# Round 7 CEDA – ASU RV vs. Pitt LM (Aff)

## 1AC

### Inherency

#### Observation One: Inherency

#### Obama pushing nuclear incentives now.

Pistilli 12 (Melissa, reporting on market-shaking news in the resource and mining investment sector with Resource Investing News since 2008, 10-11-12, “Nuclear Power Prominent in US Presidential Candidates’ Energy Policies” 10/11 <http://uraniuminvestingnews.com/12783/nuclear-power-united-states-energy-policies-romney-obama-election.html>)

The Obama administration’s energy policy supports the expansion of nuclear energy. Under Obama, the government’s 2012 budget allocated $36 billion in loan guarantees for new nuclear reactors and more than $800 million in loan guarantees for nuclear research, an IBISWorld report states. The research report also highlights Obama’s Clean Electricity Standard and its push for more electricity to be produced from zero-carbon sources. “These climate-change policies will lead to a boost in nuclear-energy production,” said IBISWorld. New nuclear reactors approved This year, the US approved construction of reactors for the first time in nearly 30 years; they are expected to come online by 2017. The Southern Company (NYSE:SO) won approval from the US Nuclear Regulatory Commission (NRC) to construct two new reactors at its Vogtle power plant near Waynesboro, Georgia. Currently, another 16 plants across the country have applied to the NRC to build 25 more reactors. Last month, the NRC issued a license that allows General Electric-Hitachi Global Laser Enrichment (GLE) to build and operate the first uranium enrichment plant with classified laser technology, a more cost-effective process than employing centrifuges. The plant “could provide a steady supply of uranium enriched right here in the US to the country’s nuclear reactors,” GLE CEO Chris Monetta said. The US Department of Energy (DOE) “has played a pivotal role in advancing a public-private cost-sharing program that supports the development of smaller reactors,” according to former Environmental Protection Agency administrator and former New Jersey Governor Christine Todd Whitman and Dr. Patrick More, co-founder and former leader of Greenpeace — current co-chairs of the Clean and Safe Energy Coalition. Where will waste go? However, the US nuclear revival has been held up by the fact that the country lacks a long-term plan for dealing with nuclear waste. Currently, most plants keep waste onsite in temporary storage pools, but that is only a short-term solution to a long-term problem. In June 2012, a federal appeals court ruled that the NRC has not provided “reasonable assurance” that it has a long-term waste-management solution — as a result, the NRC will not be approving any new projects for some time. The plan had been to move waste to a repository at Nevada’s Yucca Mountain. The US government has already signed contracts with several utilities, including Southern, for waste disposal at Yucca Mountain. The repository was supposed to open in 1998, but politics and legal issues stalled the project for years. Obama put the project on ice in 2010, appointing the Blue Ribbon Commission on America’s Nuclear Future to develop recommendations for creating a safe, long-term solution to nuclear waste management and storage. The Commission delivered its final report in January of this year, calling for the creation of a federal agency aimed at soliciting and evaluating voluntary proposals from states interested in hosting nuclear disposal areas. The idea is similar to what Romney proposed in October 2011 and would involve states offering disposal sites in exchange for monetary compensation. What next? The freeze on new reactor approvals hasn’t stopped the Obama administration from pushing forward on nuclear energy research and development. In late September, the US Department of Energy announced $13 million in funding for university-led nuclear innovation projects under the Nuclear Energy University Programs (NEUP). “The awards … build upon the Obama Administration’s broader efforts to promote a sustainable nuclear industry in the U.S. and cultivate the next generation of scientists and engineers,” the DOE press release states. The funding was awarded to research groups at the Georgia Institute of Technology, the University of Illinois at Urbana-Champaign and the University of Tennessee.

#### But, the US is not reversing course on reprocessing.

Saillan 10 (Charles, attorney with the New Mexico Environment Department, Harvard Environmental Law Review, 2010, “DISPOSAL OF SPENT NUCLEAR FUEL IN THE UNITED STATES AND EUROPE: A PERSISTENT ENVIRONMENTAL PROBLEM”, Vol. 34, RSR)

The U.S. government’s position on reprocessing changed in 1974 when India exploded a nuclear weapon in the state of Rajasthan. 150 The weapon’s plutonium was isolated with reprocessing equipment imported for “peaceful purposes.” 151 Rightly concerned about the dangers of nuclear proliferation, President Ford announced that the United States would no longer view reprocessing as a necessary step in the nuclear fuel cycle. He called on other nations to place a three-year moratorium on the export of reprocessing technology. 152 In 1977, President Carter indefinitely deferred domestic efforts at reprocessing and continued the export embargo. 153 Although President Reagan reversed the ban on domestic reprocessing in 1981, 154 the nuclear industry has not taken the opportunity to invest in the technology. In 2006, the George W. Bush Administration proposed a Global Nuclear Energy Partner ship (“GNEP”) for expanded worldwide nuclear power production. 155 As a key component of the GNEP proposal, the United States would provide other nations with a reliable supply of nuclear fuel, and it would take back the spent fuel for reprocessing at a commercial facility in the United States, thus avoiding the spread of reprocessing technology. 156 However, the Obama Administration substantially curtailed GNEP in 2009, and is “no longer pursuing domestic commercial reprocessing.” 157

### Observation 2

#### Observation Two: Waste

#### In the short term US nuclear waste is stored on-site.

Galbraith 11 (Kate, Staff Writer, “A New Urgency to the Problem of Storing Nuclear Waste”, New York Times, 11-27-11, http://www.nytimes.com/2011/11/28/business/energy-environment/a-new-urgency-to-the-problem-of-storing-nuclear-waste.html, RSR)

Other countries are also looking at waste in new ways in the post-Fukushima world. Right now, worldwide, most spent fuel waste is stored on the site of the facility that produced it, in spent-fuel pools and, after it eventually cools, dry casks. Experts say dispersed storage is expensive and that central storage would be more secure. Few countries , apart from Sweden and Finland, have moved forward on centralized disposal sites, deep in the earth, designed to hold the waste permanently. France is evaluating a permanent disposal site for spent fuel , near the remote northeastern village of Bure.

#### On-site storage is dangerous – storage pools are vulnerable to accidents.

Alvarez 12 (Robert, Senior Scholar at IPS, where he is currently focused on nuclear disarmament, environmental, and energy policies, “Improving Spent-Fuel Storage at Nuclear Reactors”, Winter, ISSUES IN SCIENCE AND TECHNOLOGY, RSR)

Until the NAS completes its study, if it agrees to do so, the bulk of current attention is focused on the NRC’s analysis of the Fukushima disaster. As in Japan, U.S. spent-fuel pools are not required to have defense-in-depth nuclear safety features. They are not covered by the types of heavy containment structures that cover reactor vessels. Reactor operators are not required have backup power supplies to circulate water in the pools and keep them cool in the event of onsite power failures. Reactor control rooms rarely have instrumentation keeping track of the pools’ water levels and chemistry. (In one incident at a U.S. reactor, water levels dropped to a potentially dangerous level after operators simply failed to look into the pool area.) Some reactors may not have the necessary capabilities to restore water to pools when needed. Quite simply, spent-fuel pools at nuclear reactors are not required to have the same level of nuclear safety protection as required for reactors, because the assumption was that they would be used only for short-term storage before the rods were removed for reprocessing or permanent storage. In its interim report, the NRC task force recognized these shortcomings and recommended that the NRC order reactor operators to: • “. . . provide sufficient safety-related instrumentation, able to withstand design-basis natural phenomena, to monitor key spent fuel pool parameters (i.e., water level, temperature, and area radiation levels) from the control room.” • “. . . revise their technical specifications to address requirements to have one train of onsite emergency electrical power operable for spent fuel pool makeup and spent fuel pool instrumentation when there is irradiated fuel in the spent fuel pool, regardless of the operational mode of the reactor.” • “. . . have an installed seismically qualified means to spray water into the spent fuel pools, including an easily accessible connection to supply the water (e.g., using a portable pump or pumper truck) at grade outside the building.” Improving pool safety is certainly important. For decades, nuclear safety research has consistently pointed out that severe accidents could occur at spent-fuel pools that would result in catastrophic consequences. A severe pool fire could render about 188 square miles around the nuclear reactor uninhabitable, cause as many as 28,000 cancer fatalities, and cause $59 billion in damage, according to a 1997 report for the NRC by Brookhaven National Laboratory. If the fuel were exposed to air and steam, the zirconium cladding around the fuel would react exothermically, catching fire at about 800 degrees Celsius. Particularly worrisome are the large amounts of cesium-137 in spent-fuel pools, because nearly all of this dangerous isotope would be released into the environment in a fire, according to the NRC. Although it is too early to know the full extent of long-term land contamination from the accident at the Dai-Ichi station, fragmentary evidence has been reported of high cesium-137 levels as far away as metropolitan Tokyo. The NRC also has reported that spent-fuel fragments were found a mile away from the reactor site. The damage from a large release of fission products, particularly cesium-137, was demonstrated at Chernobyl. More than 100,000 residents from 187 settlements were permanently evacuated because of contamination by cesium-137. The total area of this radiation-control zone is huge: more than 6,000 square miles, equal to roughly two-thirds the area of New Jersey. During the following decade, the population of this area declined by almost half because of migration to areas of lower contamination.

#### The densely packed fuel is enough to trigger a full scaled meltdown – Fukushima proves.

Kinitisch 11 (Eli, Reporter at Science Magazine, “Waste Panel Expected To Back Interim Storage”, Science Magazine, Vol. 333, 7-8-11, RSR)

In any case, experts agree, some new plan for waste storage is essential. Waste currently stored in pools and casks at U.S. sites does not pose “unmanageable … safety or security risks,” says a subcommittee report. But every ton that stays at reactor sites makes those risks slightly greater. Fuel in U.S. spent fuel pools is packed four times as densely as it was 25 years ago, raising concerns about the risk of explosions or meltdown if the pools were to empty in an accident. The tsunami that devastated the Fukushima nuclear plant in Japan in March may have resulted in a loss of water in one of its ponds (Science, 1 April, p. 24). A draft commission report says the issue of the safety of keeping fuel densely packed in pools should be “reexamined,” although “it is still too early to draw deﬁ nitive conclusions” from the Fukushima accident. It calls for an expert panel at the National Academies to tackle the subject.

#### These catastrophic meltdowns cause extinction – reactors contain 100x the radiation of nuclear bombs.

Lendman 11 (Stephen, Research Associate of the Centre for Research on Globalization,

03/ 13, “Nuclear Meltdown in Japan,”, The People’s Voice <http://www.thepeoplesvoice.org/TPV3/Voices.php/2011/03/13/nuclear-meltdown-in-japan>, accessed 8-2-12, RSR)

Reuters said the 1995 Kobe quake caused $100 billion in damage, up to then the most costly ever natural disaster. This time, from quake and tsunami damage alone, that figure will be dwarfed. Moreover, **under a worst case** core **meltdown, all bets are off as the entire region and beyond will be threatened with permanent contamination**, making the most affected areas unsafe to live in. On March 12, Stratfor Global Intelligence issued a "Red Alert: Nuclear Meltdown at Quake-Damaged Japanese Plant," saying: Fukushima Daiichi "nuclear power plant in Okuma, Japan, appears to have caused a reactor meltdown." Stratfor downplayed its seriousness, adding that such an event "does not necessarily mean a nuclear disaster," that already may have happened - the ultimate nightmare short of nuclear winter. According to Stratfor, "(A)s long as the reactor core, which is specifically designed to contain high levels of heat, pressure and radiation, remains intact, the melted fuel can be dealt with. If the (core's) breached but the containment facility built around (it) remains intact, the melted fuel can be....entombed within specialized concrete" as at Chernobyl in 1986. In fact, that disaster killed nearly one million people worldwide from nuclear radiation exposure. In their book titled, "Chernobyl: Consequences of the Catastrophe for People and the Environment," Alexey Yablokov, Vassily Nesterenko and Alexey Nesterenko said: "For the past 23 years, it has been clear that there is a danger greater than nuclear weapons concealed within nuclear power. **Emissions from** this **one reactor** exceeded a hundred**-fold the radioactive contamination of** the bombs dropped on **Hiroshima and Nagasaki.**" "**No** citizen of any **country** can be assured that he or she **can be protected from radioactive contamination. One nuclear reactor can pollute half the globe.** Chernobyl fallout covers the entire Northern Hemisphere." Stratfor explained that if Fukushima's floor cracked, "it is highly likely that the melting fuel will burn through (its) containment system and enter the ground. This has never happened before," at least not reported. If now occurring, "containment goes from being merely dangerous, time consuming and expensive to nearly impossible," making the quake, aftershocks, and tsunamis seem mild by comparison. Potentially, millions of lives will be jeopardized. Japanese officials said Fukushima's reactor container wasn't breached. Stratfor and others said it was, making the potential calamity far worse than reported. Japan's Nuclear and Industrial Safety Agency (NISA) said the explosion at Fukushima's Saiichi No. 1 facility could only have been caused by a core meltdown. In fact, 3 or more reactors are affected or at risk. Events are fluid and developing, but remain very serious. The possibility of an extreme catastrophe can't be discounted. Moreover, independent nuclear safety analyst John Large told Al Jazeera that by venting radioactive steam from the inner reactor to the outer dome, a reaction may have occurred, causing the explosion. "When I look at the size of the explosion," he said, "it is my opinion that there could be a very large leak (because) fuel continues to generate heat." Already, Fukushima way exceeds Three Mile Island that experienced a partial core meltdown in Unit 2. Finally it was brought under control, but coverup and denial concealed full details until much later. According to anti-nuclear activist Harvey Wasserman, Japan's quake fallout may cause nuclear disaster, saying: "This is a very serious situation. **If the cooling system fails** (apparently it has at two or more plants), the super-heated **radioactive fuel rods will melt**, and (if so) you could conceivably have an explosion," that, in fact, occurred. As a result, **massive radiation releases may follow**, impacting the entire region. "**It could be**, literally, **an apocalyptic event.** The reactor could blow." If so, Russia, China, Korea and most parts of Western Asia will be affected. Many thousands will die, potentially millions under a worse case scenario, including far outside East Asia.¶ Moreover, at least five reactors are at risk. Already, a 20-mile wide radius was evacuated. What happened in Japan can occur anywhere. Yet Obama's proposed budget includes $36 billion for new reactors, a shocking disregard for global safety.¶ Calling Fukushima an "apocalyptic event," Wasserman said "(t)hese nuclear plants have to be shut," let alone budget billions for new ones. It's unthinkable, he said. If a similar disaster struck California, nuclear fallout would affect all America, Canada, Mexico, Central America, and parts of South America.¶ Nuclear Power: A Technology from Hell¶ Nuclear expert Helen Caldicott agrees, telling this writer by phone that a potential regional catastrophe is unfolding. Over 30 years ago, she warned of its inevitability. Her 2006 book titled, "Nuclear Power is Not the Answer" explained that contrary to government and industry propaganda, even during normal operations, nuclear power generation causes significant discharges of greenhouse gas emissions, as well as hundreds of thousands of curies of deadly radioactive gases and other radioactive elements into the environment every year.¶ Moreover, nuclear plants are atom bomb factories. A 1000 megawatt reactor produces 500 pounds of plutonium annually. Only 10 are needed for a bomb able to devastate a large city, besides causing permanent radiation contamination.¶ Nuclear Power not Cleaner and Greener¶ Just the opposite, in fact. Although a nuclear power plant releases no carbon dioxide (CO2), the primary greenhouse gas, a vast infrastructure is required. Called the nuclear fuel cycle, it uses large amounts of fossil fuels.¶ Each cycle stage exacerbates the problem, starting with the enormous cost of mining and milling uranium, needing fossil fuel to do it. How then to dispose of mill tailings, produced in the extraction process. It requires great amounts of greenhouse emitting fuels to remediate.¶ Moreover, other nuclear cycle steps also use fossil fuels, including converting uranium to hexafluoride gas prior to enrichment, the enrichment process itself, and conversion of enriched uranium hexafluoride gas to fuel pellets. In addition, nuclear power plant construction, dismantling and cleanup at the end of their useful life require large amounts of energy.¶ There's more, including contaminated cooling water, nuclear waste, its handling, transportation and disposal/storage, problems so far unresolved. Moreover, nuclear power costs and risks are so enormous that the industry couldn't exist without billions of government subsidized funding annually.¶ The Unaddressed Human Toll from Normal Operations¶ Affected are uranium miners, industry workers, and potentially everyone living close to nuclear reactors that routinely emit harmful radioactive releases daily, harming human health over time, causing illness and early death.¶ The link between radiation exposure and disease is irrefutable, depending only on the amount of cumulative exposure over time, Caldicott saying:¶ "If a regulatory gene is biochemically altered by radiation exposure, the cell will begin to incubate cancer, during a 'latent period of carcinogenesis,' lasting from two to sixty years."¶ In fact, a single gene mutation can prove fatal. No amount of radiation exposure is safe. Moreover, when combined with about 80,000 commonly used toxic chemicals and contaminated GMO foods and ingredients, it causes 80% of known cancers, putting everyone at risk everywhere.¶ Further, the combined effects of allowable radiation exposure, uranium mining, milling operations, enrichment, and fuel fabrication can be devastating to those exposed. Besides the insoluble waste storage/disposal problem, nuclear accidents happen and catastrophic ones are inevitable.¶ Inevitable Meltdowns¶ Caldicott and other experts agree they're certain in one or more of the hundreds of reactors operating globally, many years after their scheduled shutdown dates unsafely. Combined with human error, imprudently minimizing operating costs, internal sabotage, or the effects of a high-magnitude quake and/or tsunami, an eventual catastrophe is certain.¶ Aging plants alone, like Japan's Fukushima facility, pose unacceptable risks based on their record of near-misses and meltdowns, resulting from human error, old equipment, shoddy maintenance, and poor regulatory oversight. However, under optimum operating conditions, all nuclear plants are unsafe. Like any machine or facility, they're vulnerable to breakdowns, that if serious enough can cause enormous, possibly catastrophic, harm.¶ Add nuclear war to the mix, also potentially inevitable according to some experts, by accident or intent, including Steven Starr saying:¶ "Only a single failure of nuclear deterrence is required to start a nuclear war," the consequences of which "would be profound, potentially killing "tens of millions of people, and caus(ing) long-term, catastrophic disruptions of the global climate and massive destruction of Earth's protective ozone layer. The result would be a global nuclear famine that could kill up to one billion people."¶ Worse still is nuclear winter, the ultimate nightmare, able to end all life if it happens. It's nuclear proliferation's unacceptable risk, a clear and present danger as long as nuclear weapons and commercial dependency exist.¶ In 1946, Enstein knew it, saying:¶ "Our world faces a crisis as yet unperceived by those possessing the power to make great decisions for good and evil. The unleashed power of the atom has changed everything save our modes of thinking, and thus we drift toward unparalleled catastrophe."¶ He envisioned two choices - abolish all forms of nuclear power or face extinction. No one listened. The Doomsday Clock keeps ticking.

#### In the long term, waste will be stored at Yucca – only option.

Tollefson 11 (Jeff, former Knight fellow in science journalism at MIT, “Battle of Yucca Mountain rages on”, Nature, Vol. 473, No. 266, 5-19-11, RSR)

The commission intends to issue a draft report in July and a final one next January. With its recommendations in hand, the administration is expected to propose legislation that would establish a new process for identifying nuclear waste storage sites. Yet such a process could well take decades, the GAO report concludes, and the government’s reversal at Yucca Mountain could serve to galvanize public opposition at other candidate sites. Since the debate began, “no states have expressed an interest in hosting a permanent repository for this spent nuclear fuel ... including the states with sites currently storing the waste”, the report adds. The commission’s scheme for an interim storage facility may prove no more appealing, given fears that ‘interim’ means permanent as long as the present impasse continues. Such fears have in the past halted interim storage proposals in states such as Wyoming. And even if one community decides that it is willing to play host to the waste, that doesn’t mean others won’t challenge nuclear-waste transportation routes. Nevertheless, the nation will need to find a permanent repository at some point, and Yucca Mountain, it seems, is down but not out. “Yucca Mountain has nine lives,” says Ed Davis, a nuclear consultant who heads the Pegasus Group in Washington DC. “And nobody knows how many lives have been used up.”

#### Yucca explosion is likely and results in extinction – top geologists agree.

Broad 90 (William, NYT Staff, The New York Times, November 18)

One scientist, however, has quietly but persistently warned that this vision of a safe repository is little more than a delusion.¶ Jerry S. Szymanski (pronounced sha-MAN-ski) is a geologist who works on the Yucca Mountain project for the United States Department of Energy, which is in charge of evaluating the site and would run the repository. For years, he has argued that ground water under the mountain could eventually well up, flood the facility and prompt a calamity of vast proportions. The geological action is easy to visualize. Crustal stresses in the area slowly open fractures and faults under and within the mountain. Water seeps into them. An earthquake occurs, compressing the fractures and forcing the ground water upward into the dump. As the inrushing water comes into contact with the hot canisters of nuclear waste, the water is vaporized, threatening to cause explosions, ruptures and the release of radioactivity.¶ Szymanski has worked for the D.O.E. since 1983. He takes pains to distance himself from foes of nuclear power. "This report is not the act of a disgruntled employee or an antinuclear freak," he wrote in the preface of a study he made on Yucca Mountain. "Rather, it is the act of a deeply concerned scientist, a public servant and a pro-nuclear activist."¶ He chain-smokes Winstons and drinks Scotch, neither of which seems to impair his ability to take brisk hikes up the mountain with his dog Max, a fierce-looking but friendly creature that is half Labrador, half pit bull. Szymanski's eyes flash when he speaks of those who oppose his view of the evidence. "It's banality of thought," he growls, "absence of depth." That same kind of banality, he says, was responsible for the Holocaust, around which his earliest memories revolve, and for a brutal crackdown in his native Poland, which prompted him to flee that country two decades ago with his wife and 6-month-old son. Today, he says, banality is prompting the Federal Government to court disaster.¶ Squinting in the bright Nevada sunlight, a cigarette firmly in his mouth, Szymanski walks into Trench No. 8, a deep scar on the side of Yucca Mountain dug at the behest of the Energy Department. It runs across a fault. He bends down to examine a one-yard-wide vein of rock whose creamy color stands in contrast to the dark, surrounding earth tones. His fingers play over its surface. The vein was deposited, he says, by mineral-laden water that welled up and turned this desolate site into an oasis.¶ "This is above the repository level," he says with studied understatement. The implication is clear and troubling -- where water once flowed, it might flow again.¶ The repository would hold up to 70,000 metric tons of waste. A large release would have an environmental impact that, by some estimates, would exceed that of a nuclear war. For perspective, the explosion of the Chernobyl reactor in the Soviet Union shot into the atmosphere just a few dozen pounds of highly radioactive nuclear waste, one of the most dangerous components of which was cesium 137 (it would also be a significant part of the waste at Yucca Mountain). Various studies say the consequences of Chernobyl will eventually be somewhere between 17,000 and 475,000 deaths from cancer, as well as an alarming number of serious ailments.¶ For half a decade, Szymanski's was a lone voice. His grim appraisal was opposed by almost everyone else on the Yucca Mountain project, who let their displeasure be known in subtle and not-so-subtle ways. But recently, growing ranks of geologists have backed his view. The dispute is by no means resolved.¶ If Szymanski is right and his warnings are heeded, it could mark the end of the Yucca Mountain project. The retreat would be a stunning setback for the Government and the nuclear-power industry, which is poised for a revival. If he is right and his warnings go unheeded, some experts say it might be the beginning of the ultimate end.¶ "You flood that thing and you could blow the top off the mountain," says Charles B. Archambeau, a geophysicist at the University of Colorado who has reviewed Szymanski's work and found it persuasive. "At the very least, the radioactive material would go into the ground water and spread to Death Valley, where there are hot springs all over the place, constantly bringing water up from great depths. It would be picked up by the birds, the animals, the plant life. It would start creeping out of Death Valley. You couldn't stop it. That's the nightmare. It could slowly spread to the whole biosphere. If you want to envision the end of the world, that's it."

#### Reprocessing would remove the waste problem – the waste we currently store can be reused

Bastin 8 (Clinton, Former Chemical Engineer at the Atomic Energy Commission, 21st Century Science and Technology, “We Need to Reprocess Spent Nuclear Fuel, And Can Do It Safely, At Reasonable Cost”, 2008, [http://www.21stcenturysciencetech.com/Articles%202008/ Summer\_2008/Reprocessing.pdf](http://www.21stcenturysciencetech.com/Articles%202008/Summer_2008/Reprocessing.pdf), RSR)

The concept of used nuclear fuel as “nuclear waste” is a fiction created by the opponents of nuclear energy. Used nuclear fuel isn’t waste at all, but a renewable resource that can be reprocessed into new nuclear fuel and valuable isotopes. When we entered the nuclear age, the great promise of nuclear energy wasitsrenewability, making it an inexpensive and efficient way to produce electricity. It was assumed that the nations making use of nuclear energy would reprocess their spent fuel, completing the nuclear fuel cycle by recycling the nuclear fuel after it was burned in a reactor, to extract the 95 to 99 percent of unused uranium in it that can be turned into new fuel. This means that if the United States buries its 70,000 metric tons of spent nuclear fuel, we would be wasting 66,000 metric tons of uranium-28, which could be used to make new fuel. In addition, we would be wasting about 1,200 metric tons of fissile uranium-25 and plutonium-29, which can also be burned as fuel. Because of the high energy density in the nucleus, this relatively small amount of U.S. spent fuel (it would fit in one small house) is equivalent in energy to about 20 percent of the U.S. oil reserves. About 96 percent of the spent fuel the United States is now storing can be turned into new fuel. The 4 percent of the socalled waste that remains—2,500 metric tons—consists of highly radioactive materials, but these are also usable. There are about 80 tons each of cesium-17 and strontium-90 that could be separated out for use in medical applications, such as sterilization of medical supplies. Using isotope separation techniques, and fast-neutron bombardment for transmutation (technologies that the United States pioneered but now refuses to develop), we could separate out all sorts of isotopes, like americium, which is used in smoke detectors, or isotopes used in medical testing and treatment. Right now, the United Statesmust import 90 percent of its medical isotopes, used in 40,000 medical procedures daily. The diagram shows a closed nuclear fuel cycle. At present, the United States has no reprocessing, and stores spent fuel in pools or dry storage at nuclear plants. Existing nuclear reactors use only about 1 percent of the total energy value in uranium resources; fast reactors with fuel recycle would use essentially 100 percent, burning up all of the uranium and actinides, the long-lived fission products. In a properly managed and safeguarded system, the plutonium produced in fast reactors would remain in its spent fuel until needed for recycle.Thus, there need be no excess buildup of accessible plutonium. The plutonium could also be fabricated directly into new reactor fuel assemblies to be burned in nuclear plants.

### Observation Three

#### Observation Three: Warming

#### Warming is real and anthropogenic – carbon dioxide increase, polar ice records, melting glaciers, sea level rise all prove.

Prothero 12 (Donald, Lecturer in Geobiology at Cal Tech and Professor of Geology at Occidental College, 3-1-12, “How We Know Global Warming is Real and Human Caused," Skeptic, vol 17 no 2, EBSCO)

Converging Lines of Evidence¶ How do we know that global warming is real and primarily human caused? There are numerous lines of evidence that converge toward this conclusion.¶ 1. Carbon Dioxide Increase.¶ Carbon dioxide in our atmosphere has increased at an unprecedented rate in the past 200 years. Not one data set collected over a long enough span of time shows otherwise. Mann et al. (1999) compiled the past 900 years' worth of temperature data from tree rings, ice cores, corals, and direct measurements in the past few centuries, and the sudden increase of temperature of the past century stands out like a sore thumb. This famous graph is now known as the "hockey stick" because it is long and straight through most of its length, then bends sharply upward at the end like the blade of a hockey stick. Other graphs show that climate was very stable within a narrow range of variation through the past 1000, 2000, or even 10,000 years since the end of the last Ice Age. There were minor warming events during the Climatic Optimum about 7000 years ago, the Medieval Warm Period, and the slight cooling of the Little Ice Age in die 1700s and 1800s. But the magnitude and rapidity of the warming represented by the last 200 years is simply unmatched in all of human history. More revealing, die timing of this warming coincides with the Industrial Revolution, when humans first began massive deforestation and released carbon dioxide into the atmosphere by burning an unprecedented amount of coal, gas, and oil.¶ 2. Melting Polar Ice Caps.¶ The polar icecaps are thinning and breaking up at an alarming rate. In 2000, my former graduate advisor Malcolm McKenna was one of the first humans to fly over the North Pole in summer time and see no ice, just open water. The Arctic ice cap has been frozen solid for at least the past 3 million years (and maybe longer),4 but now the entire ice sheet is breaking up so fast that by 2030 (and possibly sooner) less than half of the Arctic will be ice covered in the summer.5 As one can see from watching the news, this is an ecological disaster for everything that lives up there, from the polar bears to the seals and walruses to the animals they feed upon, to the 4 million people whose world is melting beneath their feet. The Antarctic is thawing even faster. In February-March 2002, the Larsen B ice shelf - over 3000 square km (the size of Rhode Island) and 220 m (700 feet) thick- broke up in just a few months, a story typical of nearly all the ice shelves in Antarctica. The Larsen B shelf had survived all the previous ice ages and interglacial warming episodes over the past 3 million years, and even the warmest periods of the last 10,000 years- yet it and nearly all the other thick ice sheets on the Arctic, Greenland, and Antarctic are vanishing at a rate never before seen in geologic history.¶ 3. Melting Glaciers.¶ Glaciers are all retreating at the highest rates ever documented. Many of those glaciers, along with snow melt, especially in the Himalayas, Andes, Alps, and Sierras, provide most of the freshwater that the populations below the mountains depend upon - yet this fresh water supply is vanishing. Just think about the percentage of world's population in southern Asia (especially India) that depend on Himalayan snowmelt for their fresh water. The implications are staggering. The permafrost that once remained solidly frozen even in the summer has now Üiawed, damaging the Inuit villages on the Arctic coast and threatening all our pipelines to die North Slope of Alaska. This is catastrophic not only for life on the permafrost, but as it thaws, the permafrost releases huge amounts of greenhouse gases which are one of the major contributors to global warming. Not only is the ice vanishing, but we have seen record heat waves over and over again, killing thousands of people, as each year joins the list of the hottest years on record. (2010 just topped that list as the hottest year, surpassing the previous record in 2009, and we shall know about 2011 soon enough). Natural animal and plant populations are being devastated all over the globe as their environments change.6 Many animals respond by moving their ranges to formerly cold climates, so now places that once did not have to worry about disease-bearing mosquitoes are infested as the climate warms and allows them to breed further north.¶ 4. Sea Level Rise.¶ All that melted ice eventually ends up in the ocean, causing sea levels to rise, as it has many times in the geologic past. At present, the sea level is rising about 3-4 mm per year, more than ten times the rate of 0.10.2 mm/year that has occurred over the past 3000 years. Geological data show Üiat ttie sea level was virtually unchanged over the past 10,000 years since the present interglacial began. A few mm here or there doesn't impress people, until you consider that the rate is accelerating and that most scientists predict sea levels will rise 80-130 cm in just the next century. A sea level rise of 1.3 m (almost 4 feet) would drown many of the world's low-elevation cities, such as Venice and New Orleans, and low-lying countries such as the Netherlands or Bangladesh. A number of tiny island nations such as Vanuatu and the Maldives, which barely poke out above the ocean now, are already vanishing beneath the waves. Eventually their entire population will have to move someplace else.7 Even a small sea level rise might not drown all these areas, but they are much more vulnerable to the large waves of a storm surge (as happened with Hurricane Katrina), which could do much more damage than sea level rise alone. If sea level rose by 6 m (20 feet), most of die world's coastal plains and low-lying areas (such as the Louisiana bayous, Florida, and most of the world's river deltas) would be drowned.¶ Most of the world's population lives in lowelevation coastal cities such as New York, Boston, Philadelphia, Baltimore, Washington, D.C., Miami, and Shanghai. All of those cities would be partially or completely under water with such a sea level rise. If all the glacial ice caps melted completely (as they have several times before during past greenhouse episodes in the geologic past), sea level would rise by 65 m (215 feet)! The entire Mississippi Valley would flood, so you could dock an ocean liner in Cairo, Illinois. Such a sea level rise would drown nearly every coastal region under hundreds of feet of water, and inundate New York City, London and Paris. All that would remain would be the tall landmarks such as the Empire State Building, Big Ben, and the Eiffel Tower. You could tie your boats to these pinnacles, but the rest of these drowned cities would lie deep underwater.

#### We must act quickly with long term technological innovation to avoid the irreversible climate change triggered by 2°C.

Peters, et al. 12(Glen (Center for International Climate and Environmental Research – Oslo); Robbie Andrew (Center for International Climate and Environmental Research – Oslo); Tom Boden (Carbon Dioxide Information Analysis Center (CDIAC), Oak Ridge National Laboratory); Josep Canadell (Global Carbon Project, CSIRO Marine and Atmospheric Research, Canberra, Australia); Philippe Ciais (Laboratoire des Sciences du Climat et de l’Environnement, Gif sur Yvette, France); Corinne Le Quéré (Tyndall Centre for Climate Change Research, University of East Anglia, Norwich, UK); Gregg Marland (Research Institute for Environment, Energy, and Economics, Appalachian State University); Michael R. Raupach (Global Carbon Project, CSIRO Marine and Atmospheric Research, Canberra, Australia); and Charlie Wilson (Tyndall Centre for Climate Change Research, University of East Anglia, Norwich, UK), “The challenge to keep global warming below 2 °C”, Nature Climate Change, 12-2-12, RSR)

It is important to regularly re-assess the relevance of emissions scenarios in light of changing global circumstances3,8. In the past, decadal trends in CO2 emissions have responded slowly to changes in the underlying emission drivers because of inertia and path dependence in technical, social and political systems9. Inertia and path dependence are unlikely to be affected by short-term fluctuations2,3,9 — such as financial crises10 — and it is probable that emissions will continue to rise for a period even after global mitigation has started11. Thermal inertia and vertical mixing in the ocean, also delay the temperature response to CO2 emissions12. Because of inertia, path dependence and changing global circumstances, there is value in comparing observed decadal emission trends with emission scenarios to help inform the prospect of different futures being realized, explore the feasibility of desired changes in the current emission trajectory and help to identify whether new scenarios may be needed. Global CO2 emissions have increased from 6.1±0.3 Pg C in 1990 to 9.5±0.5 Pg C in 2011 (3% over 2010), with average annual growth rates of 1.9% per year in the 1980s, 1.0% per year in the 1990s, and 3.1% per year since 2000. We estimate that emissions in 2012 will be 9.7±0.5 Pg C or 2.6% above 2011 (range of 1.9–3.5%) and 58% greater than 1990 (Supplementary Information and ref. 13). The observed growth rates are at the top end of all four generations of emissions scenarios (Figs 1 and 2). Of the previous illustrative IPCC scenarios, only IS92-E, IS92-F and SRES A1B exceed the observed emissions (Fig. 1) or their rates of growth (Fig. 2), with RCP8.5 lower but within uncertainty bounds of observed emissions. Observed emission trends are in line with SA90-A, IS92-E and IS92-F, SRES A1FI, A1B and A2, and RCP8.5 (Fig. 2). The SRES scenarios A1FI and A2 and RCP8.5 lead to the highest temperature projections among the scenarios, with a mean temperature increase of 4.2–5.0 °C in 2100 (range of 3.5–6.2 °C)14, whereas the SRES A1B scenario has decreasing emissions after 2050 leading to a lower temperature increase of 3.5 °C (range 2.9–4.4°C)14. Earlier research has noted that observed emissions have tracked the upper SRES scenarios15,16 and Fig. 1 confirms this for all four scenario generations. This indicates that the space of possible pathways could be extended above the top-end scenarios to accommodate the possibility of even higher emission rates in the future. The new RCPs are particularly relevant because, in contrast to the earlier scenarios, mitigation efforts consistent with longterm policy objectives are included among the pathways2,. RCP3-PD (peak and decline in concentration) leads to a mean temperature increase of 1.5 °C in 2100 (range of 1.3–1.9 °C)14. RCP3–PD requires net negative emissions (for example, bioenergy with carbon capture and storage) from 2070, but some scenarios suggest it is possible to stay below 2 °C without negative emissions17–19. RCP4.5 and RCP6 — which lie between RCP3–PD and RCP8.5 in the longer term — lead to a mean temperature increase of 2.4 °C (range of 1.0–3.0 °C) and 3.0 °C (range of 2.6–3.7 °C) in 2100, respectively14. For RCP4.5, RCP6 and RCP8.5, temperatures will continue to increase after 2100 due to on-going emissions14 and inertia in the climate system12. Current emissions are tracking slightly above RCP8.5, and given the growing gap between the other RCPs (Fig. 1), significant emission reductions are needed by 2020 to keep 2 °C as a feasible goal18–20. To follow an emission trend that can keep the temperature increase below 2 °C (RCP3-PD) requires sustained global CO2 mitigation rates of around 3% per year, if global emissions peak before 202011,19. A delay in starting mitigation activities will lead to higher mitigation rates11, higher costs21,22, and the target of remaining below 2 °C may become unfeasible18,20. If participation is low, then higher rates of mitigation are needed in individual countries, and this may even increase mitigation costs for all countries22. Many of these rates assume that negative emissions will be possible and affordable later this century11,17,18,20. Reliance on negative emissions has high risks because of potential delays or failure in the development and large-scale deployment of emerging technologies such as carbon capture and storage, particularly those connected to bioenergy17,18. Although current emissions are tracking the higher scenarios, it is still possible to transition towards pathways consistent with keeping temperatures below 2 °C (refs 17,19,20). The historical record shows that some countries have reduced CO2 emissions over 10-year periods, through a combination of (non-climate) policy intervention and economic adjustments to changing resource availability. The oil crisis of 1973 led to new policies on energy supply and energy savings, which produced a decrease in the share of fossil fuels (oil shifted to nuclear) in the energy supply of Belgium, France and Sweden, with emission reductions of 4–5% per year sustained over 10 or more years (Supplementary Figs S17–19). A continuous shift to natural gas — partially substituting coal and oil — led to sustained mitigation rates of 1–2% per year in the UK in the 1970s and again in the 2000s, 2% per year in Denmark in the 1990–2000s, and 1.4% per year since 2005 in the USA (Supplementary Figs S10–12). These examples highlight the practical feasibility of emission reductions through fuel substitution and efficiency improvements, but additional factors such as carbon leakage23 need to be considered. These types of emission reduction can help initiate a transition towards trajectories consistent with keeping temperatures below 2 °C, but further mitigation measures are needed to complete and sustain the reductions. Similar energy transitions could be encouraged and co-ordinated across countries in the next 10 years using available technologies19, but well-targeted technological innovations24 are required to sustain the mitigation rates for longer periods17. To move below the RCP8.5 scenario — avoiding the worst climate impacts — requires early action17,18,21 and sustained mitigation from the largest emitters22 such as China, the United States, the European Union and India. These four regions together account for over half of global CO2 emissions, and have strong and centralized governing bodies capable of co-ordinating such actions. If similar energy transitions are repeated over many decades in a broader range of developed and emerging economies, the current emission trend could be pulled down to make RCP3‑PD, RCP4.5 and RCP6 all feasible futures. A shift to a pathway with the highest likelihood to remain below 2 °C above preindustrial levels (for example, RCP3-PD), requires high levels of technological, social and political innovations, and an increasing need to rely on net negative emissions in the future11,17,18. The timing of mitigation efforts needs to account for delayed responses in both CO2 emissions9 (because of inertia in technical, social and political systems) and also in global temperature12 (because of inertia in the climate system). Unless large and concerted global mitigation efforts are initiated soon, the goal of remaining below 2 °C will very soon become unachievable.

#### Scenario one is biodiversity

#### Warming and CO2 emissions kill biodiversity – newest research shows that ecosystems are on the brink due to human activity.

Barnosky et al 12 (Anthony (Department of Integrative Biology, University of California, Berkeley); Elizabeth Hadly (Department of Biology, Stanford University); Jordi Bascompte (Integrative Ecology Group, Estacion Biologica de Donana, Sevilla, Spain); Eric Berlow (TRU NORTH Labs, Berkeley, California); James H. Brown (Department of Biology, The University of New Mexico); Mikael Fortelius (Department of Geosciences and Geography and Finnish Museum of Natural History); Wayne Getz (Department of Environmental Science, Policy, and Management, University of California, Berkeley); John Harte (Department of Environmental Science, Policy, and Management, University of California, Berkeley); Alan Hastings (Department of Environmental Science and Policy, University of California – Davis); Pablo Marquet (Departamento de Ecologıa, Facultad de Ciencias Biologicas, Pontificia Universidad Catolica de Chile); Neo Martinez (Pacific Ecoinformatics and Computational Ecology Lab); Arne Mooers (Department of Biological Sciences, Simon Fraser University); Peter Roopnarine (California Academy of Sciences); Geerta Vermeij (Department of Geology, University of California – Davis); John W. Williams (Department of Geography, University of Wisconsin); Rosemary Gilespie (Department of Environmental Science, Policy, and Management, University of California, Berkeley); Justin Kitzes (Department of Environmental Science, Policy, and Management, University of California, Berkeley); Charles Marshall (Department of Integrative Biology, University of California, Berkeley); Nicholas Matzke (Department of Integrative Biology, University of California, Berkeley); David Mindell ( Department of Biophysics and Biochemistry, University of California, San Francisco); Eloy Revilla (Department of Conservation Biology, Estacion Biologica de Donana); and Adam B. Smith (Center for Conservation and Sustainable Development, Missouri Botanical Garden), “Approaching a state shift in Earth’s biosphere”, Nature, May 2012, RSR)

As a result of human activities, direct local-scale forcings have accumulated to the extent that indirect, global-scale forcings of biological change have now emerged. Direct forcing includes the conversion of ,43% of Earth’s land to agricultural or urban landscapes, with much of the remaining natural landscapes networked with roads 1,2,34,35 . This exceeds the physical transformation that occurred at the last global-scale critical transition, when ,30% of Earth’s surface went from being covered by glacial ice to being ice free. The indirect global-scale forcings that have emerged from human activities include drastic modification of how energy flows through the global ecosystem. An inordinate amount of energy now is routed through one species, Homo sapiens. Humans commandeer ,20–40% of global net primary productivity 1,2,35 (NPP) and decrease overall NPP through habitat degradation. Increasing NPP regionally through atmospheric and agricultural deposition of nutrients (for example nitrogen and phosphorus) does not make up the shortfall 2 . Second, through the release of energy formerly stored in fossil fuels, humans have substantially increased the energy ultimately available to power the global ecosystem. That addition does not offset entirely the human appropriation of NPP, because the vast majority of that ‘extra’ energy is used to support humans and their domesticates, the sum of which comprises large-animal biomass that is far beyond that typical of pre-industrial times 27 . A decrease in this extra energy budget, which is inevitable if alternatives do not compensate for depleted fossil fuels, is likely to impact human health and economies severely 28 , and also to diminish biodiversity 27 , the latter because even more NPP would have to be appropriated by humans, leaving less for other species 36 . By-products of altering the global energy budget are major modifications to the atmosphere and oceans. Burning fossil fuels has increased atmospheric CO2 concentrations by more than a third (,35%) with respect to pre-industrial levels, with consequent climatic disruptions that include a higher rate of global warming than occurred at the last global-scale state shift 37 . Higher CO2 concentrations have also caused the ocean rapidly to become more acidic, evident as a decrease in pH by ,0.05 in the past two decades 38 . In addition, pollutants from agricultural run-off and urban areas have radically changed how nutrients cycle through large swaths of marine areas 16 . Already observable biotic responses include vast ‘dead zones’ in the near-shore marine realm39 , as well as the replacement of .40% of Earth’s formerly biodiverse land areas with landscapes that contain only a few species of crop plants, domestic animals and humans 3,40 . Worldwide shifts in species ranges, phenology and abundances are concordant with ongoing climate change and habitat transformation 41 . Novel communities are becoming widespread as introduced, invasive and agricultural species integrate into many ecosystems 42 . Not all community modification is leading to species reductions; on local and regional scales, plant diversity has been increasing, owing to anthropogenic introductions 42 , counter to the overall trend of global species loss 5,43 . However, it is unknown whether increased diversity in such locales will persist or will eventually decrease as a result of species interactions that play out over time. Recent and projected 5,44 extinction rates of vertebrates far exceed empirically derived background rates 25 . In addition, many plants, vertebrates and invertebrates have markedly reduced their geographic ranges and abundances to the extent that they are at risk of extinction 43 . Removal of keystone species worldwide, especially large predators at upper trophic levels, has exacerbated changes caused by less direct impacts, leading to increasingly simplified and less stable ecological networks 39,45,46 . Looking towards the year 2100, models forecast that pressures on biota will continue to increase. The co-opting of resources and energy use by humans will continue to increase as the global population reaches 9,500,000,000 people (by 2050), and effects will be greatly exacerbated if per capita resource use also increases. Projections for 2100 range from a population low of 6,200,000,000 (requiring a substantial decline in fertility rates) to 10,100,000,000 (requiring continued decline of fertility in countries that still have fertility above replacement level) to 27,000,000,000 (if fertility remains at 2005–2010 levels; this population size is not thought to be supportable; ref. 31). Rapid climate change shows no signs of slowing. Modelling suggests that for ,30% of Earth, the speed at which plant species will have to migrate to keep pace with projected climate change is greater than their dispersal rate when Earth last shifted from a glacial to an interglacial climate 47 , and that dispersal will be thwarted by highly fragmented landscapes. Climates found at present on 10–48% of the planet are projected to disappear within a century, and climates that contemporary organisms have never experienced are likely to cover 12–39% of Earth 48 . The mean global temperature by 2070 (or possibly a few decades earlier) will be higher than it has been since the human species evolved. The magnitudes of both local-scale direct forcing and emergent globalscaleforcing are much greater than those that characterized the last globalscale state shift, and are not expected to decline any time soon. Therefore, the plausibility of a future planetary state shift seems high, even though considerable uncertainty remains about whether it is inevitable and, if so, how far in the future it may be. The clear potential for a planetary-scale state shift greatly complicates biotic forecasting efforts, because by their nature state shifts contain surprises. Nevertheless, some general expectations can be gleaned from the natural experiments provided by past global-scale state shifts. On the timescale most relevant to biological forecasting today, biotic effects observed in the shift from the last glacial to the present interglacial (Box 1) included many extinctions 30,49–51 ; drastic changes in species distributions, abundances and diversity; and the emergence of novel communities 49,50,52–54 . New patterns of gene flow triggered new evolutionary trajectories 55–58 , but the time since then has not been long enough for evolution to compensate for extinctions. At a minimum, these kinds of effects would be expected from a globalscale state shift forced by present drivers, not only in human-dominated regions but also in remote regions not now heavily occupied by humans (Fig. 1); indeed, such changes are already under way (see above 5,25,39,41–44 ). Given that it takes hundreds of thousands to millions of years for evolution to build diversity back up to pre-crash levels after major extinction episodes 25 , increased rates of extinction are of particular concern, especially because global and regional diversity today is generally lower than it was 20,000 yr ago as a result of the last planetary state shift 37,50,51,54,59 . This large-scale loss of diversity is not overridden by historical increases in plant species richness in many locales, owing to human-transported species homogenizing the world’s biota 42 . Possible too are substantial losses of ecosystem services required to sustain the human population 60 . Still unknown is the extent to which human-caused increases in certain ecosystem services—such as growing food—balances the loss of ‘natural’ ecosystem services, many of which already are trending in dangerous directions as a result of overuse, pollutants and climate change 3,16 . Examples include the collapse of cod and other fisheries 45,61,62 ; loss of millions of square kilometres of conifer forests due to climate-induced bark-beetle outbreaks; 63 loss of carbon sequestration by forest clearing 60 ; and regional losses of agricultural productivity from desertification or detrimental land-use practices 1,35 . Although the ultimate effects of changing biodiversity and species compositions are still unknown, if critical thresholds of diminishing returns in ecosystem services were reached over large areas and at the same time global demands increased (as will happen if the population increases by 2,000,000,000 within about three decades), widespread social unrest, economic instability and loss of human life could result 64 .

#### The risk of keystone species loss leads to extinction – outweighs on reversibility.

Chen 2k (Jim, Professor of Law at University of Minnesota and Dean of Law School at Louisville, “Globalization and Its Losers”:, 9 Minn. J. Global Trade 157’ LexisNexis Legal)

Conscious decisions to allow the extinction of a species or the destruction of an entire ecosystem epitomize the "irreversible and irretrievable commitments of resources" that NEPA is designed to retard.312 The original Endangered Species Act gave such decisions no quarter whatsoever;313 since 1979, such decisions have rested in the hands of a solemnly convened "God Squad."314 In its permanence and gravity, natural extinction provides the baseline by which all other types of extinction should be judged. The Endangered Species Act explicitly acknowledges the "esthetic, ecological, educational, historical, recreational, and scientific value" of endangered species and the biodiversity they represent.315 Allied bodies of international law confirm this view:316 global biological diversity is part of the commonly owned heritage of all humanity and deserves full legal protec- tion.317 Rather remarkably, these broad assertions understate the value of biodiversity and the urgency of its protection. A Sand County Almanac, the eloquent bible of the modern environmental movement, contains only two demonstrable bio- logical errors. It opens with one and closes with another. We can forgive Aldo Leopold's decision to close with that elegant but erroneous epigram, "ontogeny repeats phylogeny."318 What concerns erns us is his opening gambit: "There are some who can live without wild things, and some who cannot."319 Not quite. None of us can live without wild things. Insects are so essential to life as we know it that if they "and other land-dwelling anthropods ... were to disappear, humanity probably could not last more than a few months."320 "Most of the amphibians, reptiles, birds, and mammals," along with "the bulk of the flowering plants and ... the physical structure of most forests and other terrestrial habitats" would disappear in turn.321 "The land would return to" something resembling its Cambrian condition, "covered by mats of recumbent wind-pollinated vegetation, sprinkled with clumps of small trees and bushes here and there, largely devoid of animal life."322 From this perspective, the mere thought of valuing biodiver- sity is absurd, much as any attempt to quantify all of earth's planetary amenities as some trillions of dollars per year is ab- surd. But the frustration inherent in enforcing the Convention on International Trade in Endangered Species (CITES) has shown that conservation cannot work without appeasing Homo economicus, the profit-seeking ape. Efforts to ban the interna- tional ivory trade through CITES have failed to stem the slaugh- ter of African elephants.323 The preservation of biodiversity must therefore begin with a cold, calculating inventory of its benefits. Fortunately, defending biodiversity preservation in human- ity's self-interest is an easy task. As yet unexploited species might give a hungry world a larger larder than the storehouse of twenty plant species that provide nine-tenths of humanity's cur- rent food supply.324 "Waiting in the wings are tens of thousands of unused plant species, many demonstrably superior to those in favor."325 As genetic warehouses, many plants enhance the pro- ductivity of crops already in use. In the United States alone, the lates phylogeny" means that the life history of any individual organism replays the entire evolutionary history of that organism's species. genes of wild plants have accounted for much of "the explosive growth in farm production since the 1930s."326 The contribution is worth $1 billion each year.327 Nature's pharmacy demonstrates even more dramatic gains than nature's farm.328 Aspirin and penicillin, our star analgesic and antibiotic, had humble origins in the meadowsweet plant and in cheese mold.329 Leeches, vampire bats, and pit vipers all contribute anticoagulant drugs that reduce blood pressure, pre- vent heart attacks, and facilitate skin transplants.330 Merck & Co., the multinational pharmaceutical company, is helping Costa Rica assay its rich biota.33' A single commercially viable product derived "from, say, any one species among... 12,000 plants and 300,000 insects ... could handsomely repay Merck's entire investment" of $1 million in 1991 dollars.332 Wild animals, plants, and microorganisms also provide eco- logical services.333 The Supreme Court has lauded the pes- ticidal talents of migratory birds.334 Numerous organisms process the air we breathe, the water we drink, the ground we stroll.335 Other species serve as sentries. Just as canaries warned coal miners of lethal gases, the decline or disappearance of indicator species provides advance warning against deeper environmental threats.336 Species conservation yields the great- est environmental amenity of all: ecosystem protection. Saving discrete species indirectly protects the ecosystems in which they live.337 Some larger animals may not carry great utilitarian value in themselves, but the human urge to protect these charis- matic "flagship species" helps protect their ecosystems.338 In- deed, to save any species, we must protect their ecosystems.339 Defenders of biodiversity can measure the "tangible eco- nomic value" of the pleasure derived from "visiting, photograph- ing, painting, and just looking at wildlife."340 In the United States alone, wildlife observation and feeding in 1991 generated $18.1 billion in consumer spending, $3 billion in tax revenues, and 766,000 jobs.341 Ecotourism gives tropical countries, home to most of the world's species, a valuable alternative to subsis- tence agriculture. Costa Rican rainforests preserved for ecotour- ism "have become many times more profitable per hectare than land cleared for pastures and fields," while the endangered go- rilla has turned ecotourism into "the third most important source of income in Rwanda."342 In a globalized economy where commodities can be cultivated almost anywhere, environmen- tally sensitive locales can maximize their wealth by exploiting the "boutique" uses of their natural bounty. The value of endangered species and the biodiversity they embody is "literally . . . incalculable."343 What, if anything, should the law do to preserve it? There are those that invoke the story of Noah's Ark as a moral basis for biodiversity preser- vation.344 Others regard the entire Judeo-Christian tradition, especially the biblical stories of Creation and the Flood, as the root of the West's deplorable environmental record.345 To avoid getting bogged down in an environmental exegesis of Judeo- Christian "myth and legend," we should let Charles Darwin and evolutionary biology determine the imperatives of our moment in natural "history."346 The loss of biological diversity is quite arguably the gravest problem facing humanity. If we cast the question as the contemporary phenomenon that "our descend- ants [will] most regret," the "loss of genetic and species diversity by the destruction of natural habitats" is worse than even "energy depletion, economic collapse, limited nuclear war, or con- quest by a totalitarian government."347 Natural evolution may in due course renew the earth with a diversity of species approximating that of a world unspoiled by Homo sapiens - in ten mil- lion years, perhaps a hundred million.348

#### Scenario two is methane

#### Status quo warming is melting arctic sea ice and releasing methane, causing positive feedback loops.

Wadhams, Professor of Ocean Physics, and Head of the Polar Ocean Physics Group in the Department of Applied Mathematics and Theoretical Physics, University of Cambridge, ‘12

[Peter, “Arctic Ice Cover, Ice Thickness and Tipping Points”, 1-19-12, Royal Swedish Academy of Sciences, AMBIO, RSR]

The present thinning and retreat of Arctic sea ice is one of the most serious geophysical consequences of global warming and is causing a major change to the face of our planet. A challenging characteristic of the behaviour is that both the rate of retreat (especially in summer) and the rate of thinning in all seasons have greatly exceeded the predictions of most models. Although sea ice in the Arctic Ocean has been in slow retreat since the 1950s at a rate of 2.8–4.3% per decade (ACIA 2005) as measured from microwave satellites (Parkinson et al. 1999), the annual-averaged rate speeded up to 10.7% per decade from 1996 onwards (Comiso et al. 2008), whilst the summer extent has shrunk even faster. In September 2007 the area reached 4.1 million km 2 , a record low (NSIDC 2007; Stroeve et al. 2007) and more than 1 million km 2 less than in the previous record year of 2005 (Stroeve et al. 2005). Although the area stabilized in 2008–2010 the continuing decline in multi-year (MY) ice fraction suggests that the total Arctic ice volume in late summer has continued to decrease, and indeed an accelerating decrease has been suggested in ﬁgures published using the PIOMAS model (Polar Science Center, Univ. Washington, personal commun., 2011). New model predictions, tuned to match these recent changes, predict disappearance of the summer sea ice within 20–30 years (Wang and Overland 2009). At the same time, submarine sonar measurements have shown that the ice has been thinning much more rapidly, by some 43% in the 25 years between the early 1970s and late 1990s (Rothrock et al. 1999, 2003; Wadhams and Davis 2000, 2001; Yu et al. 2004; Kwok et al. 2009). The thinning rate implies that at some critical date the annual cycle of thickness will have a summer minimum at which a substantial fraction of the winter ice cover will disappear, with the thinner component (mainly undeformed ﬁrst-year ice) melting completely. We may be already reaching this situation, since in the Beaufort Sea the measured summer bottom melt of a MY ﬂoe in 2007 was 2 m (Perovich et al. 2008) whilst the winter thickness achieved by ﬁrst-year (FY) ice was only 1.6 m. This may be a special case of ﬂoes drifting into a previously warmed region, but the trend is clear: decreased winter growth and increased summer melt leads to a decreased area at the end of summer, which itself offers a positive feedback through increased radiation absorption by the open water. Figure 1 shows the ice cover on September 16 2007, with a huge area of open water extending northward from the Beaufort and Chukchi Seas, exposing the ocean there to the atmosphere for the ﬁrst time since records began. The ﬁgure also shows the March 2007 track of HMS Tireless, which carried out a multibeam sonar survey of the ice underside, described later in this article. Already we are seeing consequences from these changes. The new large area of open water warms up to 4–5C during summer, which not only delays the onset of autumn freezing but also warms the seabed over the shelf areas, helping to melt offshore permafrost. One consequence of this melt is the release and decomposition of trapped methane hydrates, causing methane plumes which have global warming potential. Already such plumes have been directly observed in the East Siberian Sea (Shakhova et al. 2010) and off Svalbard, and the curve of global atmospheric methane content has undergone a (small) upward blip after being stable for some years. Molecule for molecule, methane is 23 times as potent as CO2 as a greenhouse gas, and there have been warnings that a major methane outbreak may be imminent, with release from offshore permafrost melt being joined by releases from the active layer under the tundra, which has grown thicker as the air temperature has warmed. A further consequence is that the large area of open water in summer allows a wind fetch sufﬁcient to create substantial wave energy input to the ice edge, which causes wave-induced ice break-up into ﬂoes so as to create a classic marginal ice zone (MIZ). Hitherto the MIZ structure has been considered as applying mainly to the Greenland Sea, Barents Sea, Bering Sea and Antarctic, with the Beaufort-Chukchi region facing only a narrow slot of open water. A Beaufort-Chukchi MIZ is a new situation which may also feature a positive feedback mechanism, because the fragmentation of the ice cover into wave-driven ﬂoes creates much new open water and a large ﬂoe perimeter for enhanced melt rates. A challenging characteristic of the summer sea ice extent is that its decay has exceeded the predictions of models. The observed extent began to deviate from the ensemble mean of models used by Intergovernmental Panel on Climate Change (IPCC) in the 1970s and by the 1990s it was more than one standard deviation less than the mean (Fig. 2). The 2007 extent was less than the most extreme member of the ensemble. These results strongly suggest that existing climate models are inadequate in predicting Arctic sea ice extent and that some important physics is missing. Our understanding of the processes governing these accelerating changes needs to be based on adequate measurements of ice thickness and extent throughout the year, particularly in the winter months preceding each summer’s retreat. Satellites can track ice area, but ice thickness distribution can be most accurately measured by sonar from underneath the ice. This task has been carried out since 1958 by submarines of the US and British navies, with the most recent UK datasets being in 2004 and 2007 (Wadhams et al. 2011). Since the ﬁrst UK voyage in 1971, scientiﬁc data gathering and analysis from UK submarines has been done by the author, who has sailed on many of the voyages himself. The ﬁrst evidence of Arctic ice thinning, amounting to 15% up to 1987, was published by the author in 1990 (Wadhams 1990), whilst incorporation of more recent UK and US data has shown an enormous 43% decline in thickness from the 1970s to the late 1990s.

#### Methane release is the biggest extinction risk – most probable and empirical event.

Dorritie 7 (Dan Dorritie, paleontologist, studies mass extinction events, M.A. Geology, University of California—Davis, “Preface,” Killer in our Midst, 2007, <http://www.killerinourmidst.com/>)

Deep beneath the surface of the sea, buried in the oxygen-depleted muds that have accumulated over the ages on the underwater margins of the continents, lies a vast store of natural gas that probably well exceeds, in its carbon equivalence, the entire supply of all other oil, gas, and coal on the planet. Most of this immense store of natural gas, largely comprised of methane, lies trapped in icy cages called hydrates. Below these hydrates is a huge quantity of methane as free gas bubbles, blocked from release by the hydrate, and temperature and pressure conditions above. Still more methane, as hydrate, is found in the permanently frozen (permafrost) regions that surround the poles. Methane is a much more powerful greenhouse gas than carbon dioxide, the gas which is currently warming our globe, even though methane remains in the atmosphere for a much shorter time. If released abruptly, seafloor methane has the potential to deliver a stunning jolt of heat to the planet's already increasing temperatures. Even if released more gradually, seafloor methane will inevitably compound the problem of global warming. But abruptly or gradually, as we warm the planet by our dumping of carbon dioxide into the atmosphere, the seafloor will also warm, and its methane will inevitably be released. This book is about the release of that methane, and, in particular, about the possibility of methane catastrophe. Methane catastrophes have occurred several times in Earth's history, and when they have occurred, they have sometimes caused abrupt changes in the history of life, and at least one significant extinction. That extinction, at the end of the Permian Period 250 million years ago, is the greatest in the history of life. More than 90% of the then-existing species perished, and the course of life on Earth was altered forever. If a methane catastrophe were to happen in the near future, it is likely that not only would a considerable percentage of existing plants and animals be killed off, but a large percentage of the human population as well, as a result of the climate change and significantly more hostile environmental conditions. Yet we may well be heading toward such a catastrophe, produced by our warming of the planet. Just how rapidly seafloor methane will be released depends on numerous factors that are quite difficult to assess. It is possible that seafloor methane will be released so slowly that it will only have a relatively minor warming effect on Earth's climate. On the other hand, because the coming methane release will be the result of our warming of the planet via the burning of fossil and other acrbon fuels, it could happen much more quickly. Indeed, it seems that we are currently pumping the greenhouse gas carbon dioxide into the atmosphere at a much faster -- perhaps tens to hundreds of times faster -- rate than has ever before naturally occurred in the last half billion years or so of the Earth's history. The catastrophic warming we are causing is -- to the best of our knowledge -- unprecedented since the early days of our planet, billions of years ago. Such warming could well lead to methane catastrophe. The onset of a methane catastrophe would be abrupt because it could be initiated by a major submarine landslide, which can happen in a matter of days or even hours, or by the venting of vast quantities of seafloor methane over a period of decades. These events can take place in what is essentially a geological eyeblink. Additional slumping and/or venting can continue for centuries to millennia. The amount of methane that can be released is indeed massive. Estimates of the amount of seafloor methane generally range from about 5000 billion metric tons to around 20,000 billion metric tons (a metric ton is equal to 1.1 imperial tons, the standard ton used in the United States), though they usually range around 10,000 billion metric tons. This amount of methane contains about 7500 billion metric tons of carbon, vastly more than all the estimated carbon in all fossil fuels: petroleum, coal, and natural gas. There is a simple way to put 10,000 billion metric tons of methane into perspective: it contains about ten times the amount of carbon (largely in the form of carbon dioxide) as does the entire atmosphere. Moreover, though methane entering the atmosphere is quickly oxidized, it is oxidized to carbon dioxide, so the problem of its warming ability will remain with us for thousands of years into the future. A methane catastrophe, therefore, is an abrupt surge of greenhouse gas that could rival or exceed the carbon dioxide warming of the planet. It could potentially overwhelm the natural heat regulatory system of the Earth, which operates in a much more gradual way, and on a much more protracted time scale. The quantity of methane that could be released is so massive there would be no remedial action that people would be able to take to mitigate it except in the most superficial way. Once a methane catastrophe were to begin, there would be major consequences for the planet and its inhabitants, human and other, and we would be able to do little except wait it out. Methane, in a very real sense, is the joker in the deck of global warming. As with the current increase in atmospheric carbon dioxide, a large methane release will undoubtedly contribute to an increase in acid rain, and, through its impact on global warming, a further rise of sea level, increased desertification, increased heavy precipitation, and extreme weather events. The slowing of ocean circulation or its actual stagnation because of greater planetary warmth are also possibilities. Such a slowing would paradoxically produce a decreased transport of warm water to the coasts of northeastern North America and northernmost Europe, making for much colder winters. In addition, the destabilization of methane within seafloor sediments can send 20 meter (60 foot) high tsunamis crashing into nearby coastlines. A methane catastrophe can have other major consequences in addition to sudden global warming. It can accelerate the slow but deadly acidification of the surface ocean (down to about 100 meters, or about 300 feet), which is now occurring as a result of the increase of carbon dioxide in the atmosphere and ocean. The methane can combine with dissolved oceanic oxygen, depleting the deeper part of the ocean (that is, the ocean below about 100 meters) of oxygen, and killing off the oxygen-using (aerobic) organisms at those depths. As acidification penetrates the deep ocean, even organisms that do not use oxygen (anaerobes) will be affected. Then there are the worst case scenarios. With the warming of the world ocean, its chemical balance and biological composition will change. The ocean will become stratified, with mixing between its surface and the deep ocean becoming increasingly restricted. If the deep ocean becomes fully anoxic (devoid of oxygen), it will also become toxic, as the remaining anaerobic organisms pump out the deadly gas hydrogen sulfide. In sufficient quantities, that gas could escape oceanic confinement to poison the atmosphere and, combining with the iron in the blood's hemoglobin, kill terrestrial organisms, including us. But the composition of the atmosphere could also change in a second way, because the amount of free oxygen depends on two things: the actual production of oxygen (by the ocean's photosynthetic plankton and terrestrial green plants) and the delivery of large amounts of carbon (as part of a "rain" of organic debris from organisms closer to the surface) to the ocean's bottom. This carbon, if not removed from the global carbon cycle by sinking and eventual burial in the ocean floor, will combine with oxygen and lower its concentration in the atmosphere. Once oceanic anoxia kills off aerobic marine organisms (those which require oxygen to live), the natural regulatory system for carbon will be sent into a tailspin. The amount of organic debris produced in surface waters will likely be reduced, the amount that rapidly descends to the ocean floor will be reduced, and the proportion that gets decomposed on the way to the bottom will be significantly reduced. Exactly how this will play out is unclear, because certain of these changes will operate to slow the removal of carbon from the global carbon cycle (which will act to decrease the amount of oxygen in the atmosphere), while others will enhance it (increasing atmospheric oxygen). When a similar disruption of the marine ecosystem occurred at the end of the Permian, a quarter of a billion years ago, atmospheric oxygen dropped to a fraction (about 2/5ths) of its previous level. But increased oxygen could be just as bad: oxygen ions (sometimes referred to as free radicals) can inflict genetic damage to DNA, causing mutations and cancer. We are certainly on the verge of releasing a huge amount of permafrost and seafloor methane within a very short time; we may also be on the brink of methane catastrophe. By our own actions -- by our continuing and increasing use of carbon fuels -- we are slowly but inexorably creating the conditions during which a such a methane release, catastrophic or more gradual, could occur. We probably have time to prevent a catastrophe, but there is a certain non-negligible possibility that we have already crossed -- or will shortly cross -- an invisible threshold that will render a methane catastrophe inevitable and unstoppable. Major anthropogenic global warming by carbon dioxide and possible methane catastrophe will be events more cataclysmic than any that can befall Earth, except for an impact with a giant asteroid or comet, or a stellar explosion in our neighborhood of the Milky Way. These other events, however, are quite rare and unlikely in our immediate future. Major anthropogenic global warming by carbon dioxide and possible methane catastrophe, by contrast, are highly likely and much more immediate. More importantly, unlike those other possible cataclysms, both are preventable -- probably -- if we take them seriously, begin to understand them, and -- most difficult of all -- begin to take steps to avert them. It has become fashionable to dismiss predictions of catastrophe, partly because they have become so common. Many of us have become jaded, what with one such prediction after another. We used to hear a good deal about nuclear holocaust, or nuclear winter, but as those threats seem to have faded in the public consciousness, there are others which have replaced it. We now hear of doomsday asteroids, the ozone hole, SARS (severe acute respiratory syndrome), bird flu, global warming, and the obliteration of species. The number of threats seems to be increasing. And, actually, that number is increasing. Prior to this epoch in human history, people simply did not have the ability to impact our planet in potentially catastrophic ways. Unfortunately, we now do have that ability. The ozone hole is a simple example. Never before was humanity on the verge of destroying this gaseous umbrella which protects us (and all other organisms that live at or near the surface of the Earth) from deadly ultraviolet light. Humanity simply didn't have that kind of power. But the advent of chloro-flouro-carbon (CFC) refrigerants gave us that ability, and the ozone layer sustained significant damage before the problem began to be addressed. Luckily, this is a problem for which there is a ready solution, and by banning the production of these ozone-harming chemicals, we have begun to bring the problem under control. The problem of carbon dioxide emissions, consequent global warming, and the prospect of a major seafloor methane release, however, will not be addressed so easily. We currently have no technology to trap and hold large quantities of carbon dioxide, and we are not likely to have such a technology for many decades in the future -- if indeed we ever will. Some of the excess carbon dioxide we produce is in fact currently slipping beyond our potential grasp, entering the oceans at the astounding rate of about a million metric tons (a metric ton = 1.1 standard ton) per hour, and increasing the acidity of seawater. There is, in addition, great resistance in a world economy driven and dominated by fossil fuels to shifting the energy base of that economy. Enormous corporate profits and personal fortunes, and the success of political efforts on their behalf, are also at stake. Slowing the stampede to catastrophically higher global temperatures and ocean destruction will require substantial international effort. Even so, should we today stop spewing carbon dioxide into the atmosphere, global temperatures will continue to increase for some time into the future. Despite our aversion to warnings of imminent catastrophe, our problem may be that we are not alarmed enough. Because of the delayed consequences of our dumping carbon dioxide into the atmosphere, the major effects of global warming will only be starting just as the world supply of oil is well on its way to depletion (about 2050). But already startling environmental changes -- the early, "minor" effects of global warming -- are occurring on Earth: ·With the exception of 1996, the years from 1995 to 2004 constitute 9 of the 10 warmest years since systematic record keeping began in 1861. ·The year 2005 was the warmest year since records have been kept. The next warmest years, in order, are, 1998, 2002, 2003, and 2004. ·Globally, glaciers have retreated, on average, almost some 15% since 1850. Glacial retreat has been recorded in Tibet, Alaska, Peru, the Alps, Kenya, Antarctica. ·Alaskan temperatures have risen about 2.8°C (5°F) in the past few decades. ·In the past several decades, about 40% of Arctic Ocean sea ice has disappeared. (Some researchers now believe, however, that at least part of this sea ice loss may be due to changing wind patterns over the North Pole, but these wind changes, themselves, may be due to a warming climate.) ·Between 1965 and 1995, the amount of melt water from the Arctic region going into the North Atlantic was about 20,000 cubic kilometers (about 4800 cubic miles), the equivalent of the fresh water in all of the Great Lakes combined (Superior, Huron, Erie, and Ontario) with the exception of Lake Michigan. Preliminary calculations indicate that an additional 18,000 cubic kilometers (4300 cubic miles) or so could shut down ocean circulation in the North Atlantic. That shutdown could occur in two decades or less, though most scientists believe it will take much longer. The Intergovernmental Panel on Climate Change, comprised of thousands of climate scientists worldwide, puts the likely slowing at about 25% by 2100. ·Trade winds across the equatorial Pacific have slowed because of higher humidity, and are projected to do so even more as time passes. The increase in humidity is the result of increased evaporation, traceable to global warming. This slowing of Pacific winds will also slow the ocean surface currents that the winds push along. Some scientists fear that at some point "the switch will be tripped" and nutrient-rich bottom water will no longer rise to the surface in the eastern Pacific (a "permanent El Niño" situation which did exist about three million years ago). These waters feed the plankton which feed the anchovies in one of the world's greatest fisheries. Much of the anchovy harvest is dried, ground up, and added to chicken feed, of which it is a major protein constituent. If the switch does trip, good-bye to inexpensive chicken. ·Upper ocean temperatures have risen between 0.5 and 1.0°C (0.9 to 1.8°F) since 1960. Deeper water has also warmed, but not by as much. The total amount of energy that has gone into the oceans as a consequence of global warming, however, is staggering: enough to run the state of California for 200,000 years. ·In addition to significant retreats of the glaciers on Greenland's margins, as of 2005 Greenland's massive ice sheet is melting at more than twice the rate it was in the previous three years. Glaciologists report that portions of the sheet which were solid ice just a few years ago are now riddled with meltwater caverns. ·The deep waters of the Southern Ocean (that which encircles Antarctica) have become significantly colder and less salty than they were just ten years ago. This is presumably due to the melting of Southern Ocean sea ice and parts of the Antarctic ice cap. Deep ocean waters have been previously presumed to be fairly isolated from climate warming but the data obtained from depths of four to five kilometers (more than two to three miles) now suggests otherwise. Such changes could significantly impact global ocean circulation. ·The Southern Ocean, which may absorb more carbon dioxide than any other region of the global ocean, as of more than twenty-five years ago ceased to absorb additional carbon dioxide. In fact, its ability to absorb carbon dioxide seems to be declining -- even as atmospheric levels of that gas are reaching ever higher levels -- most likely due to increased wind speed over that part of the global ocean. The higher wind speed in turn has been attributed to both global warming and the destruction of the Antarctic ozone layer. Because oceans eventually absorb most of the carbon dioxide that goes into the atmosphere, the declining ability of the Southern Ocean to absorb carbon dioxide is a particularly ominous development. ·Huge expanses of floating ice around Antarctica have collapsed into fragments in just weeks, after existing for tens of thousands of years. In addition, the ice that currently covers West Antarctica, known as the West Antarctic Ice Sheet (WAIS), which was quite recently (as of 2001) judged by the UN's Intergovernmental Panel on Climate Change (IPCC) as unlikely to collapse before the end of this century, or even for the next millennium, may now be starting to disintegrate, according to the head of the British Antarctic Survey. If this ice sheet does collapse, global sea level will rise by about 5 meters (16 feet). ·While global daytime temperatures, on average, increased only about 0.33°C (0.6°F) between 1979 and 2003, nighttime temperatures have risen more than 1°C (1.8°F). These environmental changes have had significant biological effects: ·In the eastern North Atlantic, warm-water phytoplankton (marine organisms that photosynthesize, produce oxygen, and constitute the bottom of the food chain) has moved north 1000 km (600 miles) over the past 40 years. ·In 2004, almost a quarter of a million breeding pairs of seabirds in islands north of Scotland failed to produce more than a few dozen offspring. Their reproductive failure is most likely due to the North Atlantic phytoplankton changes, and the consequent breakdown of the marine food chain. Many of the affected birds migrate back and forth between the Scottish islands and areas around the Southern Ocean (off Antarctica) over the course of the year. Starved in the north, they will never make it back to the south. Similar changes have been observed off the West Coast of the United States in 2005. ·Krill, small (about 5 cm/2 inches in length), shrimplike creatures which are a main food source for seals, whales, and penguins in the Southern Ocean, have declined in places to just 20% of their previous number in just 30 years. ·Grass now survives the winter in places on the Antarctic Peninsula, the warmest part of that frigid continent. When grass last was able to survive Antarctic winters is unknown. ·In the 17 year period from 1987 to 2003, the number and size of major wildfires in the western U. S. has increased dramatically. Compared to the 17 year period stretching from 1970 to 1986, the number of major wildfires has increased fourfold, and the area burned by major fires has increased sixfold. All of the presumed causes for this increase -- the earlier melting of snow, increased summer temperatures, an extended fire season, and an increase in the area of high-altitude forests which is vulnerable to such fires -- can be traced to global warming. ·The small increase in global nighttime temperatures indicated above (1°C/1.8°F), is sufficient to have reduced the biomass (the total mass of roots, stems, leaves, and grain) of rice, humankind's most important crop, by 10%. Rice is the primary foodstuff for more than half of the population of the world. With the warming, the release of methane has begun to follow: ·The Western Siberian Peat Bog, comprising an area of a million square kilometers (about 385,000 square miles, roughly the combined size of France and Germany), has begun to melt. This area is underlain by permafrost (permanently frozen ground that has existed since the Ice Age) perhaps a kilometer (about 3000 feet) deep. The permafrost contains an enormous amount of methane hydrate, possibly as much as a quarter of the total inventory of continental methane. As this permafrost warms and melts -- an irreversible process -- methane is released. This melting may add a quantity of methane to the atmosphere roughly equivalent to that released by all other natural and agricultural sources, increasing global warming by 10 to 25%. ·Already, methane emissions from certain areas of Siberian permafrost is proceeding much more rapidly than previously estimated. These extensive areas, characterized by Ice Age deposits of wind-blown dust (called loess) with high carbon and very high ice (50 to 90%) contents, are bubbling out methane at a rate five times higher than earlier presumed. Overall, these "yedoma" regions are contributing an additional 10 to 63% the total rate of methane release from the wetlands of the north. These are only the early effects, ripples from the storm which is to come. Remedial action is still possible, but the likelihood of catastrophe becomes more certain with each passing year.

#### Only allowing for reprocessing allows for nuclear power to transition to a carbon free economy fast enough to avoid catastrophic warming – best modeling flows aff.

Chakravorty et al. 12 (Ujjayant (Professor and Canada Research Chair, Alberta School of Business and Department of Economics); Bertrand Magne (OECD Environment Directorate, Paris, France); Michel Moreaux (Emeritus Professor and IDEI Researcher, Toulouse School of Economics, University of Toulouse), “RESOURCE USE UNDER CLIMATE STABILIZATION: CAN NUCLEAR POWER PROVIDE CLEAN ENERGY?”, Journal of Public Economic Theory, Vol. 14, Issue 2, 2012, RSR)

This paper applies a model with price-induced substitution across resources to examine the role of nuclear power in achieving a climate stabilization target, such as that advocated by the Intergovernmental Panel on Climate Change (IPCC). It asks an important policy question: is nuclear power a viable carbon-free energy source for the future? If so, then at what cost? The main insight is that nuclear power can help us switch quickly to carbon free energy, and if historical growth rates of nuclear capacity are preserved, the costs of reaching climate stabilization goals decline signiﬁcantly and may therefore be at the lower end of cost estimates that are reported by many studies. However, it is also clear from our results that nuclear is economical anyway, even without environmental regulation. Regulation only plays a major part when fast breeders are available and that too, in the somewhat distant future, towards the end of the century. To some extent, recent increases in efﬁciency in U.S. nuclear power attest to its economic advantages, even in a market with no environmental regulation (Davis and Wolfram 2011). The climate goal of 550 ppm of carbon can be achieved at a surplus cost of about 800 billion dollars, or about 1.3% of current world GDP, if no nuclear expansion is undertaken. Achieving this goal using nuclear power will result in a tripling of the share of world nuclear electricity generation by mid century with welfare gains of about half a trillion dollars (in discounted terms). The cost of providing energy will decrease by about $1.3 trillion or 2% of current world GDP, compared to the case in which the level of nuclear generation is frozen. These estimates of cost savings from nuclear power are signiﬁcant, and unlike in previous studies, are derived from an economic model with an explicit nuclear fuel cycle. However, nuclear power can be cost-effective for about 50 years or so, beyond which period, other technologies are likely to take over, including renewables, clean coal and next generation nuclear technologies that are much more efﬁcient in recycling waste materials. Ultimately, large-scale adoption of nuclear power will be hindered by the rising cost of uranium and the problem of waste disposal. Only signiﬁcant new developments such as the availability of new generation nuclear technology that is able to recycle nuclear waste may lead to a steady state where nuclear energy plays an important role. 31

#### This is especially true now – we need nuclear power in the interim since renewables are not progressing fast enough.

Harvey 12 (Fiona, Environment Correspondent, “Nuclear power is only solution to climate change, says Jeffrey Sachs”, The Guardian, 5-3-12,

<http://www.guardian.co.uk/environment/2012/may/03/nuclear-power-solution-climate-change>, RSR)

Combating climate change will require an expansion of nuclear power, respected economist Jeffrey Sachs said on Thursday, in remarks that are likely to dismay some sections of the environmental movement. Prof Sachs said atomic energy was needed because it provided a low-carbon source of power, while renewable energy was not making up enough of the world's energy mix and new technologies such as carbon capture and storage were not progressing fast enough. "We won't meet the carbon targets if nuclear is taken off the table," he said. He said coal was likely to continue to be cheaper than renewables and other low-carbon forms of energy, unless the effects of the climate were taken into account.

#### US leadership on nuclear reprocessing leads to a spillover of the technology internationally.

Acton 9 (James, J. associate in the Nonproliferation Program at the Carnegie Endowment for International Peace, Survival, Vol. 51, No. 4, “Nuclear Power, Disarmament and Technological Restraint”, RSR)

Thus, not only does reprocessing clearly not help with facilitating take back, but if advanced nuclear states adopt it as a tool for waste management, it will be virtually impossible for them to argue against others doing likewise. Today, waste management is probably the most important driver for reprocessing. Indeed, the Bush administration’s interest in this technology was born out of a desire to stretch the capacity of Yucca Mountain as far as possible. If the United States and others reprocess they will hand a powerful argument to lobbies within a state – typically the nuclear R&D community – that support the development of reprocessing.

### Thus The Plan

#### Plan: The United States Federal Government should provide a twenty-percent investment tax credit for the deployment of domestic nuclear fuel recycling.

### Observation Four

#### Observation Four: Solvency

#### Tax incentives would solve for reprocessing – makes it commercially more desirable

Lagus 5 (Todd, 2005 WISE Intern, University of Minnesota, WISE, “Reprocessing of Spent Nuclear Fuel: A Policy Analysis” <http://www.wise-intern.org/journal/2005/lagus.pdf>, RSR)

The economic analysis shows that the reprocessing or even the once through nuclear cycle is not yet economically desirable to investors. However, changes in government policies, including environmental regulations already mentioned and economic policies, could improve the competitiveness of both technologies. The University of Chicago nuclear power study analyzes the effects of government involvement in the future of the once through cycle using several different forms of support: loan guarantees, accelerated depreciation, and investment tax credits. Loan guarantees in this case refer to the obligation of the government to repay part of the loan should a utility company not be able to repay. The 2005 Energy Bill, which passed in July 2005, would make advanced nuclear power plants eligible for federal loan guarantees and provide a tax credit for nuclear power production. This would lessen the risks associated with capital costs for investors, and according to the Chicago study, reduce the LCOE for a nuclear reactor by 4 mills/kWh to 6 mills/kWh. The next financial subject, accelerated depreciation, refers to the ability of an investor to utilize the investment tax deductions early on in the lifetime of the payment rather than receive the same deduction each year in a linear fashion. Accelerated depreciation helps investors absorb capital costs, which for nuclear power generation are large. The University of Chicago study calculates a reduction in the LCOE for a 7 year depreciation policy of 3 mills/kWh to 4 mills/kWh. Tax incentives for nuclear power production are the final policies that could make nuclear power and reprocessing more desirable. An investment tax credit of 10 percent would create an LCOE reduction between 6 mills/kWh and 8 mills/kWh, while a 20 percent credit could create cost reductions between 9 mills/kWh and 13 mills/kWh. 39 Production tax credits on a per kWh basis may also be used. Since reprocessing and the once through cycle are not appreciably different for the price, it is sufficient to assume 12 that similar effects for all three of these government policies would occur with policies applied to reprocessing. While it is no secret that monetary incentives would help the nuclear reprocessing investments, there is still the question of whether or not the government should provide economic support to the industry. As with any government funding, it is politically important not to be viewed by other energy generation industries, i.e. gas and coal, as favoring nuclear power over other sources. Given the recent concerns for global warming, tax incentives and loan guarantees for nuclear technologies seem like a realistic option especially in the absence of emission regulations. Accelerated depreciation also is an unobtrusive option that could help the industry by easing capital costs.

#### Government investment key – necessary to mitigate risks from government regulations.

Selyukh 10 (Alina, Staff Writer, “Nuclear waste issue could be solved, if...”, 8-17-10, Reuters,

<http://www.reuters.com/article/2010/08/17/us-nuclear-waste-recycling-idUSTRE67G0NM20100817>, RSR)

Since the U.S. agency declared spent fuel reprocessing too costly, U.S. research into new technologies has slowed. President George W. Bush offered federal backing for nuclear waste management alternatives, but over the years the policy has meandered and had few incentives to lure companies, said Steven Kraft, senior director of used-fuel management at the Nuclear Energy Institute, the industry's trade organization. Being able to burn through rather inexpensive uranium to produce energy, companies are wary of investing millions into recycling technology that may go against the national policy. Still, industry support for the ideas is strong, if not for the procedure itself then for allowing the market -- not the government -- to determine its cost-effectiveness and fate. Duke Energy, which operates seven nuclear plants, would support nuclear recycling if there was a cost-effective national policy, spokeswoman Rita Sipe said. GE Hitachi has proposed a new generation of fast reactors that, they say, could return to the grid up to 99 percent of energy contained in the uranium, compared to recovering 2 or 3 percent from a common light water reactor. But they want federal support for more research and, ultimately, commercialization of the technology, said chief consulting engineer Erik Loewen. That support, in essence, would have to come in a form of subsidies such as cost sharing or loan guarantees, said Jack Spencer, nuclear energy policy research fellow at the Heritage Foundation think tank. "What the industry needs... is something to mitigate government-imposed risks," he said of the regulatory regime.

#### Government investment necessary – provides appropriate risk mitigation and shortens the timeframe for completion.

IAEA 8 (International Atomic Energy Agency, “Spent Fuel Reprocessing Options”, August 2008, RSR)

With the expected high costs and significant risks involved in constructing new nuclear facilities, e.g., reprocessing facilities, the impact of various ownership options need to be considered. These options include government funding, regulated funding, private funding, and combinations of public and private funding. These different funding approaches may significantly impact the costs of fuel cycle services. Given the very long time frames associated with building reprocessing facilities, there exist risks other than technological or economic, which need to be dealt with. These include evolving government policy, public and political acceptance, and licensing risks. As a result, private investors are unlikely to provide capital unless the initial high risks factors are mitigated through appropriate risk sharing agreements (e.g., loan guarantees, equity protection plans, tax credits, etc.) with government entities.

## 2AC

### Solvency

#### Plan signal solves workforce shortage

Unistar, 10

(January, This UniStar Issue Brief is a publication of UniStar Nuclear Energy, a joint venture of Constellation Energy and EDF Group, “Rebuilding the Nuclear Energy Workforce,” http://www.unistarnuclear.com/IB/workforce.pdf)

The decades-long hiatus in construction of new nuclear energy facilities has contributed to this workforce decline, of course. As the marketplace became less interested in nuclear energy, fewer students entered the discipline, reducing enrollment and forcing the closure of university and skills-based programs. Reversing this trend will require building confidence among individuals in the target demographic that the nuclear renaissance is real and long term. Washington Must take a stand The nuclear energy industry can only go so far in making critical workforce investments without a clear signal from the Federal government. Spurred by both industry and political considerations, President Obama and Secretary of Energy Steven Chu have begun the task of promoting green and high-tech jobs in the U.S. In August 2008, while still the director of the Lawrence Berkeley National Laboratory, Dr. Chu and other National Laboratory Directors signed a statement calling for a federal commitment. “For example, the government should establish and fund a nuclear energy workforce development program at universities and colleges to meet the expected [workforce] need.” 11 As the American Nuclear Society stated, “America’s university-based [nuclear science and engineering] programs cannot continue to be leaders in the field without an active [NRC] university program.” Both the total number of nuclear engineering programs and the enrollment in those programs has fallen precipitously since the 1980s. 12 the tiMe is noW Increasing the use of nuclear energy—building new facilities and expanding or relicensing existing ones—will maintain or create tens of thousands of high-paying jobs for American workers. But two key ingredients for a true nuclear energy renaissance are missing. First, the federal government must demonstrate a long term commitment to a resurgent nuclear energy industry. This means expanding the NRC university program, funding and issuing loan guarantees, and other concrete actions. If we want people to stake their education and career choices on nuclear expansion, they deserve a clear signal that the government supports the industry with more than just words. Second, companies must commit to a continued investment in their own workforces, through research to understand the laborsupply environment, through training, and through partnerships with organized labor. Ultimately, the government and industry must act together to both provide career opportunities and also ensure that a trained workforce will be available to fill the demand.

### Waste

#### State focused nuke power solutions necessary to change consumption habitats.

Nordhaus 11, chairman – Breakthrough Instiute, and Shellenberger, president – Breakthrough Insitute, MA cultural anthropology – University of California, Santa Cruz, 2/25/‘11

(Ted and Michael, <http://thebreakthrough.org/archive/the_long_death_of_environmenta>)

Tenth, we are going to have to get over our suspicion of technology, especially nuclear power. There is no credible path to reducing global carbon emissions without an enormous expansion of nuclear power. It is the only low carbon technology we have today with the demonstrated capability to generate large quantities of centrally generated electrtic power. It is the low carbon of technology of choice for much of the rest of the world. Even uber-green nations, like Germany and Sweden, have reversed plans to phase out nuclear power as they have begun to reconcile their energy needs with their climate commitments. Eleventh, we will need to embrace again the role of the state as a direct provider of public goods. The modern environmental movement, borne of the new left rejection of social authority of all sorts, has embraced the notion of state regulation and even creation of private markets while largely rejecting the generative role of the state. In the modern environmental imagination, government promotion of technology - whether nuclear power, the green revolution, synfuels, or ethanol - almost always ends badly. Never mind that virtually the entire history of American industrialization and technological innovation is the story of government investments in the development and commercialization of new technologies. Think of a transformative technology over the last century - computers, the Internet, pharmaceutical drugs, jet turbines, cellular telephones, nuclear power - and what you will find is government investing in those technologies at a scale that private firms simply cannot replicate. Twelveth, big is beautiful. The rising economies of the developing world will continue to develop whether we want them to or not. The solution to the ecological crises wrought by modernity, technology, and progress will be more modernity, technology, and progress. The solutions to the ecological challenges faced by a planet of 6 billion going on 9 billion will not be decentralized energy technologies like solar panels, small scale organic agriculture, and a drawing of unenforceable boundaries around what remains of our ecological inheritance, be it the rainforests of the Amazon or the chemical composition of the atmosphere. Rather, these solutions will be: large central station power technologies that can meet the energy needs of billions of people increasingly living in the dense mega-cities of the global south without emitting carbon dioxide, further intensification of industrial scale agriculture to meet the nutritional needs of a population that is not only growing but eating higher up the food chain, and a whole suite of new agricultural, desalinization and other technologies for gardening planet Earth that might allow us not only to pull back from forests and other threatened ecosystems but also to create new ones. The New Ecological Politics The great ecological challenges that our generation faces demands an ecological politics that is generative, not restrictive. An ecological politics capable of addressing global warming will require us to reexamine virtually every prominent strand of post-war green ideology. From Paul Erlich's warnings of a population bomb to The Club of Rome's "Limits to Growth," contemporary ecological politics have consistently embraced green Malthusianism despite the fact that the Malthusian premise has persistently failed for the better part of three centuries. Indeed, the green revolution was exponentially increasing agricultural yields at the very moment that Erlich was predicting mass starvation and the serial predictions of peak oil and various others resource collapses that have followed have continue to fail. This does not mean that Malthusian outcomes are impossible, but neither are they inevitable. We do have a choice in the matter, but it is not the choice that greens have long imagined. The choice that humanity faces is not whether to constrain our growth, development, and aspirations or die. It is whether we will continue to innovate and accelerate technological progress in order to thrive. Human technology and ingenuity have repeatedly confounded Malthusian predictions yet green ideology continues to cast a suspect eye towards the very technologies that have allowed us to avoid resource and ecological catastrophes. But such solutions will require environmentalists to abandon the "small is beautiful" ethic that has also characterized environmental thought since the 1960's. We, the most secure, affluent, and thoroughly modern human beings to have ever lived upon the planet, must abandon both the dark, zero-sum Malthusian visions and the idealized and nostalgic fantasies for a simpler, more bucolic past in which humans lived in harmony with Nature.

### Warming

#### Rhetoric of apocalypse is key to producing substantive change and generating agency – studies prove

Veldman 12 (Robin Globus, phd candidate B.A and M.A, “Narrating the Environmental Apocalypse: How Imagining the End Facilitates Moral Reasoning Among Environmental Activists” in Ethics & the Environment 17.1.)

As we saw in the introduction, critics often argue that apocalyptic rhetoric induces feelings of hopelessness or fatalism. While it certainly does for some people, in this section I will present evidence that apocalypticism also often goes hand in hand with activism. Some of the strongest evidence of a connection between environmental apocalypticism and activism comes from a national survey that examined whether Americans perceived climate change to be dangerous. As part of his analysis, Anthony Leiserowitz identified several “interpretive communities,” which had consistent demographic characteristics but varied in their levels of risk perception. The group who perceived the risk to be the greatest, which he labeled “alarmists,” described climate change ETHICS & THE ENVIRONMENT, 17(1) 2012 using apocalyptic language, such as “Bad…bad…bad…like after nuclear war…no vegetation,” “Heat waves, it’s gonna kill the world,” and “Death of the planet” (2005, 1440). Given such language, this would seem to be a reasonable way to operationalize environmental apocalypticism. If such apocalypticism encouraged fatalism, we would expect alarmists to be less likely to have engaged in environmental behavior compared to groups with moderate or low levels of concern. To the contrary, however, Leiserowitz found that alarmists “were significantly more likely to have taken personal action to reduce greenhouse gas emissions” (ibid.) than respondents who perceived climate change to pose less of a threat. Interestingly, while one might expect such radical views to appeal only to a tiny minority, Leiserowitz found that a respectable eleven percent of Americans fell into this group (ibid). Further supporting Leiserowitz’s findings, in a separate national survey conducted in 2008, Maibach, Roser-Renouf, and Leiserowitz found that a group they labeled “the Alarmed” (again, due to their high levels of concern about climate change) “are the segment most engaged in the issue of global warming. They are very convinced it is happening, humancaused, and a serious and urgent threat. The Alarmed are already making changes in their own lives and support an aggressive national response” (2009, 3, emphasis added). This group was far more likely than people with lower levels of concern over climate change to have engaged in consumer activism (by rewarding companies that support action to reduce global warming with their business, for example) or to have contacted elected officials to express their concern. Additionally, the authors found that “[w]hen asked which reason for action was most important to them personally, the Alarmed were most likely to select preventing the destruction of most life on the planet (31%)” (2009, 31)—a finding suggesting that for many in this group it is specifically the desire to avert catastrophe, rather than some other motivation, that encourages pro-environmental behavior. Taken together, these and other studies (cf. Semenza et al. 2008 and DerKarabetia, Stephenson, and Poggi 1996) provide important evidence that many of those who think environmental problems pose a severe threat practice some form of activism, rather than giving way to fatalistic resignation.

#### Calculation is good, the only question is whether you use calculations to save the other, which we do. Their ethic only leads to cooptation.

Derrida, Professor of Philosophy, French and Comparative Literature at the University of California, Irvine, ‘2

[Jacques, Directeur d’Etudes at the Ecole des Hautes Etudes en Sciences Sociales in Paris, 2002, Acts of Religion, p. 255-57]

This excess of justice over law and calculation, this overflowing of the unpre­sentable over the determinable, cannot and should not [ne peut pas et ne doit pas] serve as an alibi for staying out of juridico-political battles, within an institution or a state, between institutions or states. Abandoned to itself, the incalculable and giv­ing [donatrice] idea of justice is always very close to the bad, even to the worst for it can always be reappropriated by the most perverse calculation. It is always possible, and this is part of the madness of which we were speaking. An absolute assurance against this risk can only saturate or suture the opening of the call to justice, a call that is always wounded. But incalculable justice commands calculation. And first of all, closest to what one associates with justice, namely, law, the juridical field that one cannot isolate within sure frontiers, but also in all the fields from which one cannot separate it, which intervene in it and are no longer simply fields: the ethical, the political, the economical, the psycho-sociological, the philosophical, the liter­ary, etc. Not only must one [il faut] calculate, negotiate the relation between the calculable and the incalculable, and negotiate without a rule that would not have to be reinvented there where we are “thrown’ there where we find ourselves; but one must [il faut] do so and take it as far as possible, beyond the place we find our­selves and beyond the already identifiable zones of morality, politics, or law, beyond the distinctions between national and international, public and private, and so on. The order of this il faut does not properly belong either to justice or to law. It only belongs to either realm by exceeding each one in the direction of the other—which means that, in their very heterogeneity, these two orders are undis­sociable: de facto and de jure [en fait et en droit]. Politicization, for example, is interminable even if it cannot and should not ever be total. To keep this from being a truism, or a triviality, one must recognize in it the following consequence: each advance in politicization obliges one to reconsider, and so to reinterpret the very foundations of law such as they had previously been calculated or delimited. This was true for example in the French Declaration of the Rights of Man, in the abolition of slavery, in all the emancipatory battles that remain and will have to remain in progress, everywhere in the world, for men and for women. Nothing seems to me less outdated than the classical emancipatory ideal. One cannot attempt to disqualify it today, whether crudely or with sophistication, without at least some thoughtlessness and without forming the worst complicities. It is true that it is also necessary to re-elaborate, without renouncing, the concept of eman­cipation, enfranchisement, or liberation while taking into account the strange structures we have been describing. But beyond these identified territories of juridico-politicization on the grand geo-political scale, beyond all self-serving misappropriations and hijackings, beyond all determined and particular reappropria­tions of international law, other areas must constantly open up that can at first resemble secondary or marginal areas. This marginality also signifies that a vio­lence, even a terrorism and other forms of hostage taking are at work. The exam­ples closest to us would be found in the area of laws [lois] on the teaching and practice of languages, the legitimization of canons, the military use of scientific research, abortion, euthanasia, problems of organ transplant, extra-uterine con­ception, bio-engineering, medical experimentation, the “social treatment” of AIDS, the macro- or micro-politics of drugs, homelessness, and so on, without forgetting; of course, the treatment of what one calls animal life, the immense question of so-called animality. On this last problem, the Benjamin text that I am coming to now shows that its author was not deaf or insensitive to it, even if his propositions on this subject remain quite obscure or traditional.

#### The plan specifically key to reconcile claims to justice and find specific solutions—blanket rejection of state engagement shut out voices from the conversation

Fan, professor of Public Administration and Institute of Public Policy – Tamkang University, ‘6

[Mei-Fang, “Environmental Justice and Nuclear Waste Conflicts in Taiwan,” Environmental Politics, Vol. 15, No. 3, p. 417 – 434, June]

It is necessary to rethink the multiple conceptions of environmental justice articulated by the Yami and Taiwanese groups. This section focuses on the questions of how we might respond to differing ways of understanding environmental justice, deal with the divisions within a multicultural society and **formulate environmental policy** regarding nuclear waste dilemmas. The Yami professional and teenage student groups tended to stress the preservation of a liveable environment for future generations and regarded it as the core element of the environmental justice movement and the basis for the Yami’s opposition to nuclear waste. Instead, for most of the Taiwanese participants, the Yami’s anti-nuclear movement did not exactly correspond to the claims of environmental justice. Those Taiwanese participants who hold utilitarian views considered that the Yami anti-nuclear waste movement involved political consideration, self-interest and the attempt to obtain benefits or celebrity. The gap between the Yami and Taiwanese groups and the lack of mutual understanding and communication between them are significant. The Yami groups expressed their doubts as to whether the Taiwanese people would treat the tribesmen sincerely as partners in dealing with environmental problems, while the Taiwanese participants seemed to view the Yami as insular. A growing number of environmental ethicists have tried to rethink the problem of what practical effect environmental ethics has had on the formation of environmental policy. Contrary to a monistic approach, moral pluralism as a practical philosophy allows a form of agreement on real cases in which agreement on the general formulation of moral principles is not essential. Practical philosophy seeks the integration of multiple values and tries to reduce the distance between disputants by finding a general policy direction that can achieve greater consensus. It searches for workable solutions to specific problems or a range of actions that are morally permissible or acceptable to a wide range of worldviews (Norton, 1995: 129– 33). The multiple conceptions of environmental justice articulated by the Yami and Taiwanese groups in the context of nuclear waste controversies provide support for a pluralistic account of environmental values rather than a monistic philosophical stance. A foundational approach to ethics that requires the application of a single theory **functionally equivalent to truth** fails to take a variety of conflicting moral insights into account and limits alternatives to nuclear waste management. In contrast, pragmatism represents an engagement with the actual problems in the specific historical and social context. Environmental pragmatism draws upon the pragmatist philosophical and political tradition in American thought, advocating a serious inquiry into the practical merits of moral pluralism (Light & Katz, 1996). The American philosophical school, represented mainly in the late 19th- and early 20thcentury writings of Charles Peirce, William James and John Dewey is marked most notably by its anti-foundational character that denies the existence of ‘a priori or self-justifying ‘‘truths’’ and moral absolutes’ (Minteer & Manning, 1999: 193). For Light (1996), there is much that we do agree on that has not been put into environmental policy or communicated to the public effectively. From the metaphilosophical perspective, what environmental pragmatists agree on is that the truth of any particular theoretical framework is not always fundamental for specific environmental problems and the ‘appropriateness of any one theory in a particular case is contingent on historical, cultural, social and resource conditions’. Environmental pragmatism chooses the approach that is most appropriate for purposes of environmental practice regardless of its theoretical origin (Light, 1996: 172, 177). Considering the multiple values held by the Yami and Taiwanese groups in the nuclear waste disputes, abstract moral norms provided by environmental ethicists do not appear to resolve the practical problems faced by the local residents on Orchid Island. **Instead of asking environmental ethicists to give up** their **debates** **about** non-anthropocentric natural **value**, environmental pragmatism endorses a pluralism that acknowledges the possible necessity of sometimes using the anthropocentric description of the value of nature to help support a morally responsible policy (Light, 2004). Furthermore, the pragmatists admit that our understandings and concepts are fallible, and that experience can at any time reveal our beliefs or the meaning of an idea as false. Environmental pragmatism recognises the importance of many diverse individuals, experiences and concepts coming together to offer insights into actual problems in the public sphere (Parker, 1996). A growing body of research has demonstrated the validity of a pragmatic approach to specific environmental and social issues, including the cases of policymaking for leaded gasoline (Thomson, 2003), forest resource management (Castle, 1996), animal welfare and hunting (Light, 2004). Environmental pragmatism, representing a democratic respect for diverse public values and ethical positions regarding the environment, is relevant to the multiple understandings of environmental justice.

#### Excluding environmentally securitizing discourse cedes its rhetorical power to militant elites, framing the environment as a security issues allows effective response and a formation of a non-militaristic concept of “security”

Liftin, prof of political science at Univ. of Washington, 98

(Karen T., “Constructing Environmental Security and Ecological Interdependence”, Global Governance 5 (1998)) NG

It may be tempting to jettison environmental security, but there are strong practical and epistemological reasons for not doing so. First, the two principal trends that have thrown the field of security studies into tumult-the declining utility of force and the growing salience of nonstate actors-are likely to persist. Alternative formulations of security will therefore continue to demand a hearing. Second, climate change, land degradation and desertification, the largest wave of species extinctions since the dinosaurs, and multifarious pollutants are real and growing sources of insecurity. Third, limiting security language to military threats cedes too much ground to the security traditionalists. If security is a discursive practice, then it can be constructed by a mulitiplicity of social actors. Security discourse can be rehabilitated to encompass environmental dangers, however, only if certain caveats are prudently observed. These have mostly to do with the twin dangers of bolstering a traditional state-centric threat-defense conception of security, and falling into an objectivism that ignores the socially constructed element of all security concerns. To claim that environmental problems are social constructions is not to deny their physical character; to believe otherwise would be ecologically and politically irresponsible. One of the pitfalls of security language is the presumption that security signifies some reality with a concrete external referent. As Ole Wrever argues, rather than being a sign for an objective referent, security is most aptly understood as a speech act: "The utterance itself is the act."19 Although his critique could provide the basis for a more reflective conception of security as a socially constructed set of concerns, Waever opposes an expanded notion of security, including the "securitization of the environment," on the grounds that "security is articulated only from aspecific prace, in an institutional voice, by elites."20 In other words, only those concerned with classic state-centric threat-defense dynamics are entitled to perform security speech acts. This reading not only ignores the fact that security speech acts are performed on a daily basis by an increasingly diffuse group of scholars and practitioners, but it also abdicates too much terrain to the security traditionalists. The state is not the sole subject of security, nor is coercive power the sole means of seeking it. If Cold War hawks could seize on the ambiguous symbol of national security, then contemporary analysts may also deploy the ambiguous symbol of environmental security. But to do so reflectively, without falling prey to the sorts of ideological excess that characterized Cold War security discourse, they must be conscious of how they construct their speech acts.

### Renewables Tradeoff

#### No shift towards renewable – venture capitalists are not interested.

Jacobius, Staff Writer, 9-17

[Arleen, “Clean-tech investing littered with mines”, Pensions and Investments,

http://www.pionline.com/article/20120917/PRINTSUB/309179992/clean-tech-investing-littered-with-mines]

Clean technology managers are redoubling their efforts to attract capital, but investors will have to pick through a landscape of failed offerings to find the managers with winning strategies.¶ Six years ago, institutional investors began making large commitments to the sector. They bet that rising fuel costs and dwindling natural resources would create a huge investment opportunity in alternative energy.¶ The California Public Employees' Retirement System has made $1.1 billion in private equity commitments to the sector, including $480 million through its CalPERS Clean Energy and Technology Fund, $500 million in clean energy and technology funds and $200 million in its environmental technology program; the California State Teachers' Retirement System has about $667.5 million invested in clean tech; and the New York State Common Retirement Fund has more than $500 million committed to the sector.¶ So far, not all investments have worked out as planned, industry insiders said. Investors are still waiting for their clean-tech portfolios to produce expected returns. The reason is that many clean-tech investments are still sitting in managers' portfolios waiting for an exit.¶ Some venture capital managers will not be able to continue supporting these companies, sending executives at these firms off in search of other sources of capital, said Tracy Lefteroff, global managing partner of the venture capital practice at PricewaterhouseCoopers U.S. who is based in the firm's San Jose, Calif., office.¶ “I think there is a lot of interest in clean technology but not enough of profitable liquidity events to maintain a high level of investment or to attract new money,” Mr. Lefteroff said.

#### Nuclear renaissance now. Pistilli says nuclear is already receiving subsidies and building plants.

#### **Global nuclear expansion now.** Over 200 reactors are going to be constructed in the next five years. That’s 1AC Marketwire.

#### Shift to renewable inevitable – countries across the globe are subsidizing the industry. No reason why the plan is enough to overcome the entirety of these subsidies.

#### Renewables fail – even massive government investment cannot overcome intermittency, Germany proves.

Gue, Energy Markets Analyst, ‘10

[Elliot, “Nuclear Power: A Better Investment than Alternative Energy,” Investing Daily, 10-11-10, http://www.investingdaily.com/13512/nuclear-power-a-better-investment-than-alternative-energy]

Renewable and alternative energies are the centerpiece of many governments’ energy policies. Germany has been a market leader in wind and solar. Generous feed-in tariffs effectively guarantee attractive returns for new alternative energy projects for 20 years. Despite relatively modest wind and solar resources, Germany is among the fastest-growing markets in the world for both technologies.¶ Although alternative energies hold some longer-term promise, blind and seemingly unwavering confidence in these solutions near-term benefits is misplaced.¶ By their very nature, wind and solar power are intermittent energy sources; when the wind isn’t blowing or the sun isn’t shining, natural gas-fired plants provide for much of the shadow capacity that keeps the electricity flowing. This pie graph breaks down Germany’s electricity mix from 1998 to 2008.¶ As you can see, thermal sources–primarily gas and coal–have lost share in Germany’s electricity grid over the past decade, though they still accounts for more than half of the nation’s net power generation. Natural gas consumption is up roughly 8 percent over this period, but coal use has flattened or declined.¶ Although Germany’s generous subsidies have increased its wind-power capacity significantly, this renewable energy accounts for just 6 percent of total generation. The country’s investments have produced a relatively small increase in electricity generated from wind power.¶ Wishful thinking aside, current wind- and solar-power technologies don’t offer a real alternative to fossil fuels.

#### Nuclear and renewables don’t compete—they’re complimentary

Scandurra and Romano ‘11

(Giuseppe and Antonio Angelo, Department of Statistical Mathematics and Economics at the University of Napoli, “The investments in renewable energy sources: do low carbon economies better invest in green technologies?”, Munich Personal RePEc Archive, 2011, http://mpra.ub.uni-muenchen.de/34216/2/MPRA\_paper\_34216.pdf)

If it can have some statistical significance, the estimates in the low carbon economies are generally higher, in absolute value, than in the high carbon sample, except the autoregressive parameters. In fact, the influence of investments in renewable energy source is stronger in the high carbon countries than to the other countries (low carbon). The former try to invest mostly in renewable sources in order to reduce their footprint and respect the international agreement that they ratified. Significant is the inverse relationship between renewable investments and share of nuclear consumption. Probably, the continuous base load electricity ensured by nuclear power plants and the absence of greenhouse gas emission allow these countries to invest in additional renewable energy in a complementary way, in order to reach an optimal energy mix and to ensure the subsidies for investment in renewable energy.

#### Proliferation concerns are empirically denied, and purification of spent fuel is impractical.

Klein, Associate Director of The Energy Institute at the University of Texas at Austin, 11 (Dale, Spent Nuclear Fuel Is An Abundant Source of Energy, 21st Century Science & Technology, 21 February 2011, http://www.21stcenturysciencetech.com/Articles\_2011/Spring-2011/Spent\_Nuclear\_Energy.pdf, da 8-23-12)

Now, more than three decades later, six nations have major ¶ ¶ commitments to reprocessing their spent fuel. The arguments ¶ ¶ against reprocessing as a proliferation concern are not compelling and obviously, other nations interested in extracting ¶ ¶ the energy value from their spent fuel do not align with U.S. ¶ ¶ policy.¶ ¶ A typical commercial nuclear power reactor will generate ¶ ¶ about 20 tonnes of spent fuel every year. Contained in that ¶ ¶ spent fuel is about 200 kilograms of reactor-grade plutonium. ¶ ¶ Often misunderstood, or misrepresented by opponents to recycling, the isotopic mixture of reactor-grade plutonium makes it ¶ ¶ unsuitable for nuclear weapons.¶ ¶ Weapons-grade plutonium is approximately 95 percent Pu-¶ ¶ 239, whereas reactor-grade is only about 50 percent Pu-239. ¶ ¶ The cost and complexity of the technologies required to purify ¶ ¶ reactor grade to weapons grade makes it impractical for use in ¶ ¶ nuclear weapons.¶ ¶ In fact, we know of, or strongly believe, that nine nations ¶ ¶ have developed nuclear weapons. Looking historically at the ¶ ¶ origins of the fissile materials used to develop those weapons, we know that the sources were either through enrichment of uranium or with the use of graphite or heavy-water-moderated production reactors, but not commercial ¶ ¶ reactors.¶ ¶ Israel, India, Pakistan, and North Korea are believed to have ¶ ¶ produced weapons-grade plutonium from the diversion of ¶ ¶ their heavy water research reactors to irradiate target materials. No nation has ever tried to produce nuclear weapons ¶ ¶ from the type of spent fuel discharged by commercial power ¶ ¶ reactors.

### Eco K

#### Our interpretation is that debate should be a question of the aff plan versus a competitive policy option or the status quo.

#### This is key to ground and predictablity – infinite number of possible kritik alternatives or things the negative could reject explodes the research burden. That’s a voting issue.

#### Ecological utopianism prevents us from forming practical coalitions and risks dystopian extremes.

Lewis 92 – Professor, School of the Environment, Duke University – 1992 (Martin, GREEN DELSIONS, p. 250)

But for all of its attractions, utopia remains, and will always remain, “no place.” Although the vision is easy to conjure, the reality is elusive. In fact, those political regimes that have struggled hardest to realize utopian plans have created some of the world’s most dystopian realities. Unfortunately, American as a people seem uniquely drawn to such fantasies, and a right-wing variant of utopianism has even guided our recent national administrations; as Robert Kuttner (1991:5, 157) shows, laissez-faire itself is an ideologically driven utopian scheme that has dire consequences for the earth’s economy and ecology. As Michael Pollan (1991:188) eloquently demonstrates, eco-radicalism and right –wing economic theory are more closely allied than one might suspect: “Indeed, the wilderness ethic and laissez-faire economics, as antithetical as they might first appear, are really mirror images of one another, each proposes a quasi-divine force – Nature, the Market – that, left to its own devices, somehow knows what’s best for a place, Nature and the Market are both self-regulating, guided by an invisible hand. Worshippers of either share a deep, Puritan distrust of man, taking it on faith that human tinkering with the natural or economic order can only pervert it. So political extremists of all stripes offer utopian visions, which credulous idealists find remarkably attractive, but considering the disparity of the vision offered – the perfect market of laissez-faire, the perfect society of socialism, or the perfectly harmonious environment of eco-radicalism – it is not surprising that the utopians in the end only increases our social and intellectual rifts, steadily diminishing our chances of avoiding an ecological holocaust.

#### Case outweighs: by failing to solve the impending waste crisis, they allow waste on-site and Yucca Mountain to eventually blow up, leading to extinction. Life is a pre-requisite to value to life. Rejecting modern treatment of the environment collapses any solutions to the problem.

#### Permutation do both.

#### Single-issue piecemeal reforms are key to challenge the root causes of environmental destruction

Stewart 03[Keith: wrote his Ph.D. dissertation on environmental politics in Ontario and currently works for the Toronto Environmental Alliance, Canadian Dimension, 9-1].

Most Environmentalists Are against the System Precisely because capitalism keeps inventing new ways to muck up the planet, the environmental movement--or at least large chunks of it--is constantly engaged in challenging the right of corporations to make money by whatever eco-destructive means are most profitable. These fights take place on multiple fronts at various spatial scales, use a bewildering variety of strategies and tactics by constantly changing coalitions of groups and individuals motivated by an equally diverse set of ideas about protecting nature. But if you spend some time with environmentalists, rather than simply absorbing whatever makes it through the filter of the mainstream media, you'll find that issue-specific solutions (save this park, better public transit, phase out that toxin) are usually couched within a broader context. At the risk of over-generalizing (and how can I not if I'm to speak of the environmental movement as if it was a coherent entity) I would argue that there is a widespread recognition within the environmental movement, particularly among those who've been around for a while, that there is a system that is lighting all these fires (climate change, deforestation, toxic contamination, radioactive waste, species extinction, etc.) that we spend all of our time running around trying to put out. Most days I label this system capitalism, but others might call it patriarchy, spiritually empty consumerism, racism, or simply big, mean corporations. And none of us would be wrong. That the planet-sized pyromaniac in question isn't always labeled capitalism is perhaps because capitalism isn't the cause of all of the world's evil, the weakness of the socialist movement in Canada and the ecologically regrettable record of "actually existing socialism." You also have to remember that few activists come to movements fresh from graduate degrees where they studied Marx--the "big picture" stuff comes out of lived experience combined with a lot of reading. Environmental activists are typically born out of a sense that something precious is in peril. Our victories seem always temporary, while defeats risk becoming permanent. It is this sense of urgency and an attachment to very particular bits of "nature"--a forest, a river, your child's smog-scarred lungs, the planet's atmosphere--or outrage at some particular assault--the toxic dump next door, the contaminated workplace, the carcinogen being sprayed on your neighbourhood park to kill those vicious dandelions--which move individuals and communities to action. Typically this action initially takes the form of seeking out practical, achievable solutions like the Kyoto Protocol, a ban in your community on the use of pesticides for cosmetic purposes, or saving the local wetland. These "reformist" solutions are not to be despised, for you can't build a movement without victories. Indeed, to dream of a movement that suddenly overthrows the existing order and replaces it with a socially and environmentally superior alternative without having won any victories along the way to inspire the collective imagination and from which to learn practical lessons is ludicrous.

#### The state is inevitable and indispensible to solve the environment.

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

#### Case solves the impact: taking action against warming represents an opportunity to reform status quo politics for a more just society.

Smith ‘10 (Brendan, co-founder of Labor Network for Sustainability, 11-23, “Fighting Doom: The New Politics of Climate Change,” Common Dreams, <http://www.commondreams.org/view/2010/11/23-1>)

I admit I have arrived late to the party. Only recently have I begun to realize what others have known for decades: The climate crisis is not, at its core, an environmental issue. In fact it is not an "issue" at all; it is an existential threat to every human and community on the planet. It threatens every job, every economy in the world. It threatens the health of our children. It threatens our food and water supply. Climate change will continue to alter the world our species has known for the past three thousand years. As an oyster farmer and longtime political activist, the effects of climate change on my life will be neither distant nor impersonal. Rising greenhouse gases and ocean temperatures may well force me to abandon my 60-acre farm within the next forty years. From France to Washington state, oystermen are already seeing massive die-offs of seed oysters and the thinning shells science has long predicted. I can see the storm clouds and they are foretelling doom. But my political alter ego is oddly less pessimistic. Rather than triggering gloom, the climate crisis has surprisingly stirred up more hope than I have felt in twenty years as a progressive activist. After decades of progressive retreat it is a strange feeling. But I am haunted by the suspicion that this coming crisis may be the first opportunity we have had in generations to radically re-shape the political landscape and build a more just and sustainable society. The Power of Doom The modern progressive movement in the U.S. has traditionally grounded its organizing in the politics of identity and altruism. Organize an affected group -- minorities, gays, janitors or women -- and then ask the public at large to support the cause -- prison reform, gay marriage, labor rights, or abortion -- based on some cocktail of good will, liberal guilt, and moral persuasion. This strategy has been effective at times. But we have failed to bring these mini-movements together into a force powerful enough to enact broad-based social reform. It takes a lot of people to change society and our current strategy has left us small in numbers and weak in power. The highlights of my political life -- as opposed to oystering -- have been marked by winning narrow, often temporary, battles, but perennially losing the larger war. I see the results in every direction I look: growing poverty and unemployment, two wars, the rise of the right, declining unionization, the failure of the Senate's climate legislation and of Copenhagen, the wholesale domination of corporate interests. The list goes on and on. We have lost; it's time to admit our strategy has been too tepid and begin charting anew. This time can be different. What is so promising about the climate crisis is that because it is not an "issue" experienced by one disenfranchised segment of the population, it opens the opportunity for a new organizing calculus for progressives. Except for nuclear annihilation, humanity has never faced so universal a threat where all our futures are bound inextricably together. This universality provides the mortar of common interest required for movement building. We could literally knock on every door on the planet and find someone -- whether they know it or not -- who has a vital self-interest in averting the climate crisis by joining a movement for sustainability. With all of humanity facing doom, we can finally gather under one banner and count our future members not in the thousands but in the millions, even billions. But as former White House "Green Jobs Czar" Van Jones told the New Yorker in 2009, "The challenge is making this an everybody movement, so your main icons are Joe Six-Pack, Joe the Plumber, becoming Joe the Solar Guy, or that kid on the street corner putting down his handgun, picking up a caulk gun." The climate crisis is carrying us into uncharted waters and our political strategy needs to be directed toward making the climate movement an "everybody movement." Let me use a personal example. As an oysterman on Long Island Sound my way of life is threatened by rising greenhouse gases and ocean temperatures. If the climate crisis is not averted my oysters will die and my farm will be shuttered. Saving my livelihood requires that I politically engage at some level. Normally I would gather together my fellow oyster farmers to lobby state and federal officials and hold a protest or two. Maybe I would find a few coalitions to join. But we would remain small in number, wield little power, and our complaints about job loss would fall on largely unsympathetic ears in the face of so many suffering in so many ways. And what would we even petition our government to do about the problem? Buyouts and unemployment benefits? Re-training classes? Our oysters will still die and we will still lose our farms. To save our lives and livelihood we need to burrow down to the root of the problem: halting greenhouse gas emissions. And halting emissions requires joining a movement with the requisite power to dismantle the fossil fuel economy while building a green economy. To tackle such a large target requires my support for every nook and cranny effort to halt greenhouse gases and transition to a green economy. I need to gather up my fellow oyster farmers and link arms with students blocking new coal-fired power plants while fighting for just transition for coal workers; I need to join forces with other green workers around the country to demand government funding for green energy jobs, not more bank and corporate bailouts; I need to support labor movement efforts in China and elsewhere to climb out of poverty by going "green not dirty." I have a stake in these disparate battles not out of political altruism, but because my livelihood and community depend on stopping greenhouse gases and climate change. In other words, the hidden jewel of the climate crisis is that I need others and others need me. We are bound together by the same story of crisis and struggle. Some in the sustainability movement have been taking advantage of the "power of doom" by weaving together novel narratives and alliances around climate change. Groups in Kentucky are complementing their anti-mountain top removal efforts by organizing members of rural electrical co-ops into "New Power" campaigns to force a transition from fossil fuels to renewable power -- and create jobs in the process. Police unions in Canada, recognizing their members will be first responders as climate disasters hit, have reached out to unions in New Orleans to ensure the tragedies that followed Katrina are not repeated. Artists, chefs, farmers, bike mechanics, designers, and others are coalescing into a "green artisan movement" focused on building vibrant sustainable communities. Immigrant organizers, worried about the very real possibility of ever-worsening racial tensions triggered by millions of environmental refugees flooding in from neighboring countries, are educating their membership about why the climate crisis matters. My hope is that over the coming years we will be able to catalog increasing numbers of these tributaries of the climate crisis. Our power will not stem from a long list of issue concerns or sponsors at events -- we have tried that as recently as the October 2nd Washington D.C. "One Nation Working Together" march with little impact. Nor, with the rise of do-it-yourself organizing, will our power spring from top-down political parties of decades past. Instead oystermen like me, driven by the need to save our lives and livelihood, will storm the barricades with others facing the effects of the climate crisis. We will merge our mini-movements under a banner of common crisis, common vision and common struggle. We will be in this fight together and emerge as force not to be trifled with. This Time We Have an Alternative I am also guardedly optimistic because this time we have an alternative. My generation came of age after the fall of communism, and as a result, we have been raised in the midst of one-sided debate. We recognize that neoliberalism has ravaged society, but besides nostalgic calls for socialism, what has been the alternative? As globalization swept the globe, we demanded livable wages and better housing for the poorest in our communities; we fought sweatshops in China; we lobbied for new campaign finance and corporate governance laws. But these are mere patchwork reforms that fail to add up to a full-blown alternative to our current anti-government, free-market system. Never being able to fully picture the progressive alternative left me not fully trusting that progressive answers were viable solutions. But when I hear the proposed solutions to the climate crisis, the fog lifts. I can track the logic and envision the machinery of our alternative. And it sounds surprisingly like a common sense rebuttal to the current free-market mayhem: We face a global emergency of catastrophic proportions. Market fundamentalism will worsen rather than solve the crisis. Instead we need to re-direct our institutions and economic resources toward solving the crisis by replacing our carbon-based economy with a green sustainable economy. And by definition, for an economy to be sustainable it must addresses the longstanding suffering ordinary people face in their lives, ranging from unemployment and poverty to housing and healthcare. For years I have tossed from campaign to campaign, but the framework of our new progressive answer to the climate crisis now provides a roadmap for my political strategy. It helps chart my opponents -- coal companies and their political minions, for example -- as well as my diverse range of allies. It lays out my policy agenda, ranging from creating millions of new green jobs to building affordable green housing in low-income communities. I finally feel confident enough in my bearings to set sail. The Era of Crisis Politics While building a new green economy makes sense on paper, it is hard to imagine our entrenched political system yielding even modest progressive reform, let alone the wholesale re-formatting of the carbon economy. But I suspect this will change in the coming years, with our future governed by cascading political crises, rather than political stasis. We are likely entering an era of crisis politics whereby each escalating environmental disaster -- ranging from water shortages and hurricanes to wildfires and disease outbreaks -- will expose the impotence of our existing political institutions and economic system. In the next 40 years alone, scientists predict a state of permanent drought throughout the Southwest US and climate-linked disease deaths to double. As Danny Thompson, secretary-treasurer of the Nevada AFL-CIO, told the Las Vegas Review Journal, the ever-worsening water crisis could be "the end of the world" that could "turn us upside down, and I don't know how you recover from that." As if that is not enough, these crises will be played out in the context of a global economy spiraling out of control. Each hurricane, drought or recession will send opinion polls and politicians lurching from right to left and vice versa. Think of how quickly, however momentarily, the political debate pivoted in the wake of Katrina, the BP disaster, and the financial crisis. As White House chief of staff Rahm Emanuel famously said "Never let a serious crisis go to waste...It's an opportunity to do things you couldn't do before." While addressing the climate crisis requires radical solutions that cannot be broached in today's political climate, each disaster opens an opportunity to advance alternative agendas -- both for the left and right. While politicians debate modest technical fixes, ordinary people left desperate by floods, fires, droughts and other disasters will increasingly -- and angrily -- demand more fundamental reforms. While our current policy choices appear limited by polls and election results, in an era of crisis politics what appears unrealistic and radical before a storm may well appear as common sense reform in its wake. My generation has been raised in the politics of eternal dusk. Except for a passing ray of hope during the Obama campaign, our years have been marked by the failure of every political force in society -- whether it be political elites or social movement leaders -- to address the problems we face as a nation and world. They have left us spinning towards disaster. We can forge a better future. Climate-generated disasters will bring our doomed future into focus. The failure of political elites to adequately respond to these cascading crises will transform our political landscape and seed the ground for social movements. And if we prepare for the chaos and long battle ahead, our alternative vision will become a necessity rather than an impossibility. As a friend recently said to me, "God help us, I hope you're right."

#### Praxis can be hard, but planning action is essential for achieving our critical goals. The world is not reducible solely to discourse—subjectivity is also positioned within material circumstances that influence thought—this demands particular strategies for change

Bryant ’12

[Levi Bryant, teaches philosophy at Collin College, “RSI, Discursivity, Critique, and Politics,” Larval Subjects, 7/18/2012, http://larvalsubjects.wordpress.com/2012/07/18/rsi-discursivity-critique-and-politics/]

If I get worked up about these issues, then this is because I think they’ve created serious lacuna in our political theory and practice. Suppose I focus on norms, for example. Great, I’ve developed a theory of norms and how they contribute to the social fabric. Yet while Kant claims that “ought implies can”, I’m not so sure. You’ve shown that something is unjust or that this would be the reasonable way to proceed. But at the real-material level people are caught in sticky networks that suck them into life in particular ways. They ought, for example, to drive an electric car, but what if it’s not available where they are or what if they can’t afford it? Well they should do whatever they can to get it? But what of their other obligations such as eating, sheltering themselves, taking care of their children, paying their medical bills, etc? It would be so nice if we just had mistaken beliefs or failed to recognize the right norms. Things would be so easy then. But there’s life, there’s the power of things. Sometimes the issues aren’t ones of ideology– and yes, of course, I recognize that ideology is probably involved in making electric cars expensive and hard to obtain, but not for them always –sometimes they’re simply issues of the power of things. And if we treat things as blank screens we’ll have difficulty seeing this and we’ll miss out on other opportunities for engagement. Long ago I used to keep track of my blog. I had a map that showed me where all my visits were coming from about the world. I noticed that the interior portions of the United States were largely dark with no visits and that the coasts and cities had a high volume of traffic. Given that my blog talks about all sorts of things ranging from weather patterns to beavers to mantis shrimps to octopi (I get all these random visits from folks searching for these things), it followed that the absence of traffic from these regions of the country couldn’t be explained in terms of a lack of interest in French and continental philosophy (yes, I recognize that there are also cultural reasons folks from these reasons might shy away from such things). What then was it? I think the answer must be that there’s a lack easy and inexpensive internet access from these portions of the country. Notice also that these regions of the country are also the most conservative regions of the country. Could there be a relation between lack of access and conservatism? I am not suggesting that lack of access is the cause of conservatism and fundamentalism. Clearly there’s a whole history in these regions and an entire set of institutions that exercise a particular inertia. I’m saying that if the only voices you hear are those in your immediate community, how much opportunity is there to think and imagine otherwise? You’re only exposed to the orthodoxy of your community and their sanctions. I am also not saying that if you give people the internet they’ll suddenly become radical leftists. Minimally, however, they’ll have a vector of deterritorialization that allows them to escape the constraints of their local social field. All of this begs the question of who critique is for. If it can’t get to the audience that you want to change, what’s it actually doing? Who’s it addressed to? Sometimes you get the sense that the practice of radical political philosophy and critical theory is a bit like the Underpants Gnomes depicted in South Park: The Underpants Gnomes have a plan for success: collect underwear —>; ? [question mark] —->; profit. This is like our critical theorists: debunk/decipher —>; ? [question mark] —->; revolution! The problem is the question mark. We’re never quite sure what’s supposed to come between collecting the underwear and profit, between debunking and revolution. This suggests an additional form of political engagement. Sometimes the more radical gesture is not to debunk and critique, but to find ways to lay fiber optic cables, roads, plumbing, etc. How, for example, can a people rise up and overturn their fundamentalist dictators if they’re suffering from typhoid and cholera as a result of bad plumbing and waste disposal? How can people overturn capitalism when they have to support families and need places to live and have no alternative? Perhaps, at this point, we need a little less critique and a little more analysis of the things that are keeping people in place, the sticky networks or regimes of attraction. Perhaps we need a little more carpentry. This has real theoretical consequences. For example, we can imagine someone writing about sovereignty, believing they’re making a blow against nationalism by critiquing Schmitt and by discussing Agamben, all the while ignoring media of communication or paths of relation between geographically diverse people as if these things were irrelevant to nationalism occurring. Ever read Anderson on print culture and nationalism? Such a person should. Yet they seem to believe nationalism is merely an incorporeal belief that requires no discussion of material channels or media. They thereby deny themselves of all sorts of modes of intervention, hitching everything on psychology, attachment, and identification. Well done!