessarily involve the irreversible destruction of the object of desire is insufficiently noted: there is a distinction to be made between utility which is satisfied by the immediate consumption of natural goods** (raw materials, agricultural products, etc.) **and a utility which implies the conservation of the useful object since conservation is a prerequisite for satisfying human interests** (this is the case for all the ecological services provided by nature without which we would very soon be deprived of any access to consumer goods). More generally, far from being no more than a source of raw materials or an open-air dumping ground for our waste, **nature can have an aesthetic, moral, spiritual or scientific value for humans**. In this case, **so that the satisfaction nature provides can endure, the object must remain intact since satisfaction is in a way inseparable from the object itself, to the point of being inherent to it**—making it possible, so to speak, to assign a educational, (and no longer metaphysical) meaning to the concept of intrinsic value, inasmuch as the objects of satisfaction are not considered to be indefinitely and indiscriminately substitutable. **From this stems the concept of distinguishing**, as Norton did in the early 1980s, **between "strong anthropocentrism" and "weak** (or extended) **anthropocentrism**. **Only the latter is capable of not under-estimating the diversity of instrumental values that humans may derive from the natural world, and** correlatively **not homogenising the plurality of interests or preferences they experience** (a spontaneous "feeling" of preference is essentially different from a "considered" preference which is mediated by a given vision of the world). **A theory is** said to be **strongly anthropocentrist if all the natural values it recognises are related to the satisfaction of preferences felt by human beings. A theory of value is said to be weakly anthropocentrist if all the natural values which it recognises are related to the influence exerted by a given "felt" preference on the ideals which structure the vision of the world** (and on which are essentially based "considered" preferences)3. **The practical difference between these two kinds of theories is considerable**. Insofar as **preferences felt by humans are not subject to any review within the value system of strong anthropocentrism, there is no way in which can be criticised the attitude of those for whom nature is no more than a store of raw materials** to be extracted and used in manufacturing products to satisfy human preferences. **Inversely, insofar as weak anthropocentrism recognises that felt preferences may, or may not, be rational** (in the sense that they may be judged as not being consonant with a rational vision of the world), **it provides a framework for the possible critical review of the value systems which prescribe a relationship with nature based on pure exploitation**: **In this way, weak anthropocentrism makes available two ethical resources of crucial importance to environmentalists. First, to the extent that environmental ethicists can make a case for a world view that emphasizes the close relationship between the human species and other living species, they can also make a case for ideals of human behavior extolling harmony with nature. These ideals are then available as a basis for criticizing preferences that merely exploit nature. Second, weak anthropocentrism as here defined also places value on human experiences that provide the basis for value formation. Because weak anthropocentrism places value not only on felt preferences, but also on the process of value formation embodied in the criticism and replacement of felt values with more rational ones, it makes possible appeals to the value of experiences of natural objects and undisturbed places in human value formation. To the extent that environmentalists can show that values are formed and informed by contact with nature, natures takes on value as a teacher of human values**. (Norton, B., 1984, p. 135) **This latter value is** the one which Norton soon came to designate by the name of "**transformative value**", i.e. **a value capable of transforming preferences in accord with a higher ideal**. It is remarkable that this is neither an instrumental, nor a non-instrumental (or intrinsic) value, but rather a value which cannot be reduced to either of these categories, which are therefore revealed as unable to express the entire range of values that humans can attribute to nature. **Rather than be forced into accepting this bipartite classification of natural values, Norton suggests an acceptance of their essential plurality and situating them in a kind of continuum, ranging from the values of consumer society to aesthetic, spiritual and other similar values. In such circumstances, the environmentalist's task, when entering the public arena, will be to defend and command the respect**— to the fullest extent possible—**of the above principles, while seeking to define an environmental policy capable of the fullest and most harmonious integration of the entire range of natural values**. Norton's belief on this point, is that **programmes for the protection of the environment are perfectly justifiable on the basis of a sufficiently broad interpretation of anthropocentric instrumental values and, better still, that this point of view has an undeniable practical advantage,** on the one hand **because it is the mode of justification which is the most current among environmentalists and therefore constitutes an immediately recognised forum for debate and**, on the other hand, **because by neutralising the axiological controversy between intrinsic value and human utility, it allows for individual subjectivity to choose between the various philosophical options. As a result, the debate is moved to the area of rational modes of environmental action. It is this idea** that **the author**, after further consideration, **reworded under the name of "convergence principle**", **meaning that between defenders of intrinsic value and supporters of anthropocentrism, there is a double convergence despite disagreement on the value principle**. On the one hand, the convergence is in practical terms (as regards recommended measures and action strategies); and on the other hand it is axiological (due to the possibility of taking into consideration values ignored by strict anthropocentrism). As Norton points out specifically, the corollary of this principle is the recognition of the validity of two distinct types of methodological pluralism, one of which could be named "theoretical pluralism" and the other "meta-theoretical pluralism". The first of these accepts the existence of a multiplicity of mutually incommensurable theoretical models which can be the foundation for the moral considerability of natural entities. The models remain theoretically different but in practice this makes almost no difference, as for example, the model based on the criterion of animal sentience (as in Peter Singer) to justify animals being given moral consideration, or the one which refers to the determination of all organic individuality as the teleological centre of life (as in Paul Taylor). The second type of pluralism accepts the possibility that **several divergent moral theories, which do not even agree on the determination of environmental ethics issues, can nevertheless work together as part of a single moral enterprise—as happens** for example **when ecofeminists and ecocentric environmentalists cooperate to save the same natural habitat, even though their respective commitment is in practice based on very different theoretical considerations4**. **The advantage of a pluralistic approach to values is that**, by its very nature, **it is prepared to seek compromise and determine jointly, through environmental policy negotiations, the conditions for cooperative action, thus making it possible to form strategic causal coalitions**5. The chances of finding common ground are all the greater **as environmental pragmatism does not refer to any concept which would be difficult to justify in philosophy, as that of "intrinsic value", nor does it in any way suppose that one needs to adopt, before even entering into discussion, any particular "vision of the world".** Although it does firmly denounce the attempt to reduce all natural values to the status of economic ones, and although it criticises the systematic use of cost-benefit analysis and warns against the pitfalls of the contingent valuation method, **environmental pragmatism shares with decision-makers the fundamental and firmly-held belief that solutions to environmental problems must be found in the sustainable development of economic systems, for the sake of our responsibility to future generations who must be able to benefit from the generosity and services offered by the ecosystem: In our search of an environmental ethic** we will never, I submit, **find any environmental values or goals more defensible than the sustainability principle".** (Norton, B., 2003, p. 63)

#### Avoiding anti-politics key to prevent the worst violence

Jonathan Small, former Americorps VISTA for the Human Services Coalition, “Moving Forward”, The Journal for Civic Commitment, Spring 2006, http://www.mesacc.edu/other/engagement/Journal/Issue7/Small.pdf

What will be the challenges of the new millennium? And how should we equip young people to face these challenges? While we cannot be sure of the exact nature of the challenges, we can say unequivocally that humankind will face them together. If the end of the twentieth century marked the triumph of the capitalists, individualism, and personal responsibility, the new century will present challenges that require collective action, unity, and enlightened self-interest. Confronting global warming, depleted natural resources, global super viruses, global crime syndicates, and multinational corporations with no conscience and no accountability will require cooperation, openness, honesty, compromise, and most of all solidarity – ideals not exactly cultivated in the twentieth century. We can no longer suffer to see life through the tiny lens of our own existence. Never in the history of the world has our collective fate been so intricately interwoven. Our very existence depends upon our ability to adapt to this new paradigm, to envision a more cohesive society. With humankind’s next great challenge comes also great opportunity. Ironically, modern individualism backed us into a corner. We have two choices, work together in solidarity or perish together in alienation. Unlike any other crisis before, the noose is truly around the neck of the whole world at once. Global super viruses will ravage rich and poor alike, developed and developing nations, white and black, woman, man, and child. Global warming and damage to the environment will affect climate change and destroy ecosystems across the globe. Air pollution will force gas masks on our faces, our depleted atmosphere will make a predator of the sun, and chemicals will invade and corrupt our water supplies. Every single day we are presented the opportunity to change our current course, to survive modernity in a manner befitting our better nature. Through zealous cooperation and radical solidarity we can alter the course of human events. Regarding the practical matter of equipping young people to face the challenges of a global, interconnected world, we need to teach cooperation, community, solidarity, balance and tolerance in schools. We need to take a holistic approach to education. Standardized test scores alone will not begin to prepare young people for the world they will inherit. The three staples of traditional education (reading, writing, and arithmetic) need to be supplemented by three cornerstones of a modern education, exposure, exposure, and more exposure. How can we teach solidarity? How can we teach community in the age of rugged individualism? How can we counterbalance crass commercialism and materialism? How can we impart the true meaning of power? These are the educational challenges we face in the new century. It will require a radical transformation of our conception of education. We’ll need to trust a bit more, control a bit less, and put our faith in the potential of youth to make sense of their world. In addition to a declaration of the gauntlet set before educators in the twenty-first century, this paper is a proposal and a case study of sorts toward a new paradigm of social justice and civic engagement education. Unfortunately, the current pedagogical climate of public K-12 education does not lend itself well to an exploratory study and trial of holistic education. Consequently, this proposal and case study targets a higher education model. Specifically, we will look at some possibilities for a large community college in an urban setting with a diverse student body. Our guides through this process are specifically identified by the journal Equity and Excellence in Education. The dynamic interplay between ideas of social justice, civic engagement, and service learning in education will be the lantern in the dark cave of uncertainty. As such, a simple and straightforward explanation of the three terms is helpful to direct this inquiry. Before we look at a proposal and case study and the possible consequences contained therein, this paper will draw out a clear understanding of how we should characterize these ubiquitous terms and how their relationship to each other affects our study. Social Justice, Civic Engagement, Service Learning and Other Commie Crap Social justice is often ascribed long, complicated, and convoluted definitions. In fact, one could fill a good-sized library with treatises on this subject alone. Here we do not wish to belabor the issue or argue over fine points. For our purposes, it will suffice to have a general characterization of the term, focusing instead on the dynamics of its interaction with civic engagement and service learning. Social justice refers quite simply to a community vision and a community conscience that values inclusion, fairness, tolerance, and equality. The idea of social justice in America has been around since the Revolution and is intimately linked to the idea of a social contract. The Declaration of Independence is the best example of the prominence of social contract theory in the US. It states quite emphatically that the government has a contract with its citizens, from which we get the famous lines about life, liberty and the pursuit of happiness. Social contract theory and specifically the Declaration of Independence are concrete expressions of the spirit of social justice. Similar clamor has been made over the appropriate definitions of civic engagement and service learning, respectively. Once again, let’s not get bogged down on subtleties. Civic engagement is a measure or degree of the interest and/or involvement an individual and a community demonstrate around community issues. There is a longstanding dispute over how to properly quantify civic engagement. Some will say that today’s youth are less involved politically and hence demonstrate a lower degree of civic engagement. Others cite high volunteer rates among the youth and claim it demonstrates a high exhibition of civic engagement. And there are about a hundred other theories put forward on the subject of civic engagement and today’s youth. But one thing is for sure; today’s youth no longer see government and politics as an effective or valuable tool for affecting positive change in the world. Instead of criticizing this judgment, perhaps we should come to sympathize and even admire it. Author Kurt Vonnegut said, “There is a tragic flaw in our precious Constitution, and I don’t know what can be done to fix it. This is it: only nut cases want to be president.” Maybe the youth’s rejection of American politics isn’t a shortcoming but rather a rational and appropriate response to their experience. Consequently, the term civic engagement takes on new meaning for us today. In order to foster fundamental change on the systemic level, which we have already said is necessary for our survival in the twenty-first century, we need to fundamentally change our systems. Therefore, part of our challenge becomes convincing the youth that these systems, and by systems we mean government and commerce,have the potential for positive change.Civic engagement consequently takes on a more specific and political meaning in this context. Service learning is a methodology and a tool for teaching social justice, encouraging civic engagement, and deepening practical understanding of a subject. Since it is a relatively new field, at least in the structured sense, service learning is only beginning to define itself. Through service learning students learn by experiencing things firsthand and by exposing themselves to new points of view. Instead of merely reading about government, for instance, a student might experience it by working in a legislative office. Rather than just studying global warming out of a textbook, a student might volunteer time at an environmental group. If service learning develops and evolves into a discipline with the honest goal of making better citizens, teaching social justice, encouraging civic engagement, and most importantly, exposing students to different and alternative experiences, it could be a major feature of a modern education. Service learning is the natural counterbalance to our current overemphasis on standardized testing. Social justice, civic engagement, and service learning are caught in a symbiotic cycle. The more we have of one of them; the more we have of all of them. However, until we get momentum behind them, we are stalled. Service learning may be our best chance to jumpstart our democracy. In the rest of this paper, we will look at the beginning stages of a project that seeks to do just that.

#### Pragmatic warming policy is effective and key to prevent extinction

Simpson 10 (Francis, College of Engineering, Vanderbilt University, “Environmental Pragmatism and its Application to Climate Change The Moral Obligations of Developed and Developing Nations to Avert Climate Change as viewed through Technological Pragmatism”, Spring 2010 | Volume 6 | Number 1)

Pragmatism and Footprinting¶ Environmental pragmatism is a relatively new field of environmental ethics that seeks to move beyond the strictly theoretical exercises normal in philosophy and allows the environmental movement to formulate substantial new policies (Light, 1). Environmental Pragmatism was initially posited by Bryan Norton and evolved to not take a stance over the dispute between non-anthropocentric and anthropocentric ethics. Distancing himself from this dispute, he preferred to distinguish between strong and weak anthropocentricism (Light, 290-291, 298). The main philosophers involved in advancing the debate in environmental pragmatism include Eric Katz, Andrew Light, and Bryan Norton. This particular discipline advocates moral pluralism, implying that the environmental problems being faced have multiple correct solutions. Light argues that the urgency of ecological crises requires that action is necessary through negotiation and compromise. While theorists serve to further the field of environmental ethics and to debate the metaethical basis of various environmental philosophies, some answers to questions are best left to private discussion rather than taking time to argue about them publically (introduction of pragmatism). Pragmatism believes that if two theories are equally able to provide solutions to a given problem, then debate on which is more is argued that: “the commitment to solving environmental problems is the only precondition for any workable and democratic political theory” (Light, 11). While the science behind a footprint is well understood, what can the synthesis of environmental pragmatism and footprinting tell us about the moral obligation to avert climate change? How does grounding the practice of sustainability footprinting in environmental pragmatism generate moral prescriptions for averting climate change?¶ Environmental Pragmatism necessitates the need for tools in engineering to be developed and applied to avert the climate change problem, since pragmatism inherently calls for bridging the gap between theory and policy/ practices. With the theory of pragmatism in mind, further research and development of tools such as life-cycle analysis and footprinting are potential policy tools that are necessary under a pragmatist viewpoint so that informed decisions can be made by policy makers. Since the role of life-cycle analysis and footprinting attempt to improve the efficiency and decrease the overall environmental impact of a given process, good, or service, environmental pragmatism would call for the further development and usage of these tools so that we can continue to develop sustainably and fulfill our moral obligation to future generations. By utilizing footprinting and life-cycle analysis, it becomes possible to make environmentally conscious decisions not only based upon a gut instinct but additionally based on sound science. Finally, in regards to averting climate change, footprinting and life-cycle analysis offer another dimension to traditional cost-benefit analysis and can allow for our moral obligation to future generations to weigh into final decisions which will eventually result in policies and/ or a production of a good or service. Since traditional cost benefit analysis does not account for the environment explicitly, pragmatism would call for the application of these tools to ensure that the environment is adequately protected for future generations.¶ Climate change modeling inherently contains many unknowns in terms of future outcomes and applied simplifications, but these factors should not be enough to hold us back from an environmental pragmatism stand point. Rather than hiding behind a veil of uncertainty with the science, the uncertainty of the possible catastrophic outcomes demands action on the part of every human individual. Environmental pragmatism could also adopt a view point like the precautionary principle where a given action has great uncertainty, but also great consequence (Haller). Since we are attempting to protect human lives and prevent unnecessary suffering, environmental pragmatism would dictate that we should take action now and stop debating the theoretical aspects of this problem. A moral obligation exists to protect human life, and it becomes our obligation to avert climate change. Despite the relatively high economic costs of averting climate change, it is worth noting that the creation of green jobs and new sectors will help to stimulate the economy rather than completely hindering it. People inherently fear change, and it is my opinion that averting climate change requires a drastic change in our consumption patterns, an important reason why people are resisting averting climate change. From an environmental pragmatism viewpoint, it is humanities responsibility to avert climate change before it is too late since we have a moral obligation to protect the future of humanity and the biosphere.

#### Specifically – Natural gas is the only pragmatic option to deal with warming

Charles K. **Ebinger**, Director, Energy Security Initiative Govinda Avasarala, Research Assistant, Foreign Policy, Energy Security Initiative The Brookings Institution 4-22-**10**, Environmental Pragmatism <http://www.brookings.edu/opinions/2010/0422_environmental_pragmatism_ebinger.aspx>, jj

Finally, **people need to embrace pragmatism**. **Though it is not ideal and rarely a sexy declaration, pragmatism and incrementalism are** the **obligatory** taxes of multilateral agreements (mind you, they are less obtrusive with fewer parties). **There are many tools at our disposal that can put the stalled climate change efforts into first gear**. First, **we must embrace bridge technologies, such as natural gas, nuclear energy, and state of the art cleaner coal**. **With total global renewable energy capacity falling catastrophically short of global energy demand, ‘bridge’ technologies can ease the environmental strain while we wait for renewable capacity to reach requisite levels**. In addition, investments in upgrading many nations’ electricity grids will make a remarkable difference in the environmental impact of power generation. **The need for action to reduce climate change is very real, particularly as many emerging economies and failed and near-failed states are most at risk and can potentially spur widespread global unrest**. **Clinging to an inefficient, incapable system will only exacerbate the crisis of inaction at a time where the world can ill-afford it. By focusing on smaller negotiations** with actual large emitters, garnering a better understanding of the real economics behind climate change, **and embracing smaller steps in ‘bridge’ technologies, we can do a far more effective job of getting the ball rolling.**

#### The state is inevitable and an indispensable part of the solution to warming

Eckersley 4 Robyn, Reader/Associate Professor in the Department of Political Science at the University of Melbourne, “The Green State: Rethinking Democracy and Sovereignty”, MIT Press, 2004, Google Books, pp. 3-8

While acknowledging the basis for this antipathy toward the nation- state, and the limitations of state-centric analyses of global ecological degradation, I seek to draw attention to the positive role that states have played, and might increasingly play, in global and domestic politics. Writing more than twenty years ago, Hedley Bull (a proto-constructivist and leading writer in the English school) outlined the state's positive role in world affairs, and his arguments continue to provide a powerful challenge to those who somehow seek to "get beyond the state," as if such a move would provide a more lasting solution to the threat of armed conflict or nuclear war, social and economic injustice, or environmental degradation.10 As Bull argued, given that the state is here to stay whether we like it or not, then the call to get "beyond the state is a counsel of despair, at all events if it means that we have to begin by abolishing or subverting the state, rather than that there is a need to build upon it.""¶ In any event, rejecting the "statist frame" of world politics ought not prohibit an inquiry into the emancipatory potential of the state as a crucial "node" in any future network of global ecological governance. This is especially so, given that one can expect states to persist as major sites of social and political power for at least the foreseeable future and that any green transformations of the present political order will, short of revolution, necessarily be state-dependent. Thus, like it or not, those concerned about ecological destruction must contend with existing institutions and, where possible, seek to "rebuild the ship while still at sea." And if states are so implicated in ecological destruction, then an inquiry into the potential for their transformation even their modest reform into something that is at least more conducive to ecological sustainability would seem to be compelling.¶ Of course, it would be unhelpful to become singularly fixated on the redesign of the state at the expense of other institutions of governance. States are not the only institutions that limit, condition, shape, and direct political power, and it is necessary to keep in view the broader spectrum of formal and informal institutions of governance (e.g., local, national, regional, and international) that are implicated in global environmental change. Nonetheless, while the state constitutes only one modality of political power, it is an especially significant one because of its historical claims to exclusive rule over territory and peoples—as expressed in the principle of state sovereignty. As Gianfranco Poggi explains, the political power concentrated in the state "is a momentous, pervasive, critical phenomenon. Together with other forms of social power, it constitutes an indispensable medium for constructing and shaping larger social realities, for establishing, shaping and maintaining all broader and more durable collectivities."12 States play, in varying degrees, significant roles in structuring life chances, in distributing wealth, privilege, information, and risks, in upholding civil and political rights, and in securing private property rights and providing the legal/regulatory framework for capitalism. Every one of these dimensions of state activity has, for good or ill, a significant bearing on the global environmental crisis. Given that the green political project is one that demands far-reaching changes to both economies and societies, it is difficult to imagine how such changes might occur on the kind of scale that is needed without the active support of states. While it is often observed that states are too big to deal with local ecological problems and too small to deal with global ones, the state nonetheless holds, as Lennart Lundqvist puts it, "a unique position in the constitutive hierarchy from individuals through villages, regions and nations all the way to global organizations. The state is inclusive of lower political and administrative levels, and exclusive in speaking for its whole territory and population in relation to the outside world."13 In short, it seems to me inconceivable to advance ecological emancipation without also engaging with and seeking to transform state power.¶ Of course, not all states are democratic states, and the green movement has long been wary of the coercive powers that all states reputedly enjoy. Coercion (and not democracy) is also central to Max Weber's classic sociological understanding of the state as "a human community that (successfully) claims the monopoly of the legitimate use of physical force within a given territory."14 Weber believed that the state could not be defined sociologically in terms of its ends\* only formally as an organization in terms of the particular means that are peculiar to it.15 Moreover his concept of legitimacy was merely concerned with whether rules were accepted by subjects as valid (for whatever reason); he did not offer a normative theory as to the circumstances when particular rules ought to be accepted or whether beliefs about the validity of rules were justified. Legitimacy was a contingent fact, and in view of his understanding of politics as a struggle for power in the context of an increasingly disenchanted world, likely to become an increasingly unstable achievement.16¶ In contrast to Weber, my approach to the state is explicitly normative and explicitly concerned with the purpose of states, and the democratic basis of their legitimacy. It focuses on the limitations of liberal normative theories of the state (and associated ideals of a just constitutional arrangement), and it proposes instead an alternative green theory that seeks to redress the deficiencies in liberal theory. Nor is my account as bleak as Weber's. The fact that states possess a monopoly of control over the means of coercion is a most serious matter, but it does not necessarily imply that they must have frequent recourse to that power. In any event, whether the use of the state's coercive powers is to be deplored or welcomed turns on the purposes for which that power is exercised, the manner in which it is exercised, and whether it is managed in public, transparent, and accountable ways—a judgment that must be made against a background of changing problems, practices, and under- standings. The coercive arm of the state can be used to "bust" political demonstrations and invade privacy. It can also be used to prevent human rights abuses, curb the excesses of corporate power, and protect the environment.¶ In short, although the political autonomy of states is widely believed to be in decline, there are still few social institution that can match the same degree of capacity and potential legitimacy that states have to redirect societies and economies along more ecologically sustainable lines to address ecological problems such as global warming and pollution, the buildup of toxic and nuclear wastes and the rapid erosion of the earth's biodiversity. States—particularly when they act collectively—have the capacity to curb the socially and ecologically harmful consequences of capitalism. They are also more amenable to democratization than cor- porations, notwithstanding the ascendancy of the neoliberal state in the increasingly competitive global economy. There are therefore many good reasons why green political theorists need to think not only critically but also constructively about the state and the state system. While the state is certainly not "healthy" at the present historical juncture, in this book I nonetheless join Poggi by offering "a timid two cheers for the old beast," at least as a potentially more significant ally in the green cause.17

#### Risk analysis is critical to energy policy

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Scenario analysis has long been used to help market participants proactively manage energy risk and volatility. Strategic decisions require testing ideas and options across alternative business environments. Scenario analysis provides the consistent framework for this critical thinking. The hands-on involvement of key decision makers forces issues and uncertainty to the surface in search of the “sweet spots” of strategy that make all the difference to success. Predictive energy analytics is bringing the power of disruptive technology in the form of visual data analysis, temporal and semantic analytics tools, knowledge capture and the mobile access to data in remote locations to make insight actionable from fundamental analysis and scenario planning. Collaboration technology and the amazing power of dynamic entity extraction to unleash the power of our interactions with customers and colleagues is turning risk management on its head. The shift induced lesson learned from listening to the wisdom of the crowd is that the process of building scenarios and creating interactive communities is a powerful way of extracting deep strategic insight that uses energy market fundamental analysis and scenarios of alternative energy futures to accelerate the search for the sweet spots where disruptive information technology and operations technology leverage the wisdom of the crowd for maximum value creation from optimizing existing resources. Scenarios create a common language to assess opportunities and risk under uncertainty and strip away the conventional wisdom that prevent us from seeing the future with fresh eyes. New management practices and methods focused on text analysis, semantic web search, and talent management offer just in time dynamic training, knowledge management, and context to ‘see insight’ in the pattern analysis of data and trends. These forces of convergence are accelerating the transformation of business and institutional relationships to focus on scalable growth by intensifying community building within a business and multiplying it by partnering with other businesses to form a loose ecosystem that speeds the time to market for new products, turns those good products into more complete end to end solutions through collaboration, and ruthlessly ‘kicks competitor butt’ with constantly changing disruptive technology applications and methods that yield insanely good results. The difference between business as usual and this new focus on harnessing constant disruptive change as a competitive advantage is passion, intensity and focus—and belief that the risk is worth the potential reward for that genius idea that excites the crowd every time you let them use it. The shale energy boom is evidence of the amazing power of disruption. The dramatic growth in unconventional oil and gas domestic energy production in the US and the oil sands in Alberta are a direct result of the constantly disruptive forces of opportunity and risk at work: • Fracking Dis-intermediates EPA Regulators and Creates Growth and Jobs. US EPA-driven emission reduction rules are an administrative response to failure to pass cap and trade legislation. The goal is to force coal plant retirements and prevent new construction but disruptive change from horizontal drilling and fracking proved a more ruthless force for change by undermining the economics of coal with low priced natural gas but revitalizing domestic oil and gas dramatically increasing domestic production, jobs, tax revenue and growth. • Shale Gas Boom creates a Global Challenge to OPEC. The US has gone from a looming importer of LNG to replace its depleting natural gas reserves to a new exporter of LNG to project shale gas into higher priced global markets. Shale plays are by their nature faster depleting resources, but there are many more play opportunities widely distributed across North America, and other parts of the world creating a serious future challenge to OPEC. • Ruthless Global Energy Competition could give way to Collaboration. Today we see ruthless global competition for access to conventional energy resources from emerging economies like China, India and Brazil eager to fuel exports to sustain their economic growth. The myth of peak oil has been shattered by the growth of unconventional oil and gas and the wide global potential for its future. Instead of competing for limited perceived resources and shipping them round the world, the shale disruptive revolution is a big shift transition to collaboration to improve technology, share and develop knowledge and expertise to use it. Far from being a competitor for energy resources, the United States and its advanced technology prowess in horizontal drilling and hydraulic fracturing democratizes energy access and reduces the corrosive dependence on OPEC, Russia and other oil and gas cartel wannabes. Scenario analysis is a powerful tool to anticipate and rehearse these big shift events before they happen. The transformation in predictive energy analytics is that crowd sourced scenario analysis with advanced data visualization combined with expert knowledge of regional energy market fundamentals is the business economics equivalent of war games enabling managers to stress test strategy opportunities and risk exposures across alternative business futures. War games require good ‘intel’ inside to prepare for the combat of constant disruption in competitive global markets.

#### Epistemology and ontology focus fails

Jarvis 2K (D.S.L., Lecturer n Government - U of Sydney, INTERNATIONAL RELATIONS AND THE CHALLENGE OF POSTMODERNISM, p. 128-9)

Certainly it is right and proper that we ponder the depths of our theoretical imaginations, engage in epistemological and ontological debate, and analyze the sociology of our knowledge. But to suppose that this is the only task of international theory, let alone the most important one, smacks of intellectual elitism and displays a certain contempt for those who search for guidance in their daily struggles as actors in international politics. What does Ashley's project his deconstructive efforts, or valiant tight against positivism say to the truly marginalized, oppressed and destitute? How does it help solve the plight of the poor, the displaced refugees, the casualties of war, or the emigres of death squads? Does it in any way speak to those whose actions and thoughts comprise the policy and practice of international relations? On all these questions one must answer no. This is not to say, of course, that all theory should be judged by its technical rarionality and problem-solving capacity as Ashley forcefully argues. But to suppose that problem-solving technical theory is not necessary—or is in some, way bad—is a contemptuous position that abrogates any hope of solving somve of the nightmarish realities that millions confront daily. Holsti argues, we need ask of these theorists and these theories tne ultimate question, “So what?” to what purpose do they deconstruct problematize, destabilize, undermine, ridicule, and belittle modernist and rationalist approaches? Does this get us any further, make the world any better, or enhance the human condition? In what sense can this "debate toward [a] bottomless pit of epistemology and metaphysics" be judged pertinent relevant helpful, or cogent to anyone other than those foolish enough to be scholastically excited by abstract and recondite debate.

#### Reps-focus also fails

Dewsbury ’03, (John-David Dewsbury -- School of Geographical Studies, University of Bristol -- Environment and Planning A 2003, volume 35, pages 1907-1932 -- http://www.sages.unimelb.edu.au/news/mhgr/dewsbury.pdf)

That someone includes us -- the social scientists, the researchers, and the writers. In some way we are all false witnesses to what is there.(2) So, even though the philosophical drive moves against the apparently sterile setup of totalizing representations, the presentation of ideas is trapped within the structure it is trying to critique. In my opinion, this sterility is only apparent. Significantly, this appearance is valid from both sides: from the side of representational theory because of the belief in the representational structure as being able to give an account of everything; and from the side of nonrepresentational theory because of the danger of getting carried away with an absolute critique of representations. The apparent sterility comes from this last point: that in getting carried away with critique you fail to appreciate that the building blocks of representation are not sterile in themselves -- only when they are used as part of a system. The representational system, its structure and regulation of meaning, is not complete -- it needs constant maintenance, loyalty, and faith from those who practice it. In this regard, its power is in its pragmatic functions: easy communication of ideas (that restricts their potential extension), and sustainable, defensible, and consensual agreement on understanding (a certain kind of understanding, and hence a certain type of knowledge). The nonrepresentational argument comes into its own in asking us to revisit the performative space of representation in a manner that is more attuned to its fragile constitution. The point being that representation left critically unattended only allows for conceptual difference and not for a concept of difference as such. The former maintains existing ideological markers whilst the latter challenges us to invent new ones. For me, the project of nonrepresentational theory then, is to excavate the empty space between the lines of representational meaning in order to see what is also possible. The representational system is not wrong: rather, it is the belief that it offers complete understanding -- and that only it offers any sensible understanding at all -- that is critically flawed.

***Federal de-regulation won’t cause a race to the bottom.***

**Willie ‘12**

Matt Willie, J.D. candidate, April 2012, J. Reuben Clark Law School, Brigham Young University, Brigham Young University Law Review, 2011 B.Y.U.L. Rev. 1743, Hydraulic Fracturing and "Spotty" Regulation: Why the Federal Government Should Let States Control Unconventional Onshore Drilling, Lexis, jj

B. Federal v. State: Why "Spotty" Regulation is Better Regulation

 **The push for more federal control of hydraulic fracturing** seems at least partly motivated by differences in state approaches to the issue. Professor Wiseman, for example, argues that "the varying complexity and breadth of state oil and gas regulation suggests that some states are not adequately protecting underground sources of drinking water." n198 The flaw in such arguments, however, is that they [\*1772] **ignore the fact that the depth, accessibility, extraction techniques, and characteristics of oil and gas reserves vary from state to state**. In fact, **that fracking regulation in the United States has been "spotty**" n199 **may actually be a good thing.**

1. Regional differences

In many respects, ***the more local and specialized the regulation, the better***. This is true primarily because **oil and gas extraction methods**, and therefore hydrofracking techniques, **are** almost **always geologic-and region-specific**. n200 **This fact makes additional federal regulation unnecessary at best and** potentially ***extremely problematic*** **if it conflicts with local and state land use controls.** The Texas Supreme Court hinted at this idea in the Coastal Oil opinion. n201 A major basis for the court's decision was the desirability of deferring to the Texas Railroad Commission on oil and gas matters, especially where they involve questions of property boundaries and extraction techniques within specific reserves. n202 The Commission has the luxury of focusing all its time and manpower on oil and gas regulation (something the court lacks) and has sufficient remedial authority to enforce its rules in a way that both protects landowners n203 and promotes "the state's goals of preventing waste and conserving natural resources." n204 Such realities make the Commission, not the court, the appropriate entity for formulating effective regulatory provisions. For similar reasons, **federal intervention into state regulation of fracking seems unnecessary**. Just as a commission's staff of experts is better equipped than judges to promulgate rules for state oil and gas development, **state officials are** generally **more informed about local and regional production techniques than federal regulators**. n205 Not [\*1773] only do many energy-producing states operate under somewhat conflicting theories of oil and gas law, n206 but **the state commissions that design rules that conform to those theories must be aware of the location, form, and accessibility of their hydrocarbon reserves in order to effectively regulate.** Of course, federal agencies can set up regional offices, and federal regulators can familiarize themselves with local industry realities, but **federal employees will never be subject to the same kind of political accountability as state officials, and this may make them less receptive to local concerns**. Perhaps more importantly, **federal officials remain bound by federal directives drawn up by bureaucrats who reside far from most of the reserves their regulations affect.** Ironically, **even proponents of federal regulation acknowledge the need for region-specific fracking rules**. Professor Wiseman notes that, "**invariably, effects will differ by region, by the type of operation and disposal methods used, and the type of formation fracked**." n207 **State officials are arguably more familiar with these variables than federal employees, yet she promotes an additional, potentially burdensome layer of federal control**. n208 This seems shortsighted simply because ***what works well in one state may work poorly in another.*** This reality has long been a burr in the side of would-be federal mining regulators. Despite widespread expansion of national environmental protections throughout the twentieth century, n209 Congress struggled to craft effective mining legislation. This was primarily because geological and regional differences encouraged a [\*1774] state-centric regulatory scheme. n210 A former government attorney who helped draft the Surface Mining Control and Reclamation Act of 1977 pointed out that coal regulation "differs significantly from other federal environmental regulatory statutes" primarily because of "the "diversity' in coal mining areas." n211 This concern eventually resulted in Congress admitting that "**the primary governmental authority for developing, authorizing, issuing, and enforcing [mining] regulations ... should rest with the States**." n212 Such **diversity is** even more **apparent among** oil and **gas formations**. A comparison of operations in the Bakken Shale with those in the Barnett Shale is illustrative. Bakken companies primarily drill for oil, n213 while Barnett operators produce gas. n214 **Typical spacing in the Bakken can be as much as 1280 acres per well**, n215 **as opposed to Barnett spacing, which rarely exceeds 100 acres**. n216 **This, of course, creates far fewer wells in the Bakken states and thus a better opportunity to avoid drilling near communities. Likewise, Bakken states** (Montana and North Dakota) **are largely rural to begin with, making land use decisions simpler and disputes regarding property lines and leasehold interests less common. Even the use of fracking fluids varies widely by field and formation. As the EPA noted, "on any one fracturing job, different fluids may be used in combination or alone at different stages in the fracturing process**. **Experienced service company engineers will devise the most effective fracturing scheme, based on formation** [\*1775] **characteristics, using the fracturing fluid combination they deem most effective**." n217 Fracking companies in Montana, for example, "have been using relatively non-intrusive fluids - mostly a gel water sand frack, with the gel consisting of a drilling mud or a polymer." n218 In Pennsylvania's Marcellus Shale, on the other hand, there have been reports of higher than expected levels of radiation in wastewater from fracked wells. n219 **Arguments for more federal intervention *consistently fail* to account for these realities**. Professor Wiseman writes, for example, that an "absence of regulation [would] not [be] of great concern if fracking [were] a relatively benign practice that could be sufficiently controlled through the general permitting process; but if fracking has significant environmental and public health impacts, the lack of regulation is problematic." n220 The problem with such an all-or-nothing analysis is that **fracking is both benign and environmentally hazardous - depending on its location**. n221 **In some states, the general permitting process provides adequate environmental protections; in others, more stringent rules are justified**. n222 But **these are decisions that ought to be left to state policymakers and state regulatory agencies, not federal employees who may be ignorant to specific local and regional practices and** may **thus** rely on articles like Wiseman's, which **downplay the importance of geological dissimilarities and variations in fracking technique. With state regulations already providing extensive environmental protections, additional federal fracking controls**, in all likelihood, **can** [\*1776] **have only one of two effects: either (1) they will "have little impact," representing "no more than ideological tinkering with state law";** n223 **or (2) they will alter the entire state-centric system, essentially voiding many workable state rules, creating overlapping controls that slow down domestic oil and gas production, and producing uniform standards for fracking techniques that ought to vary by field and region.** Should Congress opt for such a uniform system, the safest route would be to force all states to adopt stringent fracking rules. The problem is that while **such regulations** might be appropriate and welcomed in New York, they **could be unnecessarily restrictive in states like Montana and North Dakota.** At the same time, ***crafting a middle-of-the-road national standard could send the message that stricter requirements are unnecessary*.** n224

2. Federal regulatory failures

Obviously, only a shortsighted system would fail to account for at least some regional and geological differences. But **even if each state's reserves were identical, no evidence suggests that federal fracking regulation would be superior to state control**. In fact, **the BP spill and other recent energy industry problems have created concerns that the entire federal energy regulatory machine is simply too large, and too politically dominated, to be effective**. n225 As **the National Commission on the BP Deepwater Horizon Spill** and Offshore Drilling **described, from its outset "federal regulation of offshore drilling awkwardly combined" two competing priorities - environmental protection and energy independence - which were often difficult to reconcile "as a series of Congresses,** [\*1777] **Presidents, and Secretaries of the Interior" moved in and out of power**. n226 **The result was an odd**, and often ***irrational***, **set of rules**. "**In some offshore regions**," for example, "oil **drilling was essentially banned in response to environmental concerns. Elsewhere**, **most notably in the Gulf, some environmental protections and safety oversight were formally relaxed or informally diminished so as to render them ineffective**." n227 **As drilling moved further offshore and more money poured into federal coffers, safety and environmental risks increased**. Unfortunately, **these risks "were not matched by greater, more sophisticated regulatory oversight**." n228 Some problems were due to the fact that **the same federal agency, the** Minerals Management Service (**MMS**), **was "responsible for regulatory oversight of offshore drilling - and for collecting revenue from that drilling**." n229 **A 2008 study by the Interior Department revealed numerous ethical scandals involving MMS employees**, "including allegations of financial self-dealing, accepting gifts from energy companies, cocaine use and sexual misconduct." n230 **Another Interior Department report prepared after the BP spill cited communication problems at the Agency as well as unevenly staffed offices and inadequate training.** n231 As the National Commission put it: **The overall picture of MMS that has emerged since [the spill] is distressing. MMS became an agency systematically lacking the resources, technical training, or experience in petroleum engineering that is absolutely critical to ensuring that offshore** [\*1778] **drilling is being conducted in a safe and responsible manner. For a regulatory agency to fall so short of its essential safety mission is inexcusable**. n232 **In light of such failures, it is puzzling that critics of fracking believe so adamantly in the superiority of national controls over a state-centric system that has worked with relatively few problems for six decades.**

C. Financial Costs of Federal Regulation

Even if fracking regulators were somehow immune from the failures that have plagued other agencies, **additional federal regulation should not be adopted without a realistic assessment of its price tag**. Testifying before the House Committee on Energy and Commerce in 2005, Victor Carrillo, chairman of the Texas Railroad Commission, argued that **stricter federal fracking standards "would not result in cleaner water but only in adding significant cost**. **Such unnecessary regulation and the concomitant cost can only serve to ~~retard~~ the development of much needed natural gas in this country**." n233 This statement seems even more appropriate six years later, as **additional research has revealed just how significant those costs could be. Merely studying the issue at the federal level can be expensive**. As part of its Science to Achieve Results Program, **the EPA requested $ 4.3 million for fracking research alone in fiscal year 2011**. n234 The amount constitutes a $ 2.5 million increase from 2010. n235 **The costs of actually administering a federal fracking regulatory program, after research is completed and rules are drafted, would undoubtedly be *astronomically higher*. Compounding this concern is the serious potential for federal financial waste**. According to a study completed in early 2011 by the Government Accountability Office, "**overlapping and duplicative** [\*1779] [**federal] programs ... cost taxpayers billions of dollars each year**." n236 **The nonpartisan office uncovered a staggering number of federal inefficiencies, including "82 federal programs to improve teacher quality; 80 to help disadvantaged people with transportation**; 47 for job training and employment; and 56 to help people understand finances." n237 **It seems unlikely that additional federal hydraulic fracturing regulation, if enacted, would not suffer from similar financial inefficiencies.** Of course, state regulatory agencies could be just as wasteful. Nevertheless, **citizens are arguably more equipped to hold local and state government officers politically accountable for their waste**. n238 **This is so not only because citizens generally have greater access to local and state leaders, but also because they can compare government spending in their state with that of neighboring states.** n239 In contrast, **selecting appropriate foreign governments for comparisons of federal spending seems a much more daunting task. Regardless of the cost to taxpayers, additional federal regulation would put a significant financial burden on developers. A 2009 report** prepared for the American Petroleum Institute estimates that **national fracking legislation could increase the costs of shale plays by $ 47,333 per well and non-shale plays by $ 109,833 per well**. n240 Perhaps even more troubling is that **such "added costs raise the economic threshold ... at which a play can be developed," decreasing the total number of wells operators who are willing to drill**. n241 As the report explains: Experience suggests **that a 20% reduction in the number of wells completed each year due to increased regulation is a valid** [\*1780] **assumption due to the additional time needed to file permits, push-back of drilling schedules due to higher costs, increased chance of litigation, injunction or other delay tactics used by opposing groups and availability of fracturing monitoring services**. n242 **Such costs would undoubtedly be passed along to consumers, compounding government waste with higher prices at the pump.**

V. Conclusion

**The tremendous economic impact of hydraulic fracturing should not be understated**. **As the need to replace conventional sources of energy becomes more pressing, the United States' dependence on foreign oil and the risks of offshore drilling may combine to make the debate about fracking and other unconventional forms of drilling one of the most important energy-related issues** of the twenty-first century. **Special interest groups insist that fracking's impact** on the environment **is disastrous, but decades of study have revealed only minor concerns**. **In light of federal regulatory failures such as those that led to the BP disaster in the Gulf, leaving control of hydraulic fracturing with the states seems to be a far more prudent course**. Local and regional industry realities should guide energy regulation in the United States, and **state officials are far more equipped than federal employees to successfully account for the geological and human variables that shape onshore development**. State regulation of such development has intensified as unconventional methods of drilling have increased. In the process, courts have properly addressed the legal aspects of hydraulic fracturing while giving appropriate deference to agency regulations based on state common law theories, legislative directives, environmental needs, and local practices. **Hydraulic fracturing has played an important role in the oil and gas industry for more than sixty years. Regulatory intrusions by the federal government at this point will only create unnecessary financial burdens and hinder developers' ability to efficiently extract hydrocarbons.** [\*1781] As the Groundwater Protection Council warned more than a decade ago: "**If additional federal regulations were to be imposed they would not be based on scientific observation of associated contamination, and there would be little if any increase in protection of public health and the environment**." n243 W**ith so little to gain, the costs of additional federal controls are simply unjustifiable.**

***States regulations will fill in and solve.***

**Willie ‘12**

Matt Willie, J.D. candidate, April 2012, J. Reuben Clark Law School, Brigham Young University, Brigham Young University Law Review, 2011 B.Y.U.L. Rev. 1743, Hydraulic Fracturing and "Spotty" Regulation: Why the Federal Government Should Let States Control Unconventional Onshore Drilling, Lexis, jj

**What is conspicuously missing from many of these groups' arguments, however, is an explanation of how and why federal regulation will actually diminish fracking's environmental risks**. In fact, a closer look at much of the rhetoric against a state-centric regulatory system reveals not so much a push for federal regulation, but rather for federal prohibition of hydraulic fracturing. n122 Perhaps [\*1762] this is because, by and large, **state control of hydrofracking is already relatively expansive. As fracking has become more widespread, state regulation of the practice has intensified**, although specific rules vary widely. n123 Some see this variation as a reason for more federal control. n124 But as the following discussion illustrates, **every producing state has promulgated a considerable amount of fracking regulation, whether through general permitting processes or more directly**. n125 **Wyoming**, for example, **was the first state to require companies to fully disclose the chemicals used in their fracking fluids.** n126 **The state also requires drillers to give notice to surface owners of planned oil and gas operations on their lands and make good faith efforts to enter into "surface use agreements" that will protect surface resources, provide for reclamation of disturbed areas, and determine a payment for any** damages caused by the operations. n127 **Developers must show that they have complied with this requirement before the** [\*1763] **Wyoming Oil and Gas Commission will grant a permit to drill** n128 or a permit to construct a pit for retaining fluids. n129 Moreover, before any well can be used for injection activities, **an operator must demonstrate to the Commission that its casing is leak-proof and able to withstand pressures of at least 300 pounds per square inch**. n130 **New York has perhaps the nation's strictest fracking controls**. Shortly before leaving office in late 2010, former governor David Paterson "issued an executive order imposing a moratorium on permits for horizontal wells and instructed the [Department of Environmental Conservation] to revise its draft of standards governing the use of high-volume fracking." n131 In July of 2011, the Agency released a revised Draft Supplemental Generic Environmental Impact Statement (SGEIS) which recommended that the moratorium be kept in place in certain areas and lifted in others, subject to strict regulation. n132 Even without the moratorium, the state's rules are far from lenient. An operator seeking to drill needs to submit an application for a permit, pay a permit fee, offer a description of the planned drilling project, provide three copies of a plat, and complete an Environmental Assessment Form. n133 This form "provides information about the physical setting of the proposed project, the general character of the land and land use, the projected size of the area that will be disturbed and the length of time the drilling rig will be on the [\*1764] site." n134 A Supplemental Environmental Impact Statement and additional permits may also be necessary. n135 Even **Professor Wiseman calls the state's fracking rules "relatively comprehensive**." n136 **She says the same about Pennsylvania**, even though the state uses general oil and gas rules to regulate fracking. n137 Strong permitting requirements compel operators to account for any water sources or coal seams near drilling sites, n138 and the Department of Environmental Protection may deny permits that would violate any applicable environmental law. n139 The state also has separate rules for exploration activities in the Marcellus Shale. n140 Likewise, **Colorado has adopted comprehensive fracking regulations**. In 2009, the state overhauled its rules, providing more protections against methane contamination. n141 Even before the overhaul, the Colorado Oil and Gas Conservation Commission (COGCC) instituted a "mitigation program" to seal improperly abandoned wells. The program resulted in a reduction of methane concentrations in close to 30% of all sampled water wells. n142 More recently, the Commission has begun investigating the use of diesel fuel in fracking operations and regularly testing groundwater wells for contamination. n143 The COGCC also requires operators to maintain a "Chemical Inventory" of all chemicals used in drilling and completion, including fracturing, at each well site. n144 **The Alabama Oil and Gas Board claims that it "investigates every complaint it receives**." n145 A unique feature of its investigations is that each one includes research regarding "historical water quality [\*1765] data." n146 As the EPA explains, this "information is important because the coal-bearing Pottsville Formation often contains high concentrations of iron." n147 The symptoms of iron staining, which can occur suddenly and "in water with a history of good quality," are apparently similar to those of methane contamination. n148 Such observations show the importance of accounting for regional characteristics in fracking regulations. Perhaps more than any other state, **Texas has been criticized for its fracking regulations**, primarily because until recently no rule addressed the practice specifically. n149 **That changed** in June of 2011, **when** Texas governor **Rick Perry** **signed into law H.B. 3328, which requires operators to publicly disclose chemicals used in fracturing applications**. n150 Even without the legislation, much of the criticism of Texas is misplaced, since, as Professor Wiseman herself admits, **many of the state's general oil and gas regulations "apply to various components of the fracking process.**" n151 Like other states, **operators cannot drill without a permit**, n152 **and they must obtain a Water Board Letter from the state Commission on Environmental Quality setting out "the depth to which fresh water must be protected" for each well**. n153 **No operator in the state "may dispose of any oil and gas wastes [which would include fracking fluids] by any method without obtaining a permit**." n154 In addition, **the state has extensive casing and cementing regulations, including requirements that all casing be** [\*1766] **made of steel and "hydrostatically pressure tested," and that "all usable-quality water zones be isolated and sealed off to effectively prevent contamination or harm."** n155 Despite the peculiarities of each state's regulatory system, **almost all share several common features. Every producing state, for example, has "permitting requirements governing the locating, drilling, completion, and operations of wells."** **n156 Almost all have casing and cementing requirements designed to isolate ground water from production zones**. n157 **Every state but one requires regulatory authorization before operators can leave a well idle**. n158 **And all twenty-seven producing states have regulations regarding the proper plugging of wells**. n159 **Given the level of scrutiny most states are already applying to hydraulic fracturing, it is difficult to see how federal agencies could significantly curb any of the few environmental effects left unaddressed**. Congress's decision in 2005 to exempt most aspects of fracking from federal regulation has been criticized as a "loophole" for developers. n160 But as the Independent Petroleum Association of America states, "This characterization is entirely inaccurate; **Congress' action merely keeps in place a system that has worked for half a century**." n161

#### Uncertainty about climate change is exaggerated – Action is key

Roberts, 9/26/12 – Staff writer for Grist, a climate change and environmental issues think tank, *How certain can we be about climate change?* <http://grist.org/climate-energy/how-certain-can-we-be-about-climate-change/>

The question that headlines this post has caused great confusion and strife ever since climate change first entered the public consciousness. From the very beginning, climate deniers set about to exaggerate the degree of uncertainty. As GOP messaging maestro Frank Luntz said in his [infamous memo](http://www.guardian.co.uk/environment/2003/mar/04/usnews.climatechange), “Should the public come to believe that the scientific issues are settled, their views about global warming will change accordingly.” Luntz sensed, accurately, that the lay public has a pretty naive, linear view of decisionmaking; they tend to think that understanding and quantifying the risks is the first step, to be completed before moving to action. This has led climate hawks to emphasize, and sometimes overstate, the degree of certainty around climate change. To counter Luntz, they insist that “the science is settled” and “we have the tools we need to solve the problem.” This is all … kind of dumb. “Certainty vs. uncertainty” is a red herring. Of course the science isn’t “settled.” Of course substantial uncertainty remains about what will happen and the way to avoid or adapt to it. Of course that doesn’t mean what climate deniers say it means. For the sake of clarity (and to set up my next post), let’s take a closer look at the uncertainty around climate change — how much there is, what kind there is, what it means for us. We turn, as one does in these situations, to a new [white paper from the World Bank](http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=469382&piPK=64165421&menuPK=64166093&entityID=000158349_20120906142854). It’s about, among other things, climate and “deep uncertainty.” First, what we know: We know that CO2 is accumulating in the atmosphere, that it’s causing global temperatures to rise, and that rising temperatures will have substantial (and largely harmful) effects on ecosystems. We’re pretty sure we can already see that signal through the noise of natural weather variations, but the signal is sure to get stronger later this century. While nothing in science is ever “certain,” scientists have a very high degree of confidence in that stuff. So what’s uncertain? There are three varieties of uncertainty germane to climate change, and yes, they have jargony names. Since you ask, yes, there will be a quiz later. They are: policy, epistemic, and aleatory uncertainty. (Protip: “aleatory” is fun to say. Try it!) Policy uncertainty comes into play when trying to predict how our social and political choices will affect future carbon emissions. What we do between now and the end of the century will affect trends in population, technology, and economics, all of which will affect how much carbon we emit. Will we stop subsidizing fossil-fuel exploitation? Will we put a price on carbon, and if so when, and how much? Will we invest more in R&D, and if we do, will there be breakthroughs in clean technology? I wrote a [whole post](http://grist.org/politics/science-alone-cant-tell-us-how-bad-climate-change-will-be/) about this kind of uncertainty once. It cannot be avoided or eradicated, for the simple reason that human beings are unpredictable. We don’t know exactly what will happen because we don’t know exactly what we (or our descendents) will do. Epistemic uncertainty is about the science, “our imperfect knowledge of the functioning of the climate system and of affected systems.” There’s still a great deal we don’t know about how temperature will respond to rising levels of CO2 (so-called “climate sensitivity”) and, in turn, how ecosystems will respond to rising temperature. Consequently, there’s still a wide range of model projections, particularly when it comes to regional effects. The authors of the World Bank paper note: The IPCC provides results from 19 global climate models. Even though the models agree on the very big picture (more warming in high latitude than in low latitude; more precipitation in high latitudes; less precipitation around the tropics; more precipitation around the equator), the differences can be huge in some regions (e.g., half the models predict an increase in precipitation over India; half the models predict the opposite; and — as a consequence — the “average model” predicts no change, showing the risk of using an average model). Here’s another example: “For Ghana, [one model] predicts a 20% increase in precipitation, while [another model] predicts a 30% decrease!” As much as climate science has advanced in recent years, and continues to advance, the fact remains that our best models project a wide array of possible outcomes. What’s more, even the full range of model projections doesn’t capture the degree of uncertainty. All our models share certain assumptions and data, some of which will likely be refuted or amended by subsequent science. But which ones? That’s an unknown unknown. So the range of uncertainty is wider than the current range of projections. Some of the epistemic uncertainty can be reduced, but not all, because of … Aleatory uncertainty is about natural variability within climate subsystems. Here we find an ineradicable element of chance, or chaos, which is inherently unpredictable. Consequently: Climate models provide information of statistical nature (averages, variance, likelihood to exceed thresholds, etc.), but they do not provide forecasts, i.e. deterministic prediction of the future. In other words, they can estimate the average number of rainy days in the summers of 2060s, but do not say anything about any given day or even any specific summer. There’s a lot of work being done to “scale down” climate model results to geographical scales more relevant to decisionmakers — everyone wants to know what to expect in their own backyards — but there’s just an inherent limit to how granular and predictive they can get. Unlike climate, weather is chaotic. None of these three kinds of uncertainty can be eliminated, so “certainty” is off the table. Interestingly, looking out over the coming century, epistemic and aleatory uncertainty dominate in the short term, but in the long term it is policy uncertainty that looms largest. We are the biggest X factors in our own models. What we choose matters most! –

#### Action on climate change is crucial even in the face of uncertainty - big picture claims are still true

Mann 9/24/12 - Director of Penn State’s Earth System Science Center, Michael Mann authored ‘Dire Predictions’ and ‘The Hockey Stick and the Climate Wars.’ This article was also published in the Huffington Post, [*FiveThirtyEight: The Number of Things Nate Silver Gets Wrong About Climate Change*](http://thinkprogress.org/climate/2012/09/24/898561/fivethirtyeight-the-number-of-things-nate-silver-gets-wrong-about-climate-change/)*,* <http://thinkprogress.org/climate/2012/09/24/898561/fivethirtyeight-the-number-of-things-nate-silver-gets-wrong-about-climate-change/>

I suspect that Nate’s failing here arises from a sort of cultural bias. There is a whole community of pundits with origins in economics and marketing who seem more than happy to dismiss the laws of physics when they conflict with their philosophy of an unregulated market. Nate may not share that philosophy, but he was educated by those who do.

Nate Silver was trained in the [Chicago school of Economics](http://en.wikipedia.org/wiki/Chicago_school_%28economics%29), famously characterized by its philosophy of free market fundamentalism. In addition to courses from Milton Friedman, Nate might very well have taken a course from University of Chicago economist Steven Levitt, known largely for his provocative 2005 book Freakonomics and its even more audacious 2009 sequelSuper Freakonomics — a book that, perhaps better than any other, serves as a cautionary tale of the dangers that lurk when academics attempt to draw sweeping conclusions in fields well outside their area of training. In Super Freakonomics as you might guess, Levitt drew questionable conclusions about climate change and related energy issues based on an extrapolation of principles of economics way, way, way, outside their domain of applicability. Even some very basic physics calculations, for example, reveal that his dismissal of solar energy as a viable alternative to fossil fuel energy in combating climate change because of possible waste heat is total nonsense. Ray Pierrehumbert, a chaired professor himself at the University of Chicago, in the Department of Geosciences, pointed this and other serious errors out to Levitt in an [open letter](http://www.realclimate.org/index.php/archives/2009/10/an-open-letter-to-steve-levitt/) that concluded with a campus map showing how easy it would have been for Levitt to walk over to his office to discuss his ideas and, presumably, avoid the serious pitfalls that ended up undermining much of what he ended up saying in his book about climate change and energy policy. Unlike Levitt, Nate did talk to the scientists (I know. I’m one of them!). But he didn’t listen quite as carefully as he should have. When it came to areas like climate change well outside his own expertise, he to some extent fell into the same “one trick pony” trap that was the downfall of Levitt (and arguably others like Malcolm Gladwell in The Tipping Point). That is, he repeatedly invokes the alluring, but fundamentally unsound, principle that simple ideas about forecasting and prediction from one field, like economics, can readily be appropriated and applied to completely different fields, without a solid grounding in the principles, assumptions, and methods of those fields. It just doesn’t work that way (though Nate, to his credit, does at least allude to that in his discussion of Armstrong’s evaluation of climate forecasts). As a result, Nate’s chapter on climate change (Chapter 12: “A Climate of Healthy Skepticism”) is marred by straw man claims that don’t stand up to scrutiny. These include the assertion that (a) climate scientist James Hansen’s famous 1988 predictions overestimated global warming ([they didn’t](http://www.realclimate.org/index.php/archives/2007/05/hansens-1988-projections/)), that (b) “the Intergovernmental Panel on Climate Change (IPCC) settles on just one forecast that is endorsed by the entire group” (pure nonsense — even the most casual reading of the IPCC reports reveal that great care taken to emphasize the [non-trivial spread](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/figure-10-4.html) among models predictions, and to denote regions where there is [substantial disagreement](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/figure-10-9.html) between the projections from different models) and that (c) “relatively little is understood” about the El Nino cycle (here I imagine that Nate might have misinterpreted our own discussion about the matter; I explained in our discussion that there are still open questions about how climate change will influence the El Nino phenomenon — but that hardly means that we know “relatively little” about the phenomenon itself! In fact, we know [quite a bit](http://www.ucar.edu/communications/factsheets/elnino/) about it). Finally, and perhaps most troubling (d) while Nate’s chapter title explicitly acknowledges the importance of distinguishing “signal” from “noise”, and Nate does gives this topic some lip service, he repeatedly falls victim to the fallacy that tracking year-to-year fluctuations in temperature (the noise) can tell us something about predictions of global warming trends (the signal). They [can’t](http://www.realclimate.org/index.php/archives/2008/01/uncertainty-noise-and-the-art-of-model-data-comparison/) — they [really can’t](http://www.realclimate.org/index.php/archives/2008/05/what-the-ipcc-models-really-say/). Nate’s view of uncertainty, and its implications for climate model predictions, is particularly misguided. He asserts that the projections of the IPCC forecasts have been “too aggressive”, but that is simply wrong. It neglects that in many cases, e.g. as regards the alarming rate of Arctic sea ice decline (we saw a [new record low](http://www.livescience.com/23362-arctic-summer-ice-disappearance.html) set just weeks ago), the climate models have been far too cautious; We are [decades ahead of schedule](http://www.huffingtonpost.com/lou-leonard/losing-the-top-of-the-wor_b_1904924.html?utm_hp_ref=green) relative to what the models predicted. Uncertainty cuts both ways, and in many respects — be it the rapid decline in Arctic sea ice, or the melting of the ice sheets — it is cutting against us. Uncertainty, as many [economists recognize](http://www.realclimateeconomics.org/uncertainty_and_risks.html), is thus a reason for action, not inaction! I’m surprised someone as sharp as Nate just doesn’t appear to get that. Nate also takes some unnecessary cheap shots. In what has now become a rite of passage for those looking to establish their “honest broker” bona fides in the climate change debate, Nate makes the requisite “punch the hippie” accusation that Al Gore exaggerated the science of climate change in An Inconvenient Truth (a team of climate scientists reviewed the movie for accuracy and found that by-and-large Gore [got the science right](http://www.realclimate.org/index.php/archives/2007/10/convenient-untruths/)). He characterizes climate scientist Gavin Schmidt as a “sarcastic” individual who is unwilling to put his money where his mouth is by betting his personal savings on his climate model predictions (this felt to me reminiscent of Mitt Romney’s [widely mocked $10,000 bet challenge](http://www.huffingtonpost.com/2011/12/10/mitt-romneys-10000-bet-rick-perry_n_1141387.html) to Rick Perry). And while I do appreciate some of the nice things Nate says in the book about me personally (e.g. “Mann is exceptionally thoughtful about the science behind global warming”), he at the same time deeply misrepresents our discussion on several counts. I had emphasized the importance of distinguishing the true uncertainties in climate science (and there are plenty e.g. the influence of warming on hurricanes, how the El Nino phenomenon might be affected, or how regional patterns of rainfall may change) from the manufactured uncertainties and myths typically promoted by climate change deniers and contrarians (e.g. “how come there has been no warming since 1998?” — the answer is that, of course, there [has been](http://www.skepticalscience.com/global-warming-stopped-in-1998.htm)). I stressed how important it is, when scientists communicate to the public, to make clear that while there are many details that are still uncertain, the big picture (that humans are warming the planet and changing the climate, and that far larger and potentially more dangerous changes loom in our future if we don’t act) [is not](http://www.nasonline.org/about-nas/leadership/president/statement-climate-change.pdf). Nate cherry-picks a single sound bite (“our statements [should not be] so laden in uncertainty that no one even listens.”) to once again reinforce the false narrative that scientists are understating uncertainty. The point I was actually making was that we cannot spend so much time talking about what we don’t know, that we don’t end up telling the public what we do know. That, as Nate correctly quotes me, “would be irresponsible”. Nate states that “the more dramatic [climate scientists'] claims, the more likely they [are] be quoted…”, seemingly implying that scientists have a motivation to overstate the science. He ignores the fact that those scientists willing to feed the false “scientists are exaggerating” narrative are the true darlings of the “balance” over “objectivity” [school of](http://www.universityofcalifornia.edu/news/article/6572) news reporting — a school of thought that Nate sadly seems to have subscribed to. Most disappointing to me of all was the false equivalence that Nate draws between the scientific community’s efforts to fight back against intentional distortions and attacks by an industry-funded attack machine, and the efforts of that attack machine itself. He characterizes this simply as a battle between “consensus” scientists and “skeptical” individuals, as if we’re talking about two worthy adversaries in a battle. This framing is flawed on multiple levels, not the least of which is that those he calls “skeptics” are in fact typically no such thing. There is a difference between honest skepticism — something that is not only valuable but necessary for the progress of science — and pseudo-skepticism, i.e. denialism posing as “skepticism” for the sake of obscuring, rather than clarifying, what is known. Nate deeply mischaracterizes [an editorial](http://www.nature.com/nature/journal/v464/n7286/full/464141a.html) published by the prestigious and staid journal Nature(whose sentiments are echoed in my book [The Hockey Stick and the Climate Wars](http://www.amazon.com/The-Hockey-Stick-Climate-Wars/dp/023115254X/)) warning scientists that they “must acknowledge that they are in a street fight, and that their relationship with the media really matters.” Nate grossly mischaracterizes the quote, claiming that “the long-term goal of the street fight is to persuade the public and policy makers about the urgency (or lack thereof) of action to combat climate change.” Nate makes it sound like the “street fight” was of the scientists choosing, completely turning on its head what Nature was actually talking about: scientists finding a better way to defend science from cynical attacks whose sole aim is to confuse the public about what we actually do know about climate change (and therefore forestall any efforts to deal with it). I could detail the numerous other problems with the chapter (and no — there aren’t really 538 of them; I confess to having taken some “poetic license” with the title of this commentary). But the real point is that this book was a lost opportunity when it comes to the topic of climate change. Nate could have applied his considerable acumen and insight to shed light on this important topic. But the result was instead a very mixed bag of otherwise useful commentary marred by needless misconceptions and inappropriately laundered denialist memes. Don’t get me wrong. I’m still a FON (Fan Of Nate). I will continue to follow his thoughtful commentary on all matters of politics and polling. But when he makes claims about other topics, like climate change, I think I’ll be a lot more skeptical. Skepticism — real skepticism — is, after all — a good thing. Michael Mann is Director of Penn State’s Earth System Science Center and author of ‘Dire Predictions’ and ‘The Hockey Stick and the Climate Wars.’ This piece was also [published at Huffington Post](http://www.huffingtonpost.com/michael-e-mann/nate-silver-climate-change_b_1909482.html) and was reprinted with permission from the author.