### 1ac – plan

#### The United States federal government should substantially increase its economic engagement with Cuba regarding sugarcane ethanol.

### 1ac – ethanol

**The advantage is ethanol:**

#### Corn ethanol production is inevitable unless US can import Cuban sugarcane ethanol

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Cuba’s Future Sugar Industry: Ethanol Scenarios The success of the Brazilian sugarcane and ethanol industry suggests that, despite former President Castro’s views on the impossibility of restoring a viable Cuban sugar industry and the impact of sugar cultivation for ethanol production on food supplies, the Cuban sugar industry could have a promising future. The increasing use of biofuels in the transportation fuel mix in the United States and Europe provides a stable and growing market for ethanol, especially sugarcane-based ethanol, which is cheaper to produce than biofuels from other crops. The United States, under the Energy Independence and Security Act of 2007, increased the renewable fuels standard (RFS) to require that the use of biofuels gradually increase, to 36 billion gallons by 2022. Legislators intended that 16 billion of this consumption would come from cellulosic ethanol, but so far the development of a cost-effective production technology has been slow, leaving the market to corn and sugarbased ethanol. In 2009 the U.S. consumed 11.1 billion gallons of ethanol, almost all of it produced in the United States. U.S. policy favors domestic ethanol production by imposing an import tariff of 54 cents a gallon in addition to a 2.5 percent ad valorem tariff. Tariffs have limited ethanol imports into the United States, but higher prices in Europe have also been a factor. As of 2009, the United States has been suffering from an excess of production capacity, which has depressed prices in the States relative to other importing countries. But as higher U.S. renewable fuel targets kick in and U.S. prices recover from overinvestment in capacity, imported sugar-based ethanol will be competitive with higher-cost U.S. corn-based ethanol in coastal regions of the United States, even if U.S. tariffs persist. Given the high costs to transport corn-based ethanol to coastal regions from the U.S. Midwest by rail or truck, 41 Cuba’s location gives it a large transport cost advantage over both domestic and foreign rivals. Our analysis suggests that Cuba can produce 2 billion gallons of ethanol per year, equivalent to 94,500 barrels per day of gasoline, after adjusting for the differences in energy content. To arrive at this estimate we consider several factors that help determine ethanol output: —The amount of land planted with sugarcane —Yields (the amount of sugarcane harvested per hectare planted) —The industrial yield (the amount of ethanol that can be produced from one ton of sugarcane) —The proportion of sugarcane devoted to the p roduction of sugar and other non-ethanol products Amount of Land Planted with Sugarcane Figure 4-2 shows the area of sugarcane harvested each year from 1961 to 2008. In 1970, the year of the ambitious campaign to produce 10 million tons of sugar, the area harvested was 1.5 million hectares, the highest level in the post– World War II period. Between 1971 and 1989 the area harvested averaged 1.28 million hectares, fluctuating between 1.14 million and 1.42 million hectares. After the collapse of the USSR and the end of Soviet aid, the harvested area plummeted, reflecting at first the decline in imported fuel, fertilizer, and other inputs and later, the decision to restructure the industry by shutting down inefficient sugar refineries and switching farms to pasture or other crops. Since the special period in the early 1990s, Cuba has moved to diversify its agricultural sector in order to emphasize food security. It’s not clear whether this was a response to economic and political conditions at the time or represents a permanent shift of agriculture away from depending so heavily on one crop. More recently, in 2008, the Cuban government announced grants of unused land to all private, cooperative, and state farms, as a spur to enhance domestic food production. The introduction of the plan was a response to the fact that in 2007, 55 percent of agricultural land remained idle, an increase from 46 percent in 2002. 42 The shift in acreage devoted to food crops has not been successful in terms of increasing food output, 43 but reforms to give farmers more discretion in how they operate might produce better results in the future. But significantly increasing acreage devoted to food crops will not be easy. Food crops are much more fragile than sugarcane, requiring more labor, weeding, pest control, and oversight than cane, which has been referred to as the “widow’s crop” because it requires relatively little attention. As noted previously, thousands of farm workers have migrated to urban areas and it will be difficult to lure them back. If economic sanctions are removed and Cuba enters the international commercial system, food security will be less important, and Cuban agriculture will be more likely to respond to international prices. Historically, Cuba has had a comparative advantage in producing sugar, not food crops; so opening the economy to freer trade might favor a return to the dominance of sugar and development of an ethanol industry. More recently, Cuba has expressed interest in producing and exporting soybeans, and the Brazilian government has offered “technical assistance and seed in order to grow soybeans on an industrial scale.” 44 Soybeans have many uses, including as a feedstock for the production of biodiesel, but it is not clear at this point whether soybeans represent a more efficient use of Cuban land than sugarcane. Sugarcane Yields Sugarcane yields are highly variable— affected by weather conditions and other factors. Figure 4-3 shows sugarcane yields since 1961 and the decline in recent years as the industry has contracted. Yields that had fluctuated between fifty and sixty tons per hectare fell to twenty-eight in 2006. Industrial Ethanol Output Levels Table 4-5 shows the level of ethanol output per hectare of land that is devoted to the production of sugarcane targeted for ethanol production. Output in liters is shown as a function of sugarcane and distillery yields. At a sugarcane yield of 75 tons per hectare and ethanol yield of 75 liters per ton (5,625 liters per hectare), an output of 7.6 billion liters, or 2 billion gallons, of ethanol requires approximately 1.33 million hectares of sugarcane. At 80 tons per hectare, it would require only 1.26 million hectares to produce 2 billion gallons. Finally, if Cuba achieves yields currently experienced in the Center-South region of Brazil of 84 tons per hectare and 82 liters per ton of cane (6,888 liters per hectare), it will need only 1.10 million hectares of sugarcane to achieve this volume. 45 Sugar versus Ethanol The amount of ethanol produced will also depend on how much of the sugarcane is used to produce sugar and other non-ethanol products. In 2009 Cuba produced 1.25 million metric tons of sugar on 380,000 hectares with very low yields of 41.3 tons per hectare. At an improved yield of 75 tons per hectare, 1.25 million tons of sugar would have required only 209,150 hectares, which at 5,625 liters of ethanol per hectare, would reduce ethanol output by 1,175,625 liters (310,000 gallons). Sugar prices rose very quickly in 2009 to levels that are high by historical standards, approaching 25 cents a pound. 46 At these prices, producing and exporting sugar is more attractive than ethanol. But these prices are the temporary consequence of bad weather in other sugar-producing areas and will not be sustained. Both sugar and ethanol are commodities that will trade on the basis of price, and since entry into those industries is relatively unconstrained, competition will push prices down toward costs. When sanctions are lifted, Cuba will be able to benefit from the fact that it is an island economy with easy access to cheap marine transport— and the close proximity to the United States. Sugar imports in the United States are limited by quotas, so import volumes cannot change regardless of price. However, ethanol is protected by tariffs so imports can increase if domestic (U.S.) prices get too far ahead of world prices. The fact that sugar exports are an alternative to ethanol is an additional argument for the development of an ethanol industry. To the extent that sugar and ethanol prices are not closely correlated, Cuba can alter its output mix between the two products to take advantage of variations in sugar and ethanol prices and thus smooth out fluctuations in export revenues as well as maximize the income from its sugarcane industry.

#### Sugarcane-based ethanol is key to slow warming

Sugar ethanol displaces corn ethanol in the US and corn ethanol is bad – it increases demand for corn which drives up prices and incentivizes farmers to produce more. This causes them to plant corn every year which uses more nitrogen fertilizer which causes rapid warming

Biodiversity – corn ethanol production is degrading wetlands and grasslands which are key regions of biodiversity also spills over to create dead zones especially in the area of marine life by hypoxia due to nitrogen runoff

Specht 13 (Jonathan Specht, Legal Advisor, Pearlmaker Holsteins, Inc. B.A., Louisiana State University, 2009; J.D., Washington University in St. Louis, “Raising Cane: Cuban Sugarcane Ethanol’s Economic and Environmental Effects on the United States,” University of California, Davis, Vol. 36:2, April 24, 2013, http://environs.law.ucdavis.edu/issues/36/2/specht.pdf)

Assuming that Cuba is able to meet all the challenges standing in the way of creating a sugarcane-based ethanol industry, including the removal of U.S. legal barriers, and it begins importing ethanol to the United States, the United States would benefit environmentally in two ways. First, Cuban sugarcane-based ethanol would directly benefit the United States by reducing the negative environmental effects of corn-based ethanol production, to the extent to which it replaced domestically produced corn-based ethanol.55 Second, by reducing greenhouse gas emissions, Cuban sugarcane-based ethanol would indirectly benefit the United States as well as the rest of the world by reducing the speed of global climate change.56 A. Environmental Effects of Corn-Based Ethanol A chief argument in favor of the domestic corn-based ethanol industry is that it is environmentally beneficial because it reduces greenhouse gas emissions.57 Scientists, industry advocates, and critics hotly contest the degree to which greenhouse gas emissions are reduced by replacing a percentage of U.S. gasoline consumption with domestically-produced corn-based ethanol. It is beyond the scope of this Article to weigh in on which evaluation is correct.58 Nonetheless, the factors that go into these scientific evaluations, are important for understanding the larger picture of the ethanol issue, and thus will be discussed. Using any form of ethanol as a transportation fuel combats climate change because the carbon released when ethanol is burned was captured out of the atmosphere by the plants used to make the ethanol. Contrastingly, the carbon released when gasoline is burned had been stored in the earth for millennia in the form of crude oil.59 This simple fact is complicated by the reality that the entire process of getting ethanol into the fuel tanks of drivers — from growing crops, to creating a refined product, to delivering blended ethanol to gas stations — is reliant on fossil fuels. According to one report, “If corn growth required only photosynthesis, if ethanol were produced using solar power, if corn were instantly transported to ethanol plants, and if no land use changes were needed to grow the corn, then displacing a gallon of gasoline with ethanol would reduce greenhouse gas emissions by approximately [the equivalent of] 11.2 kilograms of [carbon dioxide]. However, fossil fuels are used to grow corn and produce ethanol.”60 begins to subtract from the credit side before the corn it uses is even planted. “America’s corn crop might look like a sustainable, solar-powered system for producing food, but it is actually a huge, inefficient, polluting machine that guzzles fossil fuel.”61 While advocates for corn production would dispute this characterization of the industry as “inefficient” and “polluting,” it is undeniable that conventional corn production techniques use large amounts of climate change-exacerbating fossil fuels. Conventional (non-organic) corn production techniques involve annual applications of fertilizers and pesticides, both largely derived from fossil fuels.62 The process by which incentives for ethanol production change land use patterns and thereby impact climate change, known as indirect land use change (ILUC), happens roughly as follows.63 By increasing demand for corn, cornbased ethanol production drives up the price of corn. As the price of corn increases, farmers want to grow more of it. By making corn more appealing to farmers to grow than other crops, and thereby increasing national levels of cornproduction, the corn-based ethanol industry makes the negative environmental effects of corn production more widespread. Conventional corn-growing techniques involve applying more pesticides and fertilizers to corn than is usually applied to other row crops such as soybeans.64 This effect is exacerbated when high corn prices disincentivize crop rotation.65 A common technique in American agriculture today is rotating corn and soybeans.66 Because soybeans are a nitrogen-fixing crop (that is, they take nitrogen out of the atmosphere and release it into the soil), corn grown on land that was used to grow soybeans the year before requires a lesser input of nitrogen fertilizer. By boosting the price of corn relative to other crops like soybeans, however, the domestic ethanol industry encourages farmers to use the same piece of land to grow corn year after year. Growing corn on the same land in successive years rather than rotating it with soybeans significantly increases the climate change effects of corn production because “nitrogen fertilizer applications are typically fifty pounds per acre higher for corn planted after corn” and “nitrous oxide has a global warming potential more than 300 times that of [carbon dioxide].”67 Additionally, the application of fossil fuel-derived nitrogen fertilizer has other environmental impacts beyond exacerbating climate change. The collective nitrogen runoff of the Mississippi River basin has caused a process called hypoxia, which kills off most marine life, in a region of the Gulf of Mexico. Scientists have linked the so-called Dead Zone to corn production and, thus, to the domestic ethanol industry.68 Incentivizing farmers to grow consecutive corn crops instead of alternating with soybean crops is only the least damaging of the environmentally detrimental land use changes that the domestic ethanol industry encourages. Land is primarily converted to corn production in one of three ways: land that is already used to grow another crop is converted to corn production, land that is used for pasture or is enrolled in a program like the Conservation Reserve Program69 is converted to cropland, or native habitat is plowed and converted to cropland.70 Each of these has varying levels of negative environmental effects. All three types of land use conversions are underway in the Great Plains states, which have ramped up corn production in response to demand from the ethanol industry.71 While it is not the only reason corn production is increasing in these states,72 the corn-based ethanol industry and thus the governmental policies encouraging it are clearly factors driving land use conversion. “While many factors influence land-use changes, the relationship between ethanol incentives and habitat destruction is fairly clear. Ethanol incentives increase demand for corn, which in turn increases corn prices. Increased corn prices lead to land being converted from other uses to corn production.”73 Converting pasture or Conservation Reserve Program Land to cropland causes more damage than changing crop rotation patterns in already cropped land.74 Yet, the most environmentally damaging way of converting land to crop production is to plow native habitat and plant it with row crops.75 This process is underway now in the Great Plains, with devastating environmental effects. Although the most recent data is from 2007, the USDA’s census of agriculture (published every five years) provides a clear picture of the trend lines of U.S. agricultural production. This picture is one of greatly increased corn production in the Great Plains states. According to the Census of Agriculture, the number of acres of corn production in North Dakota has increased from 592,078 acres in 1997 to 991,390 acres in 200276 to 2,348,171 acres in 2007,77 representing more than a doubling over five years and close to a quadrupling over ten years. Similarly, in South Dakota, the number of acres in corn grew from 3,165,190 in 2002 to 4,455,368 in 2007,78 an increase of forty-one percent over five years. In Nebraska, the number of acres in corn (for grain) increased from 7,344,715 in 2002 to 9,192,656 in 2007,79 a more modest but still significant increase of twenty-five percent over five years. While a major portion of this increase in corn production in the Great Plain states is attributable to farmers converting land already used to grow other crops or pasture to corn production,80 much of it also derives from plowing native habitat. “Recent dramatic increases in corn plantings have been heavily concentrated in the Prairie Pothole Region, displacing other crops as well as sensitive prairie pothole habitat.”81 The trend of replacing native habitat with fields of corn is an extremely worrying development, and is arguably the strongest reason for displacing at least some domestic corn-based ethanol with Cuban sugarcane-based ethanol. Therefore, this trend will be discussed in some depth. Increased corn production is degrading two environmentally significant habitats in the Great Plains, grasslands and wetlands. According to The Nature Conservancy, “grasslands and prairies are the world’s most imperiled ecosystem.”82 While grasslands once stretched across the entire central portion of the United States, it has lost between eighty-three and ninety-nine percent of its original tall grass prairie habitat.83 U.S. grasslands are the native habitat of a number of threatened and endangered species, such as the greater prairie chicken,84 which cannot live in cornfields.85 In addition to reducing the overall amount of habitat available to native species, the process of plowing grassland to grow crops fragments habitat by splitting it into disconnected segments.86 The negative effects on wildlife of converting grasslands to corn fields, and thereby also fragmenting what habitat remains, are well-documented. “[I]n counties with high corn [production] increases, the average number of grassland [bird] species was found to decline significantly from 2005 to 2008.”87 Furthermore, in addition to providing habitat for wildlife, grasslands act as a carbon sink, keeping centuries’ worth of accumulated atmospheric carbon in underground root systems.88 When native grassland is plowed to grow crops like corn, the carbon stored in its soil is released into the atmosphere, further exacerbating climate change and counterbalancing the greenhouse gas benefits of replacing fossil fuel-based gasoline with corn-based ethanol.89 Taken together, the environmental costs of increasing domestic corn-based ethanol production by plowing native grasslands in the Great Plains starkly outweigh their benefits. “Plowing up our nation’s last remnants of native grasslands to grow more corn for ethanol is like burning the Mona Lisa for firewood.”90 Along with grasslands, wetlands are the other major habitat type in the Great Plains that are being damaged by the domestic corn-based ethanol industry. The draining of wetlands to convert them to agricultural production is a practice in American agriculture that predates the domestic ethanol industry.91 This trend has been exacerbated by a number of legal and policy factors unrelated to ethanol production (including a 2001 Supreme Court decision interpreting the Clean Water Act).92 To the extent that it increases demand for corn and thus the price of corn, however, the domestic ethanol industry is clearly a factor driving the conversion of wetlands to corn production. This conversion process is a land use change with wide-ranging environmental consequences. The Prairie Pothole region of the Dakotas and surrounding states — which is composed of a mixture of grasslands and wetlands — is a habitat of international significance.93 Nearly forty percent of all species of migratory birds in North America — over 300 species — utilize this habitat at some point in their life cycles or yearly migrations.94 The region is where “millions of ducks and geese are born each year.”95 The two greatest threats to North American ducks are the destruction of wetlands and the degradation of prairies, both of which are being driven by the expansion of U.S. corn production.96 In addition to providing habitat for wildlife, both grasslands and wetlands help to clean up pollution and prevent flooding.97 “Those areas with native vegetation, and the soils beneath their surface, also retain the water longer throughout the season and use up the water through evapotranspiration.”98 Thus, converting grasslands and wetlands to cropland for corn increases the risk of flooding.99 Taken together, the consequences of converting grasslands and wetlands in the Great Plains to increase corn production for the domestic ethanol industry are devastating. If we proceed along the current trajectory without changing federal policies [including those promoting corn-based ethanol], the prairie pothole ecosystem may be further degraded and fragmented, and the many services it provides will be impossible to restore. The region will no longer be able to support the waterfowl cherished by hunters and wildlife enthusiasts across the country. Grassland bird populations, already declining, will be unable to rebound as nesting sites are turned into row crops. Water will become increasingly polluted and costly to clean as the grasslands and wetlands that once filtered contaminants disappear.100

#### Specifically, sugarcane revival reduces emissions and undercuts warming through the forest effect

González 10 (Dr. Amando Nova González, professor of economics and researcher at the Center for the Study of the Cuban Economy at the University of Havana, “Cuban Agriculture and Necessary Transformations,” Woodrow Wilson International Center for Scholars, Latin America Program, October 2010,http://www.cubastudygroup.org/index.cfm/files/serve?File\_id=1fbc5ca3-714e-41d1-ac33-0dc7eb52228a)

The agricultural sector is also important from the point of view of energy in that it generates renewable, non-polluting energy through the sugar cane agro-industry. Sugar cane biomass is used to create electricity, bio-fuels, and biogas, providing significant economic, social, and territorial advantages. The part of agro-industry dedicated to bio-energy is self-sustaining in terms of energy, creates sufficient energy surpluses, and achieves positive balances in terms of gas emission and absorption. Studies show that sugar cane fields act as absorption areas; they absorb carbon dioxide (CO2) from the air—the primary cause of the greenhouse effect and global warming—and expel it in the form of oxygen. It is estimated that in one year, one hectare of sugar cane can absorb more than 60 tons of carbon dioxide and produce some 40 tons of pure oxygen, in what is known as the

“forest effect.”

#### **Warming exists, is anthropogenic, and produces negative feedbacks – conclusive studies and unbiased authors.**

Nordhaus, 12 ("Why the Global Warming Skeptics Are Wrong", William is a professor of economics at Yale, Ph.D. from MIT, foreign member of the Royal Swedish Academy of Engineering Sciences, previously served on the committee of the National Academy of Sciences, February 22, www.nybooks.com/articles/archives/2012/mar/22/why-global-warming-skeptics-are-wrong/)

The first claim is that the planet is not warming. More precisely, “Perhaps the most inconvenient fact is the lack of global warming for well over 10 years now.” It is easy to get lost in the tiniest details here. Most people will benefit from stepping back and looking at the record of actual temperature measurements. The figure below shows data from 1880 to 2011 on global mean temperature averaged from three different sources.2 We do not need any complicated statistical analysis to see that temperatures are rising, and furthermore that they are higher in the last decade than they were in earlier decades.3 Nordhaus-graph-032212 One of the reasons that drawing conclusions on temperature trends is tricky is that the historical temperature series is highly volatile, as can be seen in the figure. The presence of short-term volatility requires looking at long-term trends. A useful analogy is the stock market. Suppose an analyst says that because real stock prices have declined over the last decade (which is true), it follows that there is no upward trend. Here again, an examination of the long-term data would quickly show this to be incorrect. The last decade of temperature and stock market data is not representative of the longer-term trends. The finding that global temperatures are rising over the last century-plus is one of the most robust findings of climate science and statistics. 2. A second argument is that warming is smaller than predicted by the models: The lack of warming for more than a decade—indeed, the smaller-than-predicted warming over the 22 years since the UN’s Intergovernmental Panel on Climate Change (IPCC) began issuing projections—suggests that computer models have greatly exaggerated how much warming additional CO2 can cause. What is the evidence on the performance of climate models? Do they predict the historical trend accurately? Statisticians routinely address this kind of question. The standard approach is to perform an experiment in which (case 1) modelers put the changes in CO2 concentrations and other climate influences in a climate model and estimate the resulting temperature path, and then (case 2) modelers calculate what would happen in the counterfactual situation where the only changes were due to natural sources, for example, the sun and volcanoes, with no human-induced changes. They then compare the actual temperature increases of the model predictions for all sources (case 1) with the predictions for natural sources alone (case 2). This experiment has been performed many times using climate models. A good example is the analysis described in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (for the actual figure, see the accompanying online material4). Several modelers ran both cases 1 and 2 described above—one including human-induced changes and one with only natural sources. This experiment showed that the projections of climate models are consistent with recorded temperature trends over recent decades only if human impacts are included. The divergent trend is especially pronounced after 1980. By 2005, calculations using natural sources alone underpredict the actual temperature increases by about 0.7 degrees Centigrade, while the calculations including human sources track the actual temperature trend very closely. In reviewing the results, the IPCC report concluded: “No climate model using natural forcings [i.e., natural warming factors] alone has reproduced the observed global warming trend in the second half of the twentieth century.”5 3. The sixteen scientists next attack the idea of CO2 as a pollutant. They write: “The fact is that CO2 is not a pollutant.” By this they presumably mean that CO2 is not by itself toxic to humans or other organisms within the range of concentrations that we are likely to encounter, and indeed higher CO2 concentrations may be beneficial. However, this is not the meaning of pollution under US law or in standard economics. The US Clean Air Act defined an air pollutant as “any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive…substance or matter which is emitted into or otherwise enters the ambient air.” In a 2007 decision on this question, the Supreme Court ruled clearly on the question: “Carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt ‘physical [and] chemical…substance[s] which [are] emitted into…the ambient air.’ …Greenhouse gases fit well within the Clean Air Act’s capacious definition of ‘air pollutant.’”6 In economics, a pollutant is a form of negative externality—that is, a byproduct of economic activity that causes damages to innocent bystanders. The question here is whether emissions of CO2 and other greenhouse gases will cause net damages, now and in the future. This question has been studied extensively. The most recent thorough survey by the leading scholar in this field, Richard Tol, finds a wide range of damages, particularly if warming is greater than 2 degrees Centigrade.7 Major areas of concern are sea-level rise, more intense hurricanes, losses of species and ecosystems, acidification of the oceans, as well as threats to the natural and cultural heritage of the planet. In short, the contention that CO2 is not a pollutant is a rhetorical device and is not supported by US law or by economic theory or studies. 4. The fourth contention by the sixteen scientists is that skeptical climate scientists are living under a reign of terror about their professional and personal livelihoods. They write: Although the number of publicly dissenting scientists is growing, many young scientists furtively say that while they also have serious doubts about the global-warming message, they are afraid to speak up for fear of not being promoted—or worse…. This is not the way science is supposed to work, but we have seen it before—for example, in the frightening period when Trofim Lysenko hijacked biology in the Soviet Union. Soviet biologists who revealed that they believed in genes, which Lysenko maintained were a bourgeois fiction, were fired from their jobs. Many were sent to the gulag and some were condemned to death. While we must always be attentive to a herd instinct, this lurid tale is misleading in the extreme. Some background on Lysenko will be useful. He was the leader of a group that rejected standard genetics and held that the acquired characteristics of an organism could be inherited by that organism’s descendants. He exploited the Soviet ideology about heredity, the need for agricultural production, and the favor of a powerful dictator—Stalin—to attract adherents to his theories. Under his influence, genetics was officially condemned as unscientific. Once he gained control of Russian biology, genetics research was prohibited, and thousands of geneticists were fired. Many leading geneticists were exiled to labor camps in Siberia, poisoned, or shot. His influence began to wane after Stalin’s death, but it took many years for Soviet biology to overcome the disastrous consequences of the Lysenko affair.8 The idea that skeptical climate scientists are being treated like Soviet geneticists in the Stalinist period has no basis in fact. There are no political or scientific dictators in the US. No climate scientist has been expelled from the US National Academy of Sciences. No skeptics have been arrested or banished to gulags or the modern equivalents of Siberia. Indeed, the dissenting authors are at the world’s greatest universities, including Princeton, MIT, Rockefeller, the University of Cambridge, and the University of Paris. I can speak personally for the lively debate about climate change policy. There are controversies about many details of climate science and economics. While some claim that skeptics cannot get their papers published, working papers and the Internet are open to all. I believe the opposite of what the sixteen claim to be true: dissident voices and new theories are encouraged because they are critical to sharpening our analysis. The idea that climate science and economics are being suppressed by a modern Lysenkoism is pure fiction. 5. A fifth argument is that mainstream climate scientists are benefiting from the clamor about climate change: Why is there so much passion about global warming…? There are several reasons, but a good place to start is the old question “cui bono?” Or the modern update, “Follow the money.” Alarmism over climate is of great benefit to many, providing government funding for academic research and a reason for government bureaucracies to grow. Alarmism also offers an excuse for governments to raise taxes, taxpayer-funded subsidies for businesses that understand how to work the political system, and a lure for big donations to charitable foundations promising to save the planet. This argument is inaccurate as scientific history and unsupported by any evidence. There is a suggestion that standard theories about global warming have been put together by the scientific equivalent of Madison Avenue to raise funds from government agencies like the National Science Foundation (NSF). The fact is that the first precise calculations about the impact of increased CO2 concentrations on the earth’s surface temperature were made by Svante Arrhenius in 1896, more than five decades before the NSF was founded. The skeptics’ account also misunderstands the incentives in academic research. IPCC authors are not paid. Scientists who serve on panels of the National Academy of Science do so without monetary compensation for their time and are subject to close scrutiny for conflicts of interest. Academic advancement occurs primarily from publication of original research and contributions to the advancement of knowledge, not from supporting “popular” views. Indeed, academics have often been subject to harsh political attacks when their views clashed with current political or religious teachings. This is the case in economics today, where Keynesian economists are attacked for their advocacy of “fiscal stimulus” to promote recovery from a deep recession; and in biology, where evolutionary biologists are attacked as atheists because they are steadfast in their findings that the earth is billions rather than thousands of years old. In fact, the argument about the venality of the academy is largely a diversion. The big money in climate change involves firms, industries, and individuals who worry that their economic interests will be harmed by policies to slow climate change. The attacks on the science of global warming are reminiscent of the well-documented resistance by cigarette companies to scientific findings on the dangers of smoking. Beginning in 1953, the largest tobacco companies launched a public relations campaign to convince the public and the government that there was no sound scientific basis for the claim that cigarette smoking was dangerous. The most devious part of the campaign was the underwriting of researchers who would support the industry’s claim. The approach was aptly described by one tobacco company executive: “Doubt is our product since it is the best means of competing with the ‘body of fact’ that exists in the mind of the general public. It is also the means of establishing a controversy.”9

**Models prove warming causes biodiversity loss and extinction**

**IPCC 07** – “Climate Change 2007: Working Group II: Impacts, Adaptation and Vulnerability”, http://www.ipcc.ch/publications\_and\_data/ar4/wg2/en/ch4s4-4-11.html) EL

Considerable progress has been made since the TAR in key fields that allow projection of future climate change impacts on species and ecosystems. Two of these key fields, namely climate envelope modelling (also called niche-based, or bioclimatic modelling) and dynamic global vegetation modelling have provided numerous recent results. The synthesis of these results provides a picture of potential impacts and risks that is far from perfect, in some instances apparently contradictory, but overall highlights a wide array of key vulnerabilities (Figures 4.2; 4.4; 4.5, Table 4.1). Climate envelope modelling has burgeoned recently due to increased availability of species distribution data, together with finer-scale climate data and new statistical methods that have allowed this correlative method to be widely applied (e.g., Guisan and Thuiller, 2005; McClean et al., 2005; Thuiller et al., 2005b). Despite several limitations (Section 4.3 and references cited therein) these models offer the advantage of assessing climate change impacts on biodiversity quantitatively (e.g., Thomas et al., 2004a). Climate envelope models do not simulate dynamic population or migration processes, and results are typically constrained to the regional level, so that the implications for biodiversity at the global level are difficult to infer (Malcolm et al., 2002a). In modelling ecosystem function and plant functional type response, understanding has deepened since the TAR, though consequential uncertainties remain. The ecophysiological processes affected by climate change and the mechanisms by which climate change may impact biomes, ecosystem components such as soils, fire behaviour and vegetation structure (i.e., biomass distribution and leaf area index) are now explicitly modelled and have been bolstered by experimental results (e.g., Woodward and Lomas, 2004b). One emerging key message is that climate change impacts on the fundamental regulating services may previously have been **underestimated** (Sections 4.4.1, 4.4.10, Figures 4.2; 4.3; 4.4). Nevertheless, the globally applicable DGVMs are limited inasmuch as the few plant functional types used within the models aggregate numerous species into single entities (Sitch et al., 2003). These are assumed to be entities with very broad environmental tolerances, which are immutable and immune to extinction. Therefore, underlying changes in species richness are not accounted for, and the simultaneous free dispersal of PFTs is assumed (e.g., Neilson et al., 2005; Midgley et al., 2007). The strength of DGVMs is especially in their global application, realistic dynamics and simulation of ecosystem processes including essential elements of the global C-cycle (e.g., Malcolm et al., 2002b). Thus, it is reasonable to equate changes in DGVM-simulated vegetation (e.g., Figure 4.3) to changes in community and population structures in the real world. What overall picture emerges from the results reviewed here? It appears that moderate levels of atmospheric CO2 rise and climate change relative to current conditions may be beneficial in some regions (Nemani et al., 2003), depending on latitude, on the CO2 responsiveness of plant functional types, and on the natural adaptive capacity of indigenous biota (mainly through range shifts that are now being widely observed – see Chapter 1). But as change continues, greater impacts are projected, while ecosystem and species response may be lagged (Sections 4.4.5, 4.4.6). At key points in time (Figure 4.4), ecosystem services such as carbon sequestration may cease, and even reverse (Figure 4.2). While such ‘tipping points’ (Kemp, 2005) are impossible to identify without substantial uncertainties, they may lead to **irreversible effects** such as **biodiversity loss** or, at the very least, impacts that have a slow recovery (e.g., on soils and corals). Figure 4.4 Figure 4.4. Compendium of projected risks due to critical climate change impacts on ecosystems for different levels of global mean annual temperature rise, ΔT, relative to pre-industrial climate (approach and event numbers as used in Table 4.1 and Appendix 4.1). It is important to note that these impacts do not take account of ancillary stresses on species due to over-harvesting, habitat destruction, landscape fragmentation, alien species invasions, fire regime change, pollution (such as nitrogen deposition), or for plants the potentially beneficial effects of rising atmospheric CO2. The red curve shows observed temperature anomalies for the period 1900-2005 (Brohan et al., 2006, see also Trenberth et al., 2007, Figure 3.6). The two grey curves provide examples of the possible future evolution of temperature against time (Meehl et al., 2007, Figure 10.4), providing examples of higher and lower trajectories for the future evolution of the expected value of ΔT. Shown are the simulated, multi-model mean responses to (i) the A2 emissions scenario and (ii) an extended B1 scenario, where radiative forcing beyond the year 2100 was kept constant to the 2100 value (all data from Meehl et al., 2007, Figure 10.4, see also Meehl et al., 2007, Section 10.7). In the two simulations presented in Figure 4.2 (warming of 2.9°C and 5.3°C by 2100 over land relative to the 1961-1990 baseline), the DGVM approach reveals salient changes in a key regulating service of the world’s ecosystems: carbon sequestration. Changes in the spatial distributions of ecosystems are given in Figure 4.3 (where it must be stressed that the figure highlights only key vulnerabilities through depicting appreciable vegetation type changes, i.e., PFT change over >20% of the area of any single pixel modelled). In the B1 emissions scenario (Figure 4.3b) about 26% of extant ecosystems reveal appreciable changes by 2100, with some positive impacts especially in Africa and the Southern Hemisphere. However, these positive changes are likely to be due to the assumed CO2-fertilisation effect (Section 4.4.10, Figure 4.3). By contrast, in mid- to high latitudes on all continents, substantial shifts in forest structure toward more rain-green, summer-green or deciduous rather than evergreen forest, and forest and woodland decline, underlie the overall drop in global terrestrial carbon sequestration potential that occurs post-2030, and approaches a net source by about 2070 (Figure 4.2; 4.3). In the A2 emissions scenario, roughly 37% of extant ecosystems reveal appreciable changes by 2100. Desert amelioration persists in the regions described above, but substantial decline of forest and woodland is seen at northern, tropical and sub-tropical latitudes. In both scenarios the current global sink deteriorates after 2030, and by 2070 (ΔT ~2.5°C over pre-industrial) the terrestrial biosphere becomes an increasing carbon source (Figure 4.2; see also Scholze et al., 2006) with the concomitant risk of positive feedback, developments that amplify climate change. Similar results were obtained by using a wide range of climate models which indicate that the biosphere becomes consistently within this century a net CO2 source with a global warming of >3°C relative to pre-industrial (Scholze et al., 2006). On the other hand, it must be noted that by about 2100 the modelled biosphere has nevertheless sequestered an additional 205-228 PgC (A2 and B1 emissions scenarios respectively) relative to the year 2000 (Lucht et al., 2006). Climate envelope modelling suggests that climate change impacts will diminish the areal extent of some ecosystems (e.g., reduction by 2-47% alone due to 1.6°C warming above pre-industrial, Table 4.1, No. 6) and impact many ecosystem properties and services globally. Climate impacts alone will vary regionally and across biomes and will lead to increasing levels of global biodiversity loss, as expressed through area reductions of wild habitats and declines in the abundance of wild species putting those species at risk of extinction (e.g., 3-16% of European plants with 2.2°C warming (Table 4.1, No. 20) or major losses of Amazon rainforest with 2.5°C warming above pre-industrial, Figure 4.4, Table 4.1, No. 36). Globally, biodiversity (represented by species richness and relative abundance) may decrease by 13 to 19% due to a combination of land-use change, climate change and nitrogen deposition under four scenarios by 2050 relative to species present in 1970 (Duraiappah et al., 2005). Looking at projected losses due to land-use change alone (native habitat loss), habitat reduction in tropical forests and woodland, savanna and warm mixed forest accounts for 80% of the species projected to be lost (about 30,000 species – Sala, 2005). The apparent contrast between high impacts shown by projections for species (climate envelope models) relative to PFTs (DGVMs) is likely to be due to a number of reasons – most importantly, real species virtually certainly have narrower climate tolerances than PFTs, a fact more realistically represented by the climate envelope models. DGVM projections reveal some increasing success of broad-range, generalist plant species, while climate envelope model results focus on endemics. Endemics, with their smaller ranges, have been shown to have a greater vulnerability to climate change (Thuiller et al., 2005a), and may furthermore be dependent on keystone species in relationships that are ignored in DGVMs. Therefore, for assessing extinction risks, climate envelope modelling currently appears to offer more realistic results. As indicated in the TAR, climate changes are being imposed on ecosystems experiencing other substantial and largely detrimental pressures. Roughly 60% of evaluated ecosystems are currently utilised unsustainably and show increasing signs of degradation (Reid et al., 2005; Hassan et al., 2005; Worm et al., 2006). This alone will be likely to cause widespread biodiversity loss (Chapin et al., 2000; Jenkins, 2003; Reid et al., 2005), given that 15,589 species, from every major taxonomic group, are already listed as threatened (Baillie et al., 2006). The likely synergistic impacts of climate change and land-use change on endemic species have been widely confirmed (Hannah et al., 2002a; Hughes, 2003; Leemans and Eickhout, 2004; Thomas et al., 2004a; Lovejoy and Hannah, 2005; Hare, 2006; Malcolm et al., 2006; Warren, 2006), as has over-exploitation of marine systems (Worm et al., 2006; Chapters 5 and 6). Overall, **climate change** has been estimated to be a **major driver of biodiversity loss** in cool conifer forests, savannas, mediterranean-climate systems, tropical forests, in the Arctic tundra, and in coral reefs (Thomas et al., 2004a; Carpenter et al., 2005; Malcolm et al., 2006). In other ecosystems, land-use change may be a stronger driver of biodiversity loss at least in the near term. In an analysis of the SRES scenarios to 2100 (Strengers et al., 2004), deforestation is reported to cease in all scenarios except A2, suggesting that beyond 2050 climate change is very likely to be the major driver for biodiversity loss globally. Due to climate change alone it has been estimated that by 2100 between 1% and 43% of endemic species (average 11.6%) will be committed to extinction (DGVM-based study – Malcolm et al., 2006), whereas following another approach (also using climate envelope modelling-based studies – Thomas et al., 2004a) it has been estimated that on average 15% to 37% of species (combination of most optimistic assumptions 9%, most pessimistic 52%) will be committed to extinction by 2050 (i.e., their range sizes will have begun shrinking and fragmenting in a way that guarantees their accelerated extinction). Climate-change-induced extinction rates in tropical biodiversity hotspots are likely to exceed the predicted extinctions from deforestation during this century (Malcolm et al., 2006). In the mediterranean-climate region of South Africa, climate change may have at least as significant an impact on endemic Protea species’ extinction risk as land-use change does by 2020 (Bomhard et al., 2005). Based on all above findings and our compilation (Figure 4.4, Table 4.1) we estimate that on average 20% to 30% of species assessed are likely to be at increasingly high risk of extinction from climate change impacts possibly within this century as global mean temperatures exceed 2°C to 3°C relative to pre-industrial levels (this chapter). The uncertainties remain large, however, since for about 2°C temperature increase the percentage may be as low as 10% or for about 3°C as high as 40% and, depending on biota, the range is between 1% and 80% (Table 4.1; Thomas et al., 2004a; Malcolm et al., 2006). As global average temperature exceeds 4°C above pre-industrial levels, model projections suggest significant extinctions (40-70% species assessed) around the globe (Table 4.1). Losses of biodiversity will probably lead to decreases in the provision of ecosystem goods and services with trade-offs between ecosystem services likely to intensify (National Research Council, 1999; Carpenter et al., 2005; Duraiappah et al., 2005). Gains in provisioning services (e.g., food supply, water use) are projected to occur, in part, at the expense of other regulating and supporting services including genetic resources, habitat provision, climate and runoff regulation. Projected changes may also increase the likelihood of ecological surprises that are detrimental for human well-being (Burkett et al., 2005; Duraiappah et al., 2005). Ecological surprises include rapid and abrupt changes in temperature and precipitation, leading to an increase in extreme events such as **floods**, **fires** and **landslides**, increases in **eutrophication**, invasion by **alien species**, or rapid and sudden increases in **disease** (Carpenter et al., 2005). This could also entail sudden shifts of ecosystems to less desired states (Scheffer et al., 2001; Folke et al., 2004; e.g., Chapin et al., 2004) through, for example, the exeedance of critical temperature thresholds, possibly resulting in the irreversible loss of ecosystem services, which were dependent on the previous state (Reid et al., 2005)

#### High levels of CO2 lead to mass extinctions

Parry‘ 12(Live Science Senior writer“Oceans turning acidic faster than in than psat 300 million years” Wayne Parry Live Science 3/2/2012 http://www.livescience.com/18786-ocean-acidification-extinction.html)

**The oceans are becoming more acidic faster than they have in the past 300 million years, a period that includes four mass extinctions**, researchers have found. Then, as is happening now, **increases in carbon dioxide in the atmosphere warmed the planet and made the oceans more acidic. These changes are associated with major shifts in climate and mass extinctions.** But while past increases in the atmosphere's carbon dioxide levels resulted from volcanoes and other natural causes, today **that spike is due to human activities,** the scientists note. "What we're doing today really stands out," lead researcher Bärbel Hönisch, a paleoceanographer at Columbia University's Lamont-Doherty Earth Observatory, said in a news release. "We know that life during past ocean acidification events was not wiped out — new species evolved to replace those that died off. But **if industrial carbon emissions continue at the current pace, we may lose organisms** we care about — coral reefs, oysters, salmon." [Humans Causing 6th Mass Extinction] **As the level of carbon dioxide in the atmosphere increases, oceans absorb that carbon dioxide,** which turns into a carbon acid. As a result the pH — a measure of acidity — drops, meaning **the water has become more acidic.** This dissolves the carbonates needed by some organisms, like corals, oysters or the tiny snails salmon eat. **In their review, published Thursday (March 1) in the journal Science, Hönisch and colleagues found the closest modern parallel about 56 millions ago** in what is called the Paleocene-Eocene Thermal Maximum, w**hen atmospheric carbon concentrations doubled, pushing up global temperatures. Extinctions in the deep sea accompanied this shift.** (The PETM occurred about 9 million years after the dinosaurs went extinct.) **But, now, the ocean is acidifying at least 10 times faster than it did 56 million years ago**, according to Hönisch. Ocean acidification may also have occurred when volcanoes pumped massive amounts of carbon dioxide into the air 252 million years ago, at the end of the Permian period, and 201 million years ago, at the end of the Triassic period, they found. Both are associated with mass extinctions. **"The current rate of (mainly fossil fuel) carbon dioxide release stands out as capable of driving a combination and magnitude of ocean geochemical changes potentially unparalleled in at least the last 300 million years of Earth history, raising the possibility that we are entering an unknown territory of marine ecosystem change,"** the researchers conclude in their paper.

#### Slow-down and mitigation are key – they limit the magnitude.

Carnesale 11 (Albert Carnesale, PhD in Nuclear Engineering, UCLA Chancellor Emeritus, Professor of Public Policy and Mechanical and Aerospace Engineering, “America’s Climate Choices,” March 2011, http://dels.nas.edu/resources/static-assets/materials-based-on-reports/reports-in-brief/ACC-final-brief.pdf)In the judgment of this report’s authoring committee, the environmental, economic, and humanitarian risks posed by climate change indicate a pressing need for substantial action to limit the magnitude of climate change and to prepare for adapting to its impacts. There are many reasons why it is imprudent to delay such actions, for instance: • The sooner that serious efforts to reduce greenhouse gas emissions proceed, the lower the risks posed by climate change, and the less pressure there will be to make larger, more rapid, and potentially more expensive reductions later. • Some climate change impacts, once manifested, will persist for hundreds or even thousands of years, and will be difficult or impossible to “undo.” In contrast, many actions taken to respond to climate change could be reversed or scaled back, if they some how prove to be more

stringent than actually needed.

#### Biodiversity loss risks extinction.

Raj 12(P. J. Sanjeeva Raj, former Head of Zoology Department, Madras Christian College, “Beware the Loss of Biodiversity,” The Hindu, September 23, 2012, http://www.thehindu.com/opinion/open-page/beware-the-loss-of-biodiversity/article3927062.ece)

He regrets that if such indiscriminate annihilation of all biodiversity from the face of the earth happens for anthropogenic reasons, as has been seen now, it is sure to force humanity into an emotional shock and trauma of loneliness and helplessness on this planet. He believes that the current wave of biodiversity loss is sure to lead us into an age that may be appropriately called the “Eremozoic Era, the Age of Loneliness.” Loss of biodiversity is a much greater threat to human survival than even climate change. Both could act, synergistically too, to escalate human extinction faster. Biodiversity is so indispensable for human survival that the United Nations General Assembly has designated the decade 2011- 2020 as the ‘Biodiversity Decade’ with the chief objective of enabling humans to live peaceably or harmoniously with nature and its biodiversity. We should be happy that during October 1-19, 2012, XI Conference of Parties (CoP-11), a global mega event on biodiversity, is taking place in Hyderabad, when delegates from 193 party countries are expected to meet. They will review the Convention on Biological Diversity (CBD), which was originally introduced at the Earth Summit or the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992. The Ministry of Environment and Forests (MoEF) is the nodal agency for CoP-11. Today, India is one of the 17 mega-diverse (richest biodiversity) countries. Biodiversity provides all basic needs for our healthy survival — oxygen, food, medicines, fibre, fuel, energy, fertilizers, fodder and waste-disposal, etc. Fast vanishing honeybees, dragonflies, bats, frogs, house sparrows, filter (suspension)-feeder oysters and all keystone species are causing great economic loss as well as posing an imminent threat to human peace and survival. The three-fold biodiversity mission before us is to inventorise the existing biodiversity, conserve it, and, above all, equitably share the sustainable benefits out of it.

#### Science should be trusted—our truth claims are grounded in good methodology

**Sullivan, 98** (Phillip A., professor of aerospace engineering at the University of Toronto’s Institute for Aerospace Studies, “An Engineer Dissects Two Cases Studies”, A House Built on Sand: Exposing Postmodernist Myths about Science, edited by Noretta Koertge)

With a telephone line held open to allow us immediate access to data on spacecraft geometry, masses, and other quantities, we worked in two groups. One used Newton's laws of mechanics to estimate LEM separation speeds attainable with various tunnel pressures. The second group estimated the strength of the pressure pulse generated  
by the explosive charge. They adapted formulas verified, in the first instance, by comparisons with photographs of the first atomic explosion at Alamogordo, New Mexico. 1 We concluded that a tunnel pressure of 2 psi would provide sufficient separation speed while minimizing the risk of damage to the reentry module. We assumed that other groups were consulted, but we subsequently learned that our advice was the main basis for a decision to lower the tunnel pressure and thus to complete a successful rescue. 2 Such incidents convince us that science provides an efficient and objective way of obtaining, organizing, and using the knowledge in the disciplines we practice. Typically, the history of space exploration provides numerous examples in which Newton's laws of mechanics and gravitation have been used to accurately predict both the trajectories and timing of missions. In a word, **science works**! Consequently, when we learn that certain philosophers, sociologists, and other humanists claim that scientific knowledge is not objective or value free or that scientific laws are inventions and not discoveries, our instinctive reaction is to dismiss such views as based on ignorance or even envy. 3 But some of us, increasingly concerned that these views are adversely influencing public attitudes toward science, have decided to scrutinize our critics' work. This essay is therefore one engineer's reaction to two samples of the literature. I conclude that the initial instinctive reaction of scientists is well founded, that the problems these philosophers, sociologists, and humanists have with scientific knowledge reflect problems in those disciplines and not problems in science.

#### Successful environmental changes requires effective political engagement—environmental philosophers must abandon abstract ‘biocentric’ theorizing in order to build the public support necessary to create effective policies.

Avner **De-Shalit**, **2000**. Professor of Political Theory at the Hebrew University of Jerusalem and Associate Fellow at the Oxford Centre for Environment, Ethics, and Society, Mansfield College, Oxford University. “The Environment: Between Theory and Practice,” p. 4-6, Questia.

However, it would be wrong, if not dangerous, to blame the 'other'. From the prophets in biblical times to the French revolutionaries and the early Fabians, history is full of examples of theorists and philosophers who abandoned all hope of persuading others through deliberation, and became impatient and hence more radical in their ideas. This explains why the shift from humanistic to misanthropic attitudes has been rapid. Perhaps the 'easiest' way to solve a problem is to lose faith in a form of gradual change that can still remain respectful of humans. Such an attitude, I believe, **only brings about a new series of problems encompassing dictatorship, totalitarianism, and lack of personal freedom**. In this book I seek to maintain the philosophical impetus, not to point the finger at the politicians or the activists. Rather, I wish to examine ourselves—the philosophers who engage in discussing the environment—to discover how we might construct a theory that is much more accessible to the activists and the general public (without relinquishing any of our goals), and which can be harnessed to the aims of political philosophy. Here, the counter-argument would go something like this: 'OK, so the argumentation supplied by environmental philosophers is so removed from that used by activists and governments. So what? The only outcome of this is that more arguments, or, if you like, a pluralistic set of arguments, will emerge. Some arguments are relevant to academia alone; others can be used in politics. Thus, for example, in the university we could maintain an ecocentric environmental philosophy, 7 whereas in politics anthropocentric 8 arguments would dominate.' In response to this, it could be argued that plurality of argument is indeed welcome. Moreover, as we saw earlier, the divergence between, say, ecocentric environmental philosophy and anthropocentric environmental philosophy is not so vast in terms of the policies they recommend. In fact, as John Barry argues, 'reformed naturalistic humanism' is capable of supporting a stewardship ethics just as well (J. Barry 1999 : ch. 3). But my point is that **saving the environment is not just a matter of theory: it is an urgent political mission**. In a democratic system, however, one cannot expect policies to be decided without giving any thought to **how these policies should be explained to the public**, and thereby gain legitimacy. In other words, the rationale of a policy is an increasingly important, if not inseparable, part of the policy; in particular, the openness and transparency of the democratic regime makes the rationale a crucial aspect of the policy. A policy whose rationale is not open to the public, or one that is believed to be arrived at through a process not open to the public, is considered a-democratic (cf. Ezrahi 1990). Consequently, a policy's legitimacy is owed not only to its effectiveness, but also to the degree of moral persuasion and conviction it generates within the public arena. So, when constructing environmental policies in democratic regimes, there is a need for a theory that can be used not only by academics, but also by politicians and activists. Hence the first question in this book is, Why has the major part of environmental philosophy failed to penetrate environmental policy and serve as its rationale? The first part of this book, then, discusses this question and offers two explanations in response. These explanations are based on the premiss that environmental ethics and political theory should be differentiated and well defined so that later on they may join hands, rather than that they should be united in a single theory. It is assumed that they answer two questions. Environmental ethics is about the moral grounds for an environment-friendly attitude. Political theory with regard to the environment relates to the institutions needed to implement and support environmental policies. Thus, the failure to distinguish properly between environmental ethics and political theory underlies the failure of the major part of environmental philosophy to penetrate environmental policy and provide its rationale. In Chapter 1 it is claimed that in a way environmental philosophers have moved too rapidly away from anthropocentrism—mainstream ethical discourses—towards biocentrism and ecocentrism. 9 My argument is that **the public on the whole is not ready for this**, and therefore many activists and potential supporters of the environmental movement become alienated from the philosophical discourse on the environment. In addition, I suggest that the reason for the gap between on the one hand environmental philosophers and on the other activists and politicians is that environmental philosophers have applied the wrong approach to political philosophy. I claim that all moral reasoning involves a process of reflective equilibrium between intuitions and theory. I distinguish between 'private', 'contextual', and 'public' modes of reflective equilibrium, arguing that environmental philosophers use either the first or second mode of reasoning, whereas political philosophy requires the third: the public mode of reflective equilibrium. The latter differs from the other two models in that it weighs both the intuitions and the theories put forward by activists and the general public (and not just those of professional philosophers). The argument for this being so is that reasoning about the environment needs to include political and democratic philosophy. And yet, most of environmental philosophers' efforts so far have focused on such questions of meta-ethics as 'intrinsic value theories' and 'biocentrism'. Environmental philosophers have been pushed in this direction out of a genuine desire to seek out the 'good' and the truth, in an effort to ascertain the moral grounds for an environment-friendly attitude. I suggest that **environmental philosophers** should not limit themselves to discussing the moral grounds for attitudes, or to trying to reveal the good and the truth, although these are important and fascinating questions. At least some of them **should instead go beyond this and address the matter of the necessary institutions for implementing policies, and finally, and of no less importance, find a way to persuade others to act on behalf of the environment**. In other words, while there is a place for meta-ethics, it should not be the only approach to philosophizing about the environment; it should not replace political philosophy.

#### Switch-side debate inculcates skills that empirically improve climate policy outcomes

**Mitchell 10** (Gordon R. Mitchell, is Associate Professor and Director of Graduate Studies in the Department of Communication at the University of Pittsburgh, where he also directs the William Pitt Debating Union. Robert Asen’s patient and thoughtful feedback sharpened this manuscript, which was also improved by contributions from members of the Schenley Park Debate Authors Working Group (DAWG), a consortium of public argument scholars at the University of Pittsburgh that strives to generate rigorous scholarship addressing the role of argumentation and debate in society, “Switch-Side Debating Meets Demand-Driven Rhetoric of Science,” Spring 2010, Vol. 13 Issue 1, http://www.pitt.edu/~gordonm/JPubs/Mitchell2010.pdf)

The watchwords for the intelligence community’s debating initiative— collaboration, critical thinking, collective awareness—resonate with key terms anchoring the study of deliberative democracy. In a major new text, John Gastil defines deliberation as a process whereby people “carefully examine a problem and arrive at a well-reasoned solution aft er a period of inclusive, respectful consideration of diverse points of view.”40 Gastil and his colleagues in organizations such as the Kettering Foundation and the National Coalition for Dialogue and Deliberation are pursuing a research program that foregrounds the democratic telos of deliberative processes. Work in this area features a blend of concrete interventions and studies of citizen empowerment.41 Notably, a key theme in much of this literature concerns the relationship between deliberation and debate, with the latter term often loaded with pejorative baggage and working as a negative foil to highlight the positive qualities of deliberation.42 “Most political discussions, however, are debates. Stories in the media turn politics into a never-ending series of contests. People get swept into taking sides; their energy goes into figuring out who or what they’re for or against,” says Kettering president David Mathews and coauthor Noelle McAfee. “Deliberation is different. It is neither a partisan argument where opposing sides try to win nor a casual conversation conducted with polite civility. Public deliberation is a means by which citizens make tough choices about basic purposes and directions for their communities and their country. It is a way of reasoning and talking together.”43 Mathews and McAfee’s distrust of the debate process is almost paradigmatic amongst theorists and practitioners of Kettering-style deliberative democracy. One conceptual mechanism for reinforcing this debate-deliberation opposition is characterization of debate as a process inimical to deliberative aims, with debaters adopting dogmatic and fixed positions that frustrate the deliberative objective of “choice work.” In this register, Emily Robertson observes, “unlike deliberators, debaters are typically not open to the possibility of being shown wrong. . . . Debaters are not trying to find the best solution by keeping an open mind about the opponent’s point of view.”44 Similarly, founding documents from the University of Houston–Downtown’s Center for Public Deliberation state, “Public deliberation is about choice work, which is different from a dialogue or a debate. In dialogue, people oft en look to relate to each other, to understand each other, and to talk about more informal issues. In debate, there are generally two positions and people are generally looking to ‘win’ their side.”45 Debate, cast here as the theoretical scapegoat, provides a convenient, low-water benchmark for explaining how other forms of deliberative interaction better promote cooperative “choice work.” The Kettering-inspired framework receives support from perversions of the debate process such as vapid presidential debates and verbal pyrotechnics found on Crossfire-style television shows.46 In contrast, the intelligence community’s debating initiative stands as a nettlesome anomaly for these theoretical frameworks, with debate serving, rather than frustrating, the ends of deliberation. The presence of such an anomaly would seem to point to the wisdom of fashioning a theoretical orientation that frames the debate-deliberation connection in contingent, rather than static terms, with the relationship between the categories shift ing along with the various contexts in which they manifest in practice.47 Such an approach gestures toward the importance of rhetorically informed critical work on multiple levels. First, the contingency of situated practice invites analysis geared to assess, in particular cases, the extent to which debate practices enable and/ or constrain deliberative objectives. Regarding the intelligence community’s debating initiative, such an analytical perspective highlights, for example, the tight connection between the deliberative goals established by intelligence officials and the cultural technology manifest in the bridge project’s online debating applications such as Hot Grinds. An additional dimension of nuance emerging from this avenue of analysis pertains to the precise nature of the deliberative goals set by bridge. Program descriptions notably eschew Kettering-style references to democratic citizen empowerment, yet feature deliberation prominently as a key ingredient of strong intelligence tradecraft . Th is caveat is especially salient to consider when it comes to the second category of rhetorically informed critical work invited by the contingent aspect of specific debate initiatives. To grasp this layer it is useful to appreciate how the name of the bridge project constitutes an invitation for those outside the intelligence community to participate in the analytic outreach eff ort. According to Doney, bridge “provides an environment for Analytic Outreach—a place where IC analysts can reach out to expertise elsewhere in federal, state, and local government, in academia, and industry. New communities of interest can form quickly in bridge through the ‘web of trust’ access control model—access to minds outside the intelligence community creates an analytic force multiplier.”48 This presents a moment of choice for academic scholars in a position to respond to Doney’s invitation; it is an opportunity to convert scholarly expertise into an “analytic force multiplier.” In reflexively pondering this invitation, it may be valuable for scholars to read Greene and Hicks’s proposition that switch-side debating should be viewed as a cultural technology in light of Langdon Winner’s maxim that “technological artifacts have politics.”49 In the case of bridge, politics are informed by the history of intelligence community policies and practices. Commenter Th omas Lord puts this point in high relief in a post off ered in response to a news story on the topic: “[W]hy should this thing (‘bridge’) be? . . . [Th e intelligence community] on the one hand sometimes provides useful information to the military or to the civilian branches and on the other hand it is a dangerous, out of control, relic that by all external appearances is not the slightest bit reformed, other than superficially, from such excesses as became exposed in the cointelpro and mkultra hearings of the 1970s.”50 A debate scholar need not agree with Lord’s full-throated criticism of the intelligence community (he goes on to observe that it bears an alarming resemblance to organized crime) to understand that participation in the community’s Analytic Outreach program may serve the ends of deliberation, but not necessarily democracy, or even a defensible politics. Demand-driven rhetoric of science necessarily raises questions about what’s driving the demand, questions that scholars with relevant expertise would do well to ponder carefully before embracing invitations to contribute their argumentative expertise to deliberative projects. By the same token, it would be prudent to bear in mind that the technological determinism about switch-side debate endorsed by Greene and Hicks may tend to flatten reflexive assessments regarding the wisdom of supporting a given debate initiative—as the next section illustrates, manifest differences among initiatives warrant context-sensitive judgments regarding the normative political dimensions featured in each case. Public Debates in the EPA Policy Process Th e preceding analysis of U.S. intelligence community debating initiatives highlighted how analysts are challenged to navigate discursively the heteroglossia of vast amounts of diff erent kinds of data flowing through intelligence streams. Public policy planners are tested in like manner when they attempt to stitch together institutional arguments from various and sundry inputs ranging from expert testimony, to historical precedent, to public comment. Just as intelligence managers find that algorithmic, formal methods of analysis often don’t work when it comes to the task of interpreting and synthesizing copious amounts of disparate data, public-policy planners encounter similar challenges. In fact, the argumentative turn in public-policy planning elaborates an approach to public-policy analysis that foregrounds deliberative interchange and critical thinking as alternatives to “decisionism,” the formulaic application of “objective” decision algorithms to the public policy process. Stating the matter plainly, Majone suggests, “whether in written or oral form, argument is central in all stages of the policy process.” Accordingly, he notes, “we miss a great deal if we try to understand policy-making solely in terms of power, influence, and bargaining, to the exclusion of debate and argument.”51 One can see similar rationales driving Goodwin and Davis’s EPA debating project, where debaters are invited to conduct on-site public debates covering resolutions craft ed to reflect key points of stasis in the EPA decision-making process. For example, in the 2008 Water Wars debates held at EPA headquarters in Washington, D.C., resolutions were craft ed to focus attention on the topic of water pollution, with one resolution focusing on downstream states’ authority to control upstream states’ discharges and sources of pollutants, and a second resolution exploring the policy merits of bottled water and toilet paper taxes as revenue sources to fund water infrastructure projects. In the first debate on interstate river pollution, the team of Seth Gannon and Seungwon Chung from Wake Forest University argued in favor of downstream state control, with the Michigan State University team of Carly Wunderlich and Garrett Abelkop providing opposition. In the second debate on taxation policy, Kevin Kallmyer and Matthew Struth from University of Mary Washington defended taxes on bottled water and toilet paper, while their opponents from Howard University, Dominique Scott and Jarred McKee, argued against this proposal. Reflecting on the project, Goodwin noted how the intercollegiate Switch-Side Debating Meets Demand-Driven Rhetoric of Science 107 debaters’ ability to act as “honest brokers” in the policy arguments contributed positively to internal EPA deliberation on both issues.52 Davis observed that since the invited debaters “didn’t have a dog in the fight,” they were able to give voice to previously buried arguments that some EPA subject matter experts felt reticent to elucidate because of their institutional affiliations.53 Such findings are consistent with the views of policy analysts advocating the argumentative turn in policy planning. As Majone claims, “Dialectical confrontation between generalists and experts often succeeds in bringing out unstated assumptions, conflicting interpretations of the facts, and the risks posed by new projects.”54 Frank Fischer goes even further in this context, explicitly appropriating rhetorical scholar Charles Willard’s concept of argumentative “epistemics” to flesh out his vision for policy studies: Uncovering the epistemic dynamics of public controversies would allow for a more enlightened understanding of what is at stake in a particular dispute, making possible a sophisticated evaluation of the various viewpoints and merits of diff erent policy options. In so doing, the diff ering, oft en tacitly held contextual perspectives and values could be juxtaposed; the viewpoints and demands of experts, special interest groups, and the wider public could be directly compared; and the dynamics among the participants could be scrutizined. This would by no means sideline or even exclude scientific assessment; it would only situate it within the framework of a more comprehensive evaluation.55 As Davis notes, institutional constraints present within the EPA communicative milieu can complicate eff orts to provide a full airing of all relevant arguments pertaining to a given regulatory issue. Thus, intercollegiate debaters can play key roles in retrieving and amplifying positions that might otherwise remain sedimented in the policy process. Th e dynamics entailed in this symbiotic relationship are underscored by deliberative planner John Forester, who observes, “If planners and public administrators are to make democratic political debate and argument possible, they will need strategically located allies to avoid being fully thwarted by the characteristic self-protecting behaviors of the planning organizations and bureaucracies within which they work.”56 Here, an institution’s need for “strategically located allies” to support deliberative practice constitutes the demand for rhetorically informed expertise, setting up what can be considered a demand-driven rhetoric of science. As an instance of rhetoric of science scholarship, this type of “switch-side public 108 Rhetoric & Public Affairs debate” diff ers both from insular contest tournament debating, where the main focus is on the pedagogical benefit for student participants, and first-generation rhetoric of science scholarship, where critics concentrated on unmasking the rhetoricity of scientific artifacts circulating in what many perceived to be purely technical spheres of knowledge production.58 As a form of demand-driven rhetoric of science, switch-side debating connects directly with the communication field’s performative tradition of argumentative engagement in public controversy—a different route of theoretical grounding than rhetorical criticism’s tendency to locate its foundations in the English field’s tradition of literary criticism and textual analysis.59 Given this genealogy, it is not surprising to learn how Davis’s response to the EPA’s institutional need for rhetorical expertise took the form of a public debate proposal, shaped by Davis’s dual background as a practitioner and historian of intercollegiate debate. Davis competed as an undergraduate policy debater for Howard University in the 1970s, and then went on to enjoy substantial success as coach of the Howard team in the new millennium. In an essay reviewing the broad sweep of debating history, Davis notes, “Academic debate began at least 2,400 years ago when the scholar Protagoras of Abdera (481–411 bc), known as the father of debate, conducted debates among his students in Athens.”60 As John Poulakos points out, “older” Sophists such as Protagoras taught Greek students the value of dissoi logoi, or pulling apart complex questions by debating two sides of an issue.61 Th e few surviving fragments of Protagoras’s work suggest that his notion of dissoi logoi stood for the principle that “two accounts [logoi] are present about every ‘thing,’ opposed to each other,” and further, that humans could “measure” the relative soundness of knowledge claims by engaging in give-and-take where parties would make the “weaker argument stronger” to activate the generative aspect of rhetorical practice, a key element of the Sophistical tradition.62 Following in Protagoras’s wake, Isocrates would complement this centrifugal push with the pull of synerchesthe, a centripetal exercise of “coming together” deliberatively to listen, respond, and form common social bonds.63 Isocrates incorporated Protagorean dissoi logoi into synerchesthe, a broader concept that he used flexibly to express interlocking senses of (1) inquiry, as in groups convening to search for answers to common questions through discussion;64 (2) deliberation, with interlocutors gathering in a political setting to deliberate about proposed courses of action;65 and (3) alliance formation, a form of collective action typical at festivals,66 or in the exchange of pledges that deepen social ties.67 Switch-Side Debating Meets Demand-Driven Rhetoric of Science 109 Returning once again to the Kettering-informed sharp distinction between debate and deliberation, one sees in Isocratic synerchesthe, as well as in the EPA debating initiative, a fusion of debate with deliberative functions. Echoing a theme raised in this essay’s earlier discussion of intelligence tradecraft , such a fusion troubles categorical attempts to classify debate and deliberation as fundamentally opposed activities. Th e significance of such a finding is amplified by the frequency of attempts in the deliberative democracy literature to insist on the theoretical bifurcation of debate and deliberation as an article of theoretical faith. Tandem analysis of the EPA and intelligence community debating initiatives also brings to light dimensions of contrast at the third level of Isocratic synerchesthe, alliance formation. Th e intelligence community’s Analytic Outreach initiative invites largely one-way communication flowing from outside experts into the black box of classified intelligence analysis. On the contrary, the EPA debating program gestures toward a more expansive project of deliberative alliance building. In this vein, Howard University’s participation in the 2008 EPA Water Wars debates can be seen as the harbinger of a trend by historically black colleges and universities (hbcus) to catalyze their debate programs in a strategy that evinces Davis’s dual-focus vision. On the one hand, Davis aims to recuperate Wiley College’s tradition of competitive excellence in intercollegiate debate, depicted so powerfully in the feature film The Great Debaters, by starting a wave of new debate programs housed in hbcus across the nation.68 On the other hand, Davis sees potential for these new programs to complement their competitive debate programming with participation in the EPA’s public debating initiative. Th is dual-focus vision recalls Douglas Ehninger’s and Wayne Brockriede’s vision of “total” debate programs that blend switch-side intercollegiate tournament debating with forms of public debate designed to contribute to wider communities beyond the tournament setting.69 Whereas the political telos animating Davis’s dual-focus vision certainly embraces background assumptions that Greene and Hicks would find disconcerting—notions of liberal political agency, the idea of debate using “words as weapons”70—there is little doubt that the project of pursuing environmental protection by tapping the creative energy of hbcu-leveraged dissoi logoi diff ers significantly from the intelligence community’s eff ort to improve its tradecraft through online digital debate programming. Such diff erence is especially evident in light of the EPA’s commitment to extend debates to public realms, with the attendant possible benefits unpacked by Jane Munksgaard and Damien Pfister: 110 Rhetoric & Public Affairs Having a public debater argue against their convictions, or confess their indecision on a subject and subsequent embrace of argument as a way to seek clarity, could shake up the prevailing view of debate as a war of words. Public uptake of the possibility of switch-sides debate may help lessen the polarization of issues inherent in prevailing debate formats because students are no longer seen as wedded to their arguments. This could transform public debate from a tussle between advocates, with each public debater trying to convince the audience in a Manichean struggle about the truth of their side, to a more inviting exchange focused on the content of the other’s argumentation and the process of deliberative exchange.71 Reflection on the EPA debating initiative reveals a striking convergence among (1) the expressed need for dissoi logoi by government agency officials wrestling with the challenges of inverted rhetorical situations, (2) theoretical claims by scholars regarding the centrality of argumentation in the public policy process, and (3) the practical wherewithal of intercollegiate debaters to tailor public switch-side debating performances in specific ways requested by agency collaborators. These points of convergence both underscore previously articulated theoretical assertions regarding the relationship of debate to deliberation, as well as deepen understanding of the political role of deliberation in institutional decision making. But they also suggest how decisions by rhetorical scholars about whether to contribute switch-side debating acumen to meet demand-driven rhetoric of science initiatives ought to involve careful reflection. Such an approach mirrors the way policy planning in the “argumentative turn” is designed to respond to the weaknesses of formal, decisionistic paradigms of policy planning with situated, contingent judgments informed by reflective deliberation.

**Apocalyptic rhetoric motivates environmentalism.**

**Salvador and Norton 11** (Michael Salvador - Michael Salvador is an Associate Professor in the Edward R. Murrow College of Communication at Washington State University and Todd Norton - Todd Norton is an Assistant Professor in the Edward R. Murrow College of Communication at Washington State University, “The Flood Myth in the Age of Global Climate Change,” 2/18/11, http://dx.doi.org/10.1080/17524032.2010.544749) Gangeezy

For Killingsworth and Palmer (1996), use of apocalyptic rhetoric has shifted in response to the changing relationship between the prevailing paradigm of human domination over nature\*limitless American progress through technology and economic development\*and the oppositional environmental paradigm of humans as subject to nature and in need of ecologically sustainable practices. When this prevailing paradigm was at its zenith, stronger apocalyptic visions were advanced, as in Rachel Carson’s (1962) Silent Spring. As environmental activism took hold in the public consciousness, less threatening visions of the Earth’s future were offered, as in Barry Commoner’s (1971) The Closing Circle. Thus, apocalyptic rhetoric served as a malleable framework for discussing environmental problems, allowing those concerned to transform growing awareness of environmental problems ‘‘into acceptance of action toward a solution by prefacing the solution with a future scenario of what could happen if action is not taken, if the problem goes untreated’’ (Killingsworth & Palmer, 1996, p. 22).

#### Political simulations are educationally valuable – deliberation is empowering and activates agency

**Hanghoj 08** – Thorkild Hanghøj, Copenhagen, 2008 Since this PhD project began in 2004, the present author has been affiliated with DREAM (Danish Research Centre on Education and Advanced Media Materials), which is located at the Institute of Literature, Media and Cultural Studies at the University of Southern Denmark. Research visits have taken place at the Centre for Learning, Knowledge, and Interactive Technologies (L-KIT), the Institute of Education at the University of Bristol and the institute formerly known as Learning Lab Denmark at the School of Education, University of Aarhus, where I currently work as an assistant professor (http://static.sdu.dk/mediafiles/Files/Information\_til/Studerende\_ved\_SDU/Din\_uddannelse/phd\_hum/afhandlinger/2009/ThorkilHanghoej.pdf)

Joas’ re-interpretation of Dewey’s pragmatism as a “theory of situated creativity” raises a critique of humans as purely rational agents that navigate instrumentally through meansends- schemes (Joas, 1996: 133f). This critique is particularly important when trying to understand how games are enacted and validated within the realm of educational institutions that by definition are inscribed in the great modernistic narrative of “progress” where nation states, teachers and parents expect students to acquire specific skills and competencies (Popkewitz, 1998; cf. chapter 3). However, as Dewey argues, the actual doings of **educational gaming** cannot be reduced to rational means-ends schemes. Instead, the situated interaction between teachers, students, and learning resources are played out as contingent re-distributions of means, ends and ends in view, which often make classroom contexts seem “messy” from an outsider’s perspective (Barab & Squire, 2004). 4.2.3. **Dramatic rehearsal** The two preceding sections discussed how Dewey views play as an imaginative activity of educational value, and how his assumptions on creativity and playful actions represent a critique of rational means-end schemes. For now, I will turn to Dewey’s concept of dramatic rehearsal, which assumes that social actors deliberate by **projecting** and **choosing between** various scenarios for **future action**. Dewey uses the concept dramatic rehearsal several times in his work but presents the most extensive elaboration in Human Nature and Conduct: Deliberation is a dramatic rehearsal (**in imagination**) of various competing possible **lines of action**… [It] is an experiment in finding out what the various lines of possible action are really like (...) Thought runs ahead and foresees outcomes, and thereby avoids having to await the instruction of actual failure and disaster. An act overtly tried out is irrevocable, its consequences cannot be blotted out. An act tried out in imagination is not final or fatal. It is retrievable (Dewey, 1922: 132-3). This excerpt illustrates how Dewey views the process of decision making (deliberation) through the lens of an imaginative drama metaphor. Thus, decisions are made through the imaginative projection of outcomes, where the “possible competing lines of action” are resolved through a **thought experiment**. Moreover, Dewey’s compelling use of the drama metaphor also implies that decisions cannot be reduced to utilitarian, rational or mechanical exercises, but that they have emotional, creative and personal qualities as well. Interestingly, there are relatively few discussions within the vast research literature on Dewey of his concept of dramatic rehearsal. A notable exception is the phenomenologist Alfred Schütz, who praises Dewey’s concept as a “fortunate image” for understanding **everyday rationality** (Schütz, 1943: 140). Other attempts are primarily related to overall discussions on moral or ethical deliberation (Caspary, 1991, 2000, 2006; Fesmire, 1995, 2003; Rönssön, 2003; McVea, 2006). As Fesmire points out, dramatic rehearsal is intended to describe an important phase of deliberation that does not characterise the whole process of making moral decisions, which includes “duties and contractual obligations, short and long-term consequences, traits of character to be affected, and rights” (Fesmire, 2003: 70). Instead, dramatic rehearsal should be seen as the process of “**crystallizing possibilities** and transforming them into directive hypotheses” (Fesmire, 2003: 70). Thus, deliberation can in no way guarantee that the response of a “**thought experiment**” will be successful. But what it cando is make the **process** of choosing more **intelligent** than would be the case with “blind” trial-and-error (Biesta, 2006: 8). The notion of dramatic rehearsal provides a **valuable perspective** for understanding educational gaming as a simultaneously real and imagined inquiry into **domain-specific scenarios**. Dewey defines dramatic rehearsal as the capacity to stage and evaluate “acts”, which implies an “irrevocable” difference between acts that are “tried out in imagination” and acts that are “overtly tried out” with real-life consequences (Dewey, 1922: 132-3). This description shares obvious similarities with games as they require participants to **inquire into** and resolve **scenario-specific problems** (cf. chapter 2). On the other hand, there is also a **striking difference** between moral deliberation and educational game activities in terms of the **actual consequences** that follow particular actions. Thus, when it comes to educational games, acts are both imagined and tried out, but without all the real-life consequences of the practices, knowledge forms and outcomes that are being simulated in the game world. Simply put, there is a difference in realism between the dramatic rehearsals of everyday life and in games, which only “play at” or **simulate** the stakes and risks that characterise the “serious” nature of moral deliberation, i.e. a real-life politician trying to win a parliamentary election experiences more personal and emotional risk than students trying to win the election scenario of The Power Game. At the same time, the lack of real-life consequences in educational games makes it possible to design a relatively safe learning environment, where teachers can stage particular game scenarios to be enacted and validated for educational purposes. In this sense, educational games are able to provide a safe but meaningful way of letting teachers and students make mistakes (e.g. by giving a poor political presentation) and dramatically rehearse particular “**competing** possible **lines of action**” that are relevant to particular educational goals (Dewey, 1922: 132). Seen from this pragmatist perspective, the educational value of games is not so much a question of learning facts or giving the “right” answers, but more a question of exploring the **contingent outcomes** and **domain-specific processes** of **problem-based scenarios**.

#### Sugarcane exports are feasible and desired.

Squatriglia 08 (Chuck Squatriglia, contributor at Wired Magazine, “With Fidel Gone, Will Cuba Become a Global Ethanol Player?” February 19, 2008 http://www.wired.com/cars/energy/news/2008/02/cuba\_ethanol)

Fidel Castro hates ethanol. He thinks it punishes the poor by driving up food prices. But Cuba produces a lot of sugar, and with Fidel's brother Raul -- a fan of biofuels -- calling the shots (at least for the time being), Cuba could become a key player in the global ethanol game. It wouldn't happen overnight, and it would take a huge investment in the country's rickety sugar industry, but Cuba has the potential to produce 3.2 billion gallons of ethanol annually, according to an analysis (.pdf) by Juan Tomas Sanchez of the Association for the Study of the Cuban Economy. Another Cuba expert, Jorge Hernandez Fonseca, puts the figure (.pdf) closer to 2 billion gallons but even that figure would place Cuba third -- behind Brazil and the United States -- in worldwide production. Of course, reaching either of those numbers would require Raul Castro to open the door to foreign investment, but that may not be as unlikely as it sounds. The Washington Post notes there's speculation that Fidel's exit opens the door to economic reform like we've seen in China, and it's worth noting Cuba is quietly modernizing its ethanol infrastructure. Raul Castro is seen as a pragmatist who is more concerned with improving Cubans' daily lives than spreading la revolución, and according to Reuters he is believed to favor loosening state control on Cuba's economy. The country has said it would allow foreign investment in its tourism industry. Whether that means he'll allow foreign investment in the sugar and ethanol industries remains to be seen (Cuba produces about 1.2 million tons of sugar annually, but was the world's leading producer before Castro took over in 1959). Cuba started overhauling 11 of its 17 ethanol refineries last year. That's an expensive proposition, and the money will have to come from somewhere. And its not as if agribusiness wouldn't love to have a piece of that pie. The Wall Street Journal notes that Archer Daniels Midland tried to get in on the Cuban ethanol game in the 1990s but was rebuffed by Fidel. Perhaps Raul will be more welcoming. Cuba doesn't have much need for ethanol, Sanchez writes, and could export as much as 3 billion gallons a year -- worth about $7 billion at today's prices. Don't look for any of that ethanol to flow in America though. The State Department says it won't lift the trade embargo on Cuba any time soon.

#### Restructuring overcomes Fidel’s objections.

Cuba Standard 12 (Cuba Standard, Cuban Business and Economic News, “Cuba Ethanol Production May Open up to Foreign Investment,” January 20, 2012, http://www.cubastandard.com/2012/01/20/cuban-ethanol-production-may-open-up-to-foreign-investment/)

Overcoming the objections of Fidel Castro, the Cuban government is beginning to consider large-scale ethanol production on the sugarcane-rich island, a Brazilian official said.

Investment opportunities for Brazilian companies in ethanol production in Cuba are about to open up, said Foreign Ministry spokesman Tovar Nunes after a visit of Foreign Minister Antonio Patriota to Cuba in January, according Folha de São Paulo. “Fidel’s resistance in this field is being overcome,” Nunes said. The historical leader of the Revolution, forced by illness to leave the presidency in 2006, has repeatedly warned in his columns that crop-based ethanol puts pressure on food production and food prices, thus hurting the poor. Supporting Fidel’s criticism, Venezuela and the ALBA bloc have so far abstained from promoting ethanol production. Cuba could manufacture close to 2 billion gallons of ethanol per year, according to Jorge Hernández Fonseca, a Cuban-born researcher with the Universidade do Estado do Pará in Brazil. This would make Cuba the world’s third-largest ethanol producer after Brazil and the United States. Cuba’s sugar industry has undergone a massive restructuring since 2004, with closings of more than half the country’s sugar mills and reduction of sugarcane cultivation. As part of the restructuring, the government has touted production of sugarcane byproducts, with the exception of fuel ethanol. Even so, it quietly modernized existing “alcohol” production facilities in 2006 and 2007.

#### The status quo puts gasoline before ethanol – only regional imports solve.

Alvarez et al. 10 (Pedro J. Alvarez, PhD, George R. Brown Professor and Chair of the Department of Civil and Environmental Engineering at Rice University, fellow of the American Society of Civil Engineers, former president of the Association of Environmental Engineering and Science Professors, Joel G. Burken, PhD, professor of environmental engineering, Missouri University of Science and Technology, Lauren A. Smulcer and James D. Coan, Energy Forum Research Associates, Baker Institute for Public Policy, Marcelo E. Dias de Oliveira, Consultant to the Baker Institute for Biofuels Policy, Rosa Dominguez-Faus and Diego E. Gomez, PhD candidates in the Civil and Environmental Engineering Department at Rice University, Amy Myers Jaffe, Fellow in Energy Studies, Baker Institute for Public Policy, Kenneth B. Medlock, PhD, Fellow in Energy and Resource Economics, Baker Institute for Public Policy, Susan E. Powers, PhD, professor of environmental engineering and Associate Dean, Coulter School of Engineering, Clarkson University, Ronald Soligo, PhD, Baker Institute Scholar, professor of economics at Rice University, “Fundamentals of a Sustainable U.S. Biofuels Policy,” The James A. Baker III Institute for Public Policy of Rice University, Baker Institute Policy Report, No. 43, January 2010, pgs. 5-6)

Current government support is required for ethanol produced in the Midwest to be an attractive option to blenders in most other parts of the country. The farther the end-use market is from the Midwest, the more the price of ethanol to the blender increases, reflecting higher transportation costs from the major producing regions to U.S. coastal regions. In addition, the relative price of ethanol to gasoline also increases. The reason for this is twofold: the price of ethanol is generally higher the farther the geographic distance from the Midwest, reflecting transportation cost differentials; and the price of gasoline is generally lower along U.S. coastal regions because it is closer to gasoline production and import delivery points. The relative price of ethanol to gasoline is important because it determines the competitiveness of the two fuels. Given that ethanol has a lower heating value than gasoline—hence yielding lower fuel efficiency—ethanol’s price must be no more than roughly two-thirds of the price of gasoline to make it competitive in the marketplace to sell a blended mixture. Only if ethanol is cheaper than gasoline will blenders make a profit by adding ethanol to their fuel. Thus, the closer the relative price of ethanol-to-gasoline is to 100 percent, the less profitable an option it becomes to blend ethanol into gasoline. Without government subsidies, the average ethanol price compared to gasoline will not be commercially competitive in most regional markets in the United States to incentivize blenders to add ethanol to gasoline. Coastal regions farthest from the Midwest could easily import ethanol through existing port infrastructure. The relatively low ethanol production costs in Brazil and production potential in the Caribbean and Central America could make importing ethanol a lower cost option. So, for example, blenders in Texas and other Gulf Coast states can either import ethanol via rail and truck from domestic inland locations such as Iowa, or they can import ethanol via ship from foreign locations such as Brazil or Guatemala. This could substantially help Gulf Coast states successfully meet a 10 percent ethanol content level. Notably, the per-unit cost of transport in the latter case is much lower than the U.S. Midwest option, given relative distances and transport costs. The current tariff on imported fuel ethanol is $0.54/gal plus a 2.5 percent ad valorem tax. Ethanol from United States-Dominican Republic-Central America Free Trade Agreement (CAFTA) countries is not subject to the tariff. So far, CAFTA countries have used duty-free access to import Brazilian hydrous ethanol and export anhydrous ethanol to the United States. Only Nicaragua has a substantial domestic ethanol industry based on domestically grown sugarcane. The Caribbean Basin Initiative (CBI) provides another way for imported ethanol to get into the country duty-free, but it only allows importation to expand to a maximum of 7 percent of U.S. domestic ethanol production. Given the production cost differentials between sugarcane ethanol and corn-based ethanol, these tariffs ensure that corn-based ethanol gets the priority share of the market. Most estimates place ethanol production costs using sugarcane as the primary feedstock at the equivalent of roughly 30 percent of the average production costs using corn as the primary feedstock. This means that imports of sugarcane-based ethanol have a competitive advantage in certain U.S. coastal markets.

#### Cuba says yes --- neg evidence is about the mills and not the investment and financing

Ross 04 (James E. Ross, Professor, Department of Food and Resource Economics, Institute of Food and Agricultural Sciences, University of Florida, “The Impact of Potential Changes in U.S.-Cuba Relations on Midwest Agribusiness Trade and Investment,” 14 Transnat'l L. & Contemp. Probs. 743, Fall 2004, LexisNexis)

The Ministry of Sugar (MINAZ) in the 1990s entered into eight economic associations with foreign capital. Partners included companies from Spain, France, Canada, Italy, and Mexico. MINAZ, reportedly, was working to develop associations in all spheres of the sugar industry in need of capital, especially in the area of byproducts. Examples cited included alcohol, molasses, bagasse boards, and generation of electricity obtained from sugarcane bagasse. Cuba encouraged proposals for investments, associations, joint ventures, or other types of negotiation that could accelerate development of the sugar-agro industry.

For the first time since 1959, a foreign investment in sugar marketing was established when a joint venture company, Compania Internacional Azucarera, S.A. (CAISA), was approved on December 6, 2001. Cubazucar (under the auspice of the Ministry of Foreign Trade) was to transfer control of sugar exports from the Republic of Cuba to the joint venture company for an initial five-year period. CAISA is structured for a period of thirty years. CAISA is also expected to participate, through the provision of financing, in the development, harvesting, and milling of sugar cane. Reportedly, CAISA is not taking responsibility for any debt of Cubazucar, which is estimated to be approximately $ 300 million.