# Rd 1 vs UTSA RR

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### Part 1

#### Contention 1 is physics.

#### Liquid fluoride thorium reactors are safe, efficient, and minimally wasteful

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Liquid fuel thorium reactors offer an array of advantages in design, operation, safety, waste management, cost and proliferation resistance over the traditional configuration of nuclear plants. Individually, the advantages are intriguing. Collectively they are compelling. Unlike solid nuclear fuel, liquid fluoride salts are impervious to radiation damage. We mentioned earlier that fuel rods acquire structural damage from the heat and radiation of the nuclear furnace. Replacing them requires expensive shutdown of the plant about every 18 months to swap out a third of the fuel rods while shuffling the remainder. Fresh fuel is not very hazardous, but spent fuel is intensely radioactive and must be handled by remotely operated equipment. After several years of storage underwater to allow highly radio-active fission products to decay to stability, fuel rods can be safely transferred to dry-cask storage. Liquid fluoride fuel is not subject to the structural stresses of solid fuel and its ionic bonds can tolerate unlimited levels of radiation damage, while eliminating the (rather high) cost of fabricating fuel elements and the (also high) cost of periodic shutdowns to replace them. More important are the ways in which liquid fuel accommodates chemical engineering. Within uranium oxide fuel rods, numerous transuranic products are generated, such as plutonium-239, created by the absorption of a neutron by uranium-238, followed by beta decay. Some of this plutonium is fissioned, contributing as much as one-third of the energy production of uranium reactors. All such transuranic elements could eventually be destroyed in the neutron flux, either by direct fission or transmutation to a fissile element, except that the solid fuel must be removed long before complete burnup is achieved. In liquid fuel, transuranic fission products can remain in the fluid fuel of the core, transmuting by neutron absorption until eventually they nearly all undergo fission. In solid fuel rods, fission products are trapped in the structural lattice of the fuel material. In liquid fuel, reaction products can be relatively easily removed. For example, the gaseous fission poison xenon is easy to remove because it bubbles out of solution as the fuel salt is pumped. Separation of materials by this mechanism is central to the main feature of thorium power, which is formation of fissile uranium-233 in the blanket for export to the core. In the fluoride salt of the thorium blanket, newly formed uranium-233 forms soluble uranium tetrafluoride (UF4). Bubbling fluorine gas through the blanket solution converts the uranium tetrafluoride into gaseous uranium hexafluoride (UF6), while not chemically affecting the lessreactive thorium tetrafluoride. Uranium hexafluoride comes out of solution, is captured, then is reduced back to soluble UF4 by hydrogen gas in a reduction column, and finally is directed to the core to serve as fissile fuel. Other fission products such as molybdenum, neodymium and technetium can be easily removed from liquid fuel by fluorination or plating techniques, greatly prolonging the viability and efficiency of the liquid fuel. Liquid fluoride solutions are familiar chemistry. Millions of metric tons of liquid fluoride salts circulate through hundreds of aluminum chemical plants daily, and all uranium used in today's reactors has to pass in and out of a fluoride form in order to be enriched. The LFTR technology is in many ways a straightforward extension of contemporary nuclear chemical engineering. Waste Not Among the most attractive features of the LFTR design is its waste profile. It makes very little. Recently, the problem of nuclear waste generated during the uranium era has become both more and less urgent. It is more urgent because as of early 2009, the Obama administration has ruled that the Yucca Mountain Repository, the site designated for the permanent geological isolation of existing U.S. nuclear waste, is no longer to be considered an option. Without Yucca Mountain as a strategy for waste disposal, the U.S. has no strategy at all. In May 2009, Secretary of Energy Steven Chu, Nobel laureate in physics, said that Yucca Mountain is off the table. What we're going to be doing is saying, let's step back. We realize that we know a lot more today than we did 25 or 30 years ago. The [Nuclear Regulatory Commission] is saying that the dry-cask storage at current sites would be safe for many decades, so that gives us time to figure out what we should do for a long-term strategy. The waste problem has become somewhat less urgent because many stakeholders believe Secretary Chu is correct that the waste, secured in huge, hardened casks under adequate guard, is in fact not vulnerable to any foreseeable accident or mischief in the near future, buying time to develop a sound plan for its permanent disposal. A sound plan we must have. One component of a long-range plan that would keep the growing problem from getting worse while meeting growing power needs would be to mobilize nuclear technology that creates far less waste that is far less toxic. The liquid fluoride thorium reactor answers that need. Thorium and uranium reactors produce essentially the same fission (breakdown) products, but they produce a quite different spectrum of actinides (the elements above actinium in the periodic table, produced in reactors by neutron absorption and transmutation). The various isotopes of these elements are the main contributors to the very long-term radiotoxicity of nuclear waste. The mass number of thorium-232 is six units less than that of uranium238, thus many more neutron captures are required to transmute thorium to the first transuranic. Figure 6 shows that the radiotoxicity of wastes from a thorium /uranium fuel cycle is far lower than that of the currently employed uranium/plutonium cycle--after 300 years, it is about 10,000 times less toxic. By statute, the U.S. government has sole responsibility for the nuclear waste that has so far been produced and has collected $25 billion in fees from nuclear-power producers over the past 30 years to deal with it. Inaction on the waste front, to borrow the words of the Obama administration, is not an option. Many feel that some of the $25 billion collected so far would be well spent kickstarting research on thorium power to contribute to future power with minimal waste. Safety First It has always been the dream of reactor designers to produce plants with inherent safety - reactor assembly, fuel and power-generation components engineered in such a way that the reactor will, without human intervention, remain stable or shut itself down in response to any accident, electrical outage, abnormal change in load or other mishap. The LFTR design appears, in its present state of research and design, to possess an extremely high degree of inherent safety. The single most volatile aspect of current nuclear reactors is the pressurized water. In boiling light-water, pressurized light-water, and heavywater reactors (accounting for nearly all of the 441 reactors worldwide), water serves as the coolant and neutron moderator. The heat of fission causes water to boil, either directly in the core or in a steam generator, producing steam that drives a turbine. The water is maintained at high pressure to raise its boiling temperature. The explosive pressures involved are contained by a system of highly engineered, highly expensive piping and pressure vessels (called the "pressure boundary"), and the ultimate line of defense is the massive, expensive containment building surrounding the reactor, designed to withstand any explosive calamity and prevent the release of radioactive materials propelled by pressurized steam. A signature safety feature of the LFTR design is that the coolant - liquid fluoride salt - is not under pressure. The fluoride salt does not boil below 1400 degrees Celsius. Neutral pressure reduces the cost and the scale of LFTR plant construction by reducing the scale of the containment requirements, because it obviates the need to contain a pressure explosion. Disruption in a transport line would result in a leak, not an explosion, which would be captured in a noncritical configuration in a catch basin, where it would passively cool and harden. Another safety feature of LFTRs, shared with all of the new generation of LWRs, is its negative temperature coefficient of reactivity. Meltdown, the bogey of the early nuclear era, has been effectively designed out of modern nuclear fuels by engineering them so that power excursions - the industry term for runaway reactors - are self-limiting. For example, if the temperature in a reactor rises beyond the intended regime, signaling a power excursion, the fuel itself responds with thermal expansion, reducing the effective area for neutron absorption - the temperature coefficient of reactivity is negative - thus suppressing the rate of fission and causing the temperature to fall. With appropriate formulations and configurations of nuclear fuel, of which there are now a number from which to choose among solid fuels, runaway reactivity becomes implausible. In the LFTR, thermal expansion of the liquid fuel and the moderator vessel containing it reduces the reactivity of the core. This response permits the desirable property of load following - under conditions of changing electricity demand (load), the reactor requires no intervention to respond with automatic increases or decreases in power production. As a second tier of defense, LFTR designs have a freeze plug at the bottom of the core - a plug of salt, cooled by a fan to keep it at a temperature below the freezing point of the salt. If temperature rises beyond a critical point, the plug melts, and the liquid fuel in the core is immediately evacuated, pouring into a subcritical geometry in a catch basin. This formidable safety tactic is only possible if the fuel is a liquid. One of the current requirements of the Nuclear Regulatory Commission (NRC) for certification of a new nuclear plant design is that in the event of a complete electricity outage, the reactor remain at least stable for several days if it is not automatically deactivated. As it happens, the freezeplug safety feature is as old as Alvin Weinberg's 1965 Molten Salt Reactor Experiment design, yet it meets the NRCs requirement; at ORNL, the "old nukes" would routinely shut down the reactor by simply cutting the power to the freeze-plug cooling system. This setup is the ultimate in safe power outage response. Power isn't needed to shut down the reactor, for example by manipulating control elements. Instead power is needed to prevent the shutdown of the reactor. Cost Wise In terms of cost, the ideal would be to compete successfully against coal without subsidies or market-modifying legislation. It may well be possible. Capital costs are generally higher for conventional nuclear versus fossil-fuel plants, whereas fuel costs are lower. Capital costs are outsized for nuclear plants because the construction, including the containment building, must meet very high standards; the facilities include elaborate, redundant safety systems; and included in capital costs are levies for the cost of decommissioning and removing the plants when they are ultimately taken out of service. The much-consulted MH study The Future of Nuclear Power, originally published in 2003 and updated in 2009, shows the capital costs of coal plants at $2.30 per watt versus $4 for light-water nuclear. A principal reason why the capital costs of LFTR plants could depart from this ratio is that the LFTR operates at atmospheric pressure and contains no pressurized water. With no water to flash to steam in the event of a pressure breach, a LFTR can use a much more close-fitting containment structure. Other expensive high-pressure coolant-injection systems can also be deleted. One concept for the smaller LFTR containment structure is a hardened concrete facility below ground level, with a robust concrete cap at ground level to resist aircraft impact and any other foreseeable assaults. Other factors contribute to a favorable cost structure, such as simpler fuel handling, smaller components, markedly lower fuel costs and significantly higher energy efficiency. LFTRs are high-temperature reactors, operating at around 800 degrees Celsius, which is thermodynamically favorable for conversion of thermal to electrical energy - a conversion efficiency of 45 percent is likely, versus 33 percent typical of coal and older nuclear plants. The high heat also opens the door for other remunerative uses for the thermal energy, such as hydrogen production, which is greatly facilitated by high temperature, as well as driving other industrial chemical processes with excess process heat. Depending on the siting of a LFTR plant, it could even supply heat for homes and offices. Thorium must also compete economically with energy-efficiency initiatives and renewables. A mature decision process requires that we consider whether renewables and efficiency can realistically answer the rapidly growing energy needs of China, India and the other tiers of the developing world as cheap fossil fuels beckon - at terrible environmental cost. Part of the cost calculation for transitioning to thorium must include its role in the expansion of prosperity in the world, which will be linked inexorably to greater energy demands. We have a pecuniary interest in avoiding the enviromental blowback of a massive upsurge in fossil-fuel consumption in the developing world. The value of providing an alternative to that scenario is hard to monetize, but the consequences of not doing so are impossible to hide from. Perhaps the most compelling idea on the drawing board for pushing thorium-based power into the mainstream is mass production to drive rapid deployment in the U.S. and export elsewhere. Business economists observe that commercialization of any technology leads to lower costs as the number of units increases and the experience curve delivers benefits in work specialization, refined production processes, product standardization and efficient product redesign. Given the diminished scale of LFTRs, it seems reasonable to project that reactors of 100 megawatts can be factory produced for a cost of around $200 million. Boeing, producing one $200 million airplane per day, could be a model for LFTR production.

#### However, thorium tech hasn’t caught on in the US

Niiler ’12 Eric Niiler, “Nuclear power entrepreneurs push thorium as a fuel,” Washington Post, 2/20/2012, http://www.washingtonpost.com/national/health-science/nuclear-power-entrepreneurs-push-thorium-as-a-fuel/2011/12/15/gIQALTinPR\_story.html

The proposed fuel is thorium, an abundant silver-gray element named for the Norse god of thunder. It is less radioactive than the uranium that has always powered U.S. plants, and advocates say that not only does it produce less waste, it also is more difficult to turn into nuclear weapons. They’re pushing the idea of adapting plants to use thorium as a fuel or replacing them with a completely new kind of reactor called a liquid-fluoride thorium reactor, or LFTR (pronounced “lifter”). The LFTR would use a mixture of molten chemical salts to cool the reactor and to transfer energy from the fission reaction to a turbine. Proponents say such a system would be more efficient and safer than existing plants, which use pressurized water to cool uranium fuel rods and boiling water or steam to transfer the energy they create. “A molten-salt reactor is not a pressurized reactor,” said John Kutsch, director of the Thorium Energy Alliance, a trade group based in Harvard, Ill. “It doesn’t use water for cooling, so you don’t have the possibility of a hydrogen explosion, as you did in Fukushima.” Kutsch and others say that a thorium-fueled reactor burns hotter than uranium reactors, consuming more of the fuel. “Ninety-nine percent of the thorium is burned up,” he said. “Instead of 10,000 pounds of waste, you would have 300 pounds of waste.” ‘Small boatloads of fanatics’ Although the idea of thorium power has been around for decades — and some countries are planning to build thorium-powered plants — it has not caught on with the companies that design and build nuclear plants in the United States or with the national research labs charged with investigating future energy sources.

#### Climate change is coming now and bears a hugely disproportionate impact on those already at the greatest socioeconomic disadvantage, causing widespread physical displacement and death

Byravan and Rajan ’10 Sujatha Byravan and Sudhir Chella Rajan, “The Ethical Implications of Sea-Level Rise Due to Climate Change,” Ethics & International Affairs 24, No. 3, 9/20/2010, only accessible on some exclusive database

As scientific evidence for the adverse effects of human-induced climate change grows stronger, it is becoming increasingly clear that these questions are of urgent practical interest and require concerted international political action. In the course of this century and the next, the earth’s climate will almost surely get warmer as a direct result of the emissions accumulated in the atmosphere from the burning of fossil fuels since the Industrial Revolution. This warming will very likely result in heat waves, heavy precipitation in some areas, extreme droughts in others, increased hurricane intensity, and sea-level rise of about one meter—although recent findings suggest this rise could quite plausibly be greater than that by century’s end.1 Forecasts of how many people will be displaced by 2050 by climate change vary widely, from about 25 million to 1 billion. The difficulty in accurate forecasting lies not only in the uncertainty regarding future climate change impacts and adaptation measures but also in estimating the outcome of the several complex factors driving migration.2 No other form of environmentally induced human migration will likely be as permanent as that caused by climate-induced SLR; and there are special reasons why its victims deserve unique moral consideration. SLR will affect coastal populations in a variety of ways, including inundation, flood and storm damage, erosion, saltwater intrusion, and wetland loss. Together, these will greatly reduce available land for cultivation, water resources, and fodder, causing severe hardship in terms of livelihood and habitat loss. Worst of all, SLR and the associated changes in the coastal zone will add burdens to many who are already poor and vulnerable. The physical changes associated with SLR may themselves take place in abrupt, nonlinear ways as thresholds are crossed. In turn, the least resilient communities— that is, those dependent on subsistence fishing—will be the first to experience ‘‘tipping points’’ in their life systems, so that the only option available to them would be to abandon their homes and search for better prospects elsewhere. As the average sea level continues to rise, coastal inundation, saltwater intrusion, and storm surges will become more intense and people will find it increasingly difficult to stay in their homes and will look for ways to migrate inland. As ever larger numbers pass thresholds in their ability to cope, more societal tipping points will be crossed, resulting in the sudden mass movements of entire villages, towns, and cities in coastal regions.3 On small islands and in countries with heavily populated delta regions, the very existence of the nation-state may become jeopardized, so that the extremely vulnerable will no longer have state protection they can rely on. The extent of vulnerability to sea-level rise in any given country will depend on more than just its terrain and climatic conditions: the fraction of the population living in low-lying regions, the area and proportion of the country inundated, its wealth and economic conditions, and its prevailing political institutions and infrastructure will all be of relevance. Thus, in a large country, such as the United States or China, coastal communities would be able to move inland, given adequate preparation and government response. In the case of small islands in the South Pacific, however, such an option does not exist, since it is expected that most or even the entire land area will sink or become uninhabitable. In such cases as Bangladesh, Egypt, Guyana, and Vietnam, where nearly half or more of the populations live in low-lying deltaic regions that support a major fraction of their economies, SLR will threaten the very functioning of the state. Moreover, it is increasingly clear that for tens to hundreds of millions of people living in low-lying areas and on small islands, no physical defense is realistically possible or can be fully protective. A recent report by the Dutch Delta Committee proposes annual investments of about 1.5 billion Euros for the rest of the century just to protect the Netherlands’ 200-mile coastline, and indicates that 20–50 percent of coastal land worldwide cannot be protected, especially under conditions where SLR takes place rapidly—as a result, say, of a collapse of major ice sheets in Greenland or Antarctica.4 Even if greenhouse gases are removed from the atmosphere through some future technology, we are already committed to a certain degree of warming and sea-level rise because of the thermal inertia of the oceans. In addition, most residents of small island nations and other low-lying coastal regions around the world will not be able to avail themselves of the sorts of conventional adaptation remedies that are conceivable for the victims of drought, reduced crop yields, desertification, and so on. Apart from exceptional cases where adequate engineering solutions can be developed to prevent inundation, coastal erosion, saltwater intrusion, and other challenges associated with rising seas, people living in these vulnerable regions will be forced to flee, generally with no possibility of return to their original homes. Indeed, migration and permanent resettlement will be the only possible ‘‘adaptation’’ strategy available to millions. Existing international law provides no solution for these individuals, for whom, we will argue, the only just remedy is in the form of special rights of free global movement and resettlement in regions and countries on higher ground in advance of disaster. What Needs to Be Done The issue of climate change and migration has received considerable scholarly attention, primarily in terms of its political and legal implications, but there has been little focus on the ethical aspects.5 In an earlier paper we suggested that the responsibility of absorbing ‘‘climate exiles’’ should be shared among host countries in a manner that is proportional to a host’s cumulative emissions of greenhouse gases.6 Here, we try to develop the ethical basis for the international community, first, to recognize that displaced persons, and in particular those whose nation states will have become physically nonexistent or will face an unendurable burden, should have a special right to free movement to other countries; and, second, to formulate institutional means for providing them political, social, and economic rights. We define the victims’ unbearable burden in the following terms: they will face a breakdown or total forfeiture of prevailing physical, economic, and social support systems; and they will have no effective state to endow them with rights and alleviate their pain. It is not our intention to provide a particular formula for how individual countries should be made responsible for the victims’ habitation and citizenship, but to suggest instead that once the basic principle of shared responsibility based on each country’s contribution to climate change is accepted, there could be several ways to determine precisely how the costs of policy implementation should be distributed, how rights could be exercised by the climate exiles and migrants, and what other institutional and political mechanisms should be established to avert a massive refugee crisis. The fairest solution, we therefore propose, is for the international community to grant, in the first instance, the individual right to migrate to safe countries for those who will be displaced forcibly by SLR. We then recommend that an international treaty begin to address this issue so that climate migrants and future exiles will be able to find homes well in advance of the actual emergency.7 Indeed, unlike in the case of natural disasters, such as the Asian tsunami of December 2004, the world is already sufficiently forewarned about the need to prepare for the effects of SLR and has ample time and opportunity to make reasoned judgments about how best to respond.8 We contend that the alternative—to ignore potential victims until after they become ‘‘environmental refugees’’—is morally indefensible as well as impractical. For one thing, the victims in the case of SLR cannot even be classified as ‘‘refugees’’ since there are no legal instruments that give them this option. Notably, the Refugee Convention, designed to protect those forced to flee their homes as a result of war or persecution, in force since 1954, recognizes as a refugee someone who is ‘‘unable [or] unwilling to avail himself of the protection’’ of his country of nationality and is outside that country ‘‘owing to well-grounded fear of being persecuted for reasons of race, religion, nationality, membership in a particular social group or political opinion’’—a definition that does not extend to those adversely affected by environmental disasters, including climatic change. In this paper and elsewhere we therefore reserve the terms ‘‘climate migrants’’ and ‘‘climate exiles’’ to refer to the victims of SLR attributed to climate change. The former includes all those who are displaced because of the effects of climate change, while the latter refers to a special category of climate migrants who will have lost their ability to remain well-functioning members of political societies in their countries, often through no fault of their own. Further, while most climate migrants will be internally displaced people, or have the opportunity of returning to their countries or regions of origin if adequate adaptation measures were taken, climate exiles will be forced to become permanently stateless in the absence of other remedies. Duties to Climate Exiles Our fundamental argument is that humanity carries a special obligation to present and future generations of people whose homes, means of livelihood, and membership in states will be lost specifically as a result of sea-level rise caused by climate change. We draw upon the principle of intergenerational equity, wherein each generation is collectively responsible for protecting and using natural resources in a sustainable manner so that future generations are not unduly harmed by their present misuse. The recognition of this duty implies, as Joerg Tremmel suggests, that ‘‘in spite of the difficulties such as opportunity costs, restricted human ability and foresight, modern collective agents (present governments and leading industrial companies) have to take their responsibility for future generations seriously.’’9 This responsibility is carried over to representative agents in the future who share the legacy of causing harm with their forebears but who now have the ability to recognize the suffering that ensues as a result of historical (if not continuing) actions and can therefore make amends to the sufferers who live in their midst. As we discuss later, this is not always equivalent to an argument for making reparations for past injury.

#### Global warming risks massive species die-off and habitat destruction

Hannah ’12 Lee Hannah, senior researcher in climate change biology at Conservation International, visiting researcher and adjunct professor at the Bren School of Environmental Science & Management at UC-Santa Barbara, has a pretty detailed Wikipedia page, “As Threats to Biodiversity Grow, Can We Save World’s Species?” Yale Environment 360, 4/19/2012, http://e360.yale.edu/feature/as\_threats\_to\_biodiversity\_grow\_can\_we\_save\_worlds\_species/2518/

Now, with 7 billion people on the planet — heading to 10 billion — and with greenhouse gas emissions threatening more rapid temperature rises than the warming that brought the last Ice Age to an end, the many millions of living things on Earth face an unprecedented squeeze. Is a wave of extinctions possible, and if so, what can we do about it? The late climate scientist and biologist Stephen Schneider once described this confluence of events — species struggling to adapt to rapid warming in a world heavily modified by human action — as a “no-brainer for an extinction spasm.” My colleagues Barry Brook and Anthony Barnosky recently put it this way, “We are witnessing a similar collision of human impacts and climatic changes that caused so many large animal extinctions toward the end of the Pleistocene. But today, given the greater magnitude of both climate change and other human pressures, the show promises to be a wide-screen technicolor version of the (by comparison) black-and-white letterbox drama that played out the first time around.” The magnitude of the threat was first quantified in a 2004 Nature study, “Extinction Risk from Climate Change.” This paper suggested that in six diverse regions, 15 to 37 percent of species could be at risk of extinction. If those six regions were typical of the global risk, the study’s authors later calculated, more than a million terrestrial and marine species could face extinction due to human encroachment and climate change — assuming conservatively that 10 million species exist in the world. Headlines around the world trumpeted the 1 million figure. Whether that scenario will unfold is unclear. But signs of what is to come are already all around us: nearly 100 amphibian species in South America vanishing in a disease outbreak linked to climate change, large areas of western North American facing massive die-offs of trees because of warming-driven beetle outbreaks, and increasing loss of coral reefs worldwide because of human activities and coral bleaching events driven by rising ocean temperatures. Most of the world’s biologically unique areas have already lost more than 70 percent of their high-quality habitat. The world community has the power to greatly reduce the prospect of an extinction spasm by lowering greenhouse gas emissions and launching large-scale conservation and forest preservation programs that both slow global warming and provide a sanctuary for countless species. But progress on these fronts is slow, and pressure on the world’s biodiversity remains relentless. An important part of the solution is preserving the ability of species to move across a changing landscape. Before humans, species responded to climate change by migrating, sometimes long distances, to track their preferred climatic conditions. Fully natural landscapes were conducive to these movements, with even slow-dispersing plants shifting the heart of their range on continental scales. The mechanisms of these changes are still being worked out, but we know they happened: Insects once found in Britain are now found only in the Himalayas, and centers of oak distribution have moved from the Mediterranean to Central Europe and from Georgia to Pennsylvania. Recent studies have shown that migration was an important method for species to cope with rapid climate change as far back as 55 million years ago, a period known as the Paleocene-Eocene Thermal Maximum, or PETM. Then, for reasons that are still not entirely clear, vast amounts of greenhouse gases were released into the atmosphere and oceans, leading to an increase in global temperatures of 4 to 9 degrees C (7 to 14 degrees F) in less than 10,000 years. Geological and fossil studies, using techniques such as stable isotope analysis, show major extinctions, the evolution of new animals and plants, and the migration of species on a large scale. Now, however, landscapes are crowded with human uses. Cities, urban sprawl, and agriculture take up huge areas. Freeways and roads create long linear obstructions to natural movement and present a patchwork of obstacles that are a severe challenge to species’ natural modes of shifting to track climate. To unravel these future responses requires understanding of past response, modeling of future response, and insights from changes already underway. To date, marine systems have experienced the most extensive impacts of climate change. From coral bleaching to melting sea ice, marine systems are changing on global and regional scales. Coral bleaching occurs when water temperatures exceed regional norms, causing corals to expel symbiotic micro-organisms from their tissues, ultimately leading to morbidity or death. Bleaching has exterminated some coral species from entire ocean basins. Global extinctions may follow as temperatures continue to rise. Corals face a second threat from acidification as CO2 builds up in the atmosphere and oceans, which prevents corals and many other marine organisms, including clams and oysters, from forming their calcium carbonate shells. Overall, the evidence suggests that the world’s roughly 5 million marine species face as severe threats from climate change as their terrestrial counterparts. On land, tropical biodiversity hotspots in places such as the Amazon and the rainforests of Indonesia and Malaysia are especially at risk. All global climate models now show significant future warming in the tropics, even if more muted than warming at high latitudes. Tropical animals, insects, and plants are tightly packed along climatic gradients from lowlands to mountaintops, and these organisms are sensitive to changes in temperature and rainfall. Already, scores of amphibians in South America have disappeared as a warmer, drier climate has led to outbreaks of disease such as the chytrid fungus. At the same time, large areas of tropical forest are being cleared for timber, ranching, and farming such crops as soybeans and oil palm.

#### We affirm: The United States federal government should substantially increase market-fixed production cost incentives for thorium small modular nuclear reactors.

#### Flexible incentives would prompt a thorium renaissance

Rosner and Goldberg ‘11 (Robert (William E. Wrather Distinguished Service Professor in the Departments of Astronomy and Astrophysics and Physics) and Stephen (Special Assistant to the Director at the Argonne National Laboratory) , *Energy Policy Institute at Chicago*, “Small Modular Reactors – Key to Future Nuclear Power Generation in the U.S.”, Technical Paper, Revision 1, November 2011)

Production Cost Incentive: A production cost incentive is a performance-based incentive. With a production cost incentive, the government incentive would be triggered only when the project successfully operates. The project sponsors would assume full responsibility for the upfront capital cost and would assume the full risk for project construction. The production cost incentive would establish a target price, a so-called “market-based benchmark.” Any savings in energy generation costs over the target price would accrue to the generator. Thus, a production cost incentive would provide a strong motivation for cost control and learning improvements, since any gains greater than target levels would enhance project net cash flow. Initial SMR deployments, without the benefits of learning, will have significantly higher costs than fully commercialized SMR plants and thus would benefit from production cost incentives. Because any production cost differential would decline rapidly due to the combined effect of module manufacturing rates and learning experience, the financial incentive could be set at a declining rate, and the level would be determined on a plant-by-plant basis, based on the achievement of cost reduction targets.43 The key design parameters for the incentive include the following: 1. The magnitude of the deployment incentive should decline with the number of SMR modules and should phase out after the fleet of LEAD and FOAK plants has been deployed. 2. The incentive should be market-based rather than cost-based; the incentive should take into account not only the cost of SMRs but also the cost of competing technologies and be set accordingly. 3. The deployment incentive could take several forms, including a direct payment to offset a portion of production costs or a production tax credit. The Energy Policy Act of 2005 authorized a production tax credit of $18/MWh (1.8¢/kWh) for up to 6,000 MW of new nuclear power plant capacity. To qualify, a project must commence operations by 2021. Treasury Department guidelines further required that a qualifying project initiate construction, defined as the pouring of safety- related concrete, by 2014. Currently, two GW-scale projects totaling 4,600 MW are in early construction; consequently, as much as 1,400 MW in credits is available for other nuclear projects, including SMRs. The budgetary cost of providing the production cost incentive depends on the learning rate and the market price of electricity generated from the SMR project. Higher learning rates and higher market prices would decrease the magnitude of the incentive; lower rates and lower market prices would increase the need for production incentives. Using two scenarios (with market prices based on the cost of natural gas combined-cycle generation) yields the following range of estimates of the size of production incentives required for the FOAK plants described earlier. For a 10% learning rate, 􏰂 Based on a market price of $60/MWh44 (6¢/kWh), the LEAD plant and the subsequent eight FOAK plants would need, on average, a production credit of $13.60/MWh (1.4¢/kWh), 24% less than the $18 credit currently available to renewable and GW-scale nuclear technologies. (The actual credit would be on a sliding scale, with the credit for the LEAD plant at approximately $31/MWh, or 3.1¢/kWh, declining to a credit of about $6/MWh, or 0.6¢/kWh, by the time of deployment of FOAK-8). The total cost of the credit would be about $600 million per year (once all plants were built and operating). If the market price were about $70/MWh (7¢/kWh), the LEAD and only four subsequent FOAK plants would require a production incentive. In this case, the average incentive would be $8.40/MWh (0.8¢/kWh), with a total cost of about $200 million per year. Higher learning rates would drive down the size of the production incentive. For example, at a 12% learning rate, 􏰂 At a market price of $60/MWh (6¢/kWh), the LEAD and the subsequent five FOAK plants would require a production incentive, with an average incentive level of about $15/MWh (1.5¢/kWh). Total annual cost (after all plants are in full operation) would be about $450 million per year. 􏰂 At a market price of $70/MWh (7¢/kWh), the LEAD and three FOAK plants would require a production incentive averaging $9.00/MWh (0.9¢/kWh, half of the current statutory incentive), with a total annual cost of about $170 million per year. The range of costs for the production incentive illustrates the sensitivity of the incentive level to the learning rate and the market price of electricity. Thus, efforts to achieve higher learning rates, including fully optimized engineering designs for the SMRs and the manufacturing plant, as well as specially targeted market introduction opportunities that enable SMRs to sell electricity for higher priced and higher value applications, can have a critical impact on the requirements for production incentives. The potential size of the incentive should be subject to further analysis as higher quality cost estimates become available.

#### This would trigger key reductions in carbon emissions—that’s essential to slow and reverse anthropogenic climate change

Hargraves and Moir ’11 Robert Hargraves, teaches energy policy at the Institute for Lifelong Education at Dartmouth, PhD in physics from Brown, and Ralph Moir, Sc.D. in nuclear engineering from MIT, published 10 papers on molten-salt reactors during his career at Lawrence Livermore National Laboratory, “Liquid Fuel Nuclear Reactors,” Physics & Society, January 2011, http://www.aps.org/units/fps/newsletters/201101/hargraves.cfm

Burning coal for power is the largest source of atmospheric CO2, which drives global warming. We seek alternatives such as burying CO2 or substituting wind, solar, and nuclear power. A source of energy cheaper than coal would dissuade nations from burning coal while affording them a ready supply of electric power. Can a LFTR produce energy cheaper than is currently achievable by burning coal? Our target cost for energy cheaper than from coal is $0.03/kWh at a capital cost of $2/watt of generating capacity. Coal costs $40 per ton, contributing $0.02/kWh to electrical energy costs. Thorium is plentiful and inexpensive; one ton worth $300,000 can power a 1,000 megawatt LFTR for a year. Fuel costs for thorium would be only $0.00004/kWh. The 2009 update of MIT’s Future of Nuclear Power shows that the capital cost of new coal plants is $2.30/watt, compared to LWRs at $4/watt. The median of five cost studies of large molten salt reactors from 1962 to 2002 is $1.98/watt, in 2009 dollars. Costs for scaled-down 100 MW reactors can be similarly low for a number of reasons, six of which we summarize briefly: Pressure. The LFTR operates at atmospheric pressure, obviating the need for a large containment dome. At atmospheric pressure there is no danger of an explosion. Safety. Rather than creating safety with multiple defense-in-depth systems, LFTR’s intrinsic safety keeps such costs low. A molten salt reactor cannot melt down because the normal operating state of the core is already molten. The salts are solid at room temperature, so if a reactor vessel, pump, or pipe ruptured they would spill out and solidify. If the temperature rises, stability is intrinsic due to salt expansion. In an emergency an actively cooled solid plug of salt in a drain pipe melts and the fuel flows to a critically safe dump tank. The Oak Ridge MSRE researchers turned the reactor off this way on weekends. Heat. The high heat capacity of molten salt exceeds that of the water in PWRs or liquid sodium in fast reactors, allowing compact geometries and heat transfer loops utilizing high-nickel metals. Energy conversion efficiency. High temperatures enable 45% efficient thermal/electrical power conversion using a closed-cycle turbine, compared to 33% typical of existing power plants using traditional Rankine steam cycles. Cooling requirements are nearly halved, reducing costs and making air-cooled LFTRs practical where water is scarce. Mass production. Commercialization of technology lowers costs as the number of units produced increases due to improvements in labor efficiency, materials, manufacturing technology, and quality. Doubling the number of units produced reduces cost by a percentage termed the learning ratio, which is often about 20%. In The Economic Future of Nuclear Power, University of Chicago economists estimate it at 10% for nuclear power reactors. Reactors of 100 MW size could be factory-produced daily in the way that Boeing Aircraft produces one airplane per day. At a learning ratio of 10%, costs drop 65% in three years. Ongoing research. New structural materials include silicon-impregnated carbon fiber with chemical vapor infiltrated carbon surfaces. Such compact thin-plate heat exchangers promise reduced size and cost. Operating at 950°C can increase thermal/electrical conversion efficiency beyond 50% and also improve water dissociation to create hydrogen for manufacture of synthetic fuels such that can substitute for gasoline or diesel oil, another use for LFTR technology. In summary, LFTR capital cost targets of $2/watt are supported by simple fluid fuel handling, high thermal capacity heat exchange fluids, smaller components, low pressure core, high temperature power conversion, simple intrinsic safety, factory production, the learning curve, and technologies already under development. A $2/watt capital cost contributes $0.02/kWh to the power cost. With plentiful thorium fuel, LFTRs may indeed generate electricity at less than $0.03/kWh, underselling power generated by burning coal. Producing one LFTR of 100 MW size per day could phase out all coal burning power plants worldwide in 38 years, ending 10 billion tons per year of CO2 emissions from coal plants.

#### Thorium spills over—formal mechanisms encourage global tech dispersal

Johnson 6 (Brian, BS Nuclear Engineering from Oregon State U, later received a Ph.D. in Nuclear Science and Engineering from M.I.T., "Thorium for Use in Plutonium Disposition,Proliferation-Resistant Fuels for DevelopingCountries, and Future Reactor Designs," [www.wise-intern.org/journal/2006/Johnson-ANS.pdf], jam)

As it stands, the joint plutonium disposition plans of the United State and Russia have stalled. This is because MOX, the technology chosen to undertake disposition, has taken more time and money than expected. In addition to this, Russia refuses to bear any of the cost of plutonium disposition through the use of MOX. This has opened the door to other options including thorium based fuels. A program in Russia examining thorium-based fuels has made a lot of progress and promises to be an excellent way to dispose of plutonium. The United States cannot directly benefit from this research and should start a program equal in size to the Russian program so that if thorium-based fuels turn out to be a better option for disposition there will be less delay in implementation. The United States outlines a desire in the Global Nuclear Energy Partnership (GNEP) to establish reactors in developing nations to provide potable water, heat for industrial processes, and electricity to growing populations. There are currently no designs that have all of the characteristics desired for reactors to be deployed in developing countries. Thorium-based, proliferation-resistant fuels can provide an evolutionary step until better technologies are developed. The design of this fuel shares a lot of the same technology as thorium-based fuel for plutonium disposition. Because of this, the same program could cover both research objectives with marginal added cost. Molten salt reactors meet all of the goals of next generation fuel cycles. However, the United States is not currently funding research into the technology. Recent research done in France has shown that some of the issues that prohibited development can be resolved. The United States is the only country with operating experience with molten salt reactors. Considering these facts, it makes sense for the United States to fund some research into this promising technology. Thorium could be used to reach several goals in the United States. The technology is not ready for implementation. The United States should fund research into thorium to reach these goals. In doing so, the United States could become a leader in thorium-based technology.

#### Formal mechanisms buoy global exports

Rosner & Goldberg 11 (Robert, William E. Wrather Distinguished Service Professor, Departments of Astronomy and Astrophysics, and Physics, and the College at the U of Chicago, and Stephen, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, "Small Modular Reactors - Key to Future Nuclear Power Generation in the U.S.," November 2011, [https://epic.sites.uchicago.edu/sites/epic.uchicago.edu/files/uploads/EPICSMRWhitePaperFinalcopy.pdf], jam)

Previous studies have documented the potential for a significant export market for U.S. SMRs, mainly in lesser developed countries that do not have the demand or infrastructure to accommodate GW-scale LWRs. Clearly, the economics of SMR deployment depends not only on the cost of SMR modules, but also on the substantial upgrades in all facets of infrastructure requirements, particularly in the safety and security areas, that would have to be made, and as exemplified by the ongoing efforts in this direction by the United Arab Emirates (and, in particular, by Abu Dhabi). This is a substantial undertaking for these less developed countries. Thus, such applications may be an attractive market opportunity for FOAK SMR plants, even if the cost of such plants may not have yet achieved all of the learning benefits. The Department of Commerce has launched the Civil Nuclear Trade Initiative, which seeks to identify the key trade policy challenges and the most significant commercial opportunities. The Initiative encompasses all aspects of the U.S. nuclear industry, and, as part of this effort, the Department identified 27 countries as “markets of interest” for new nuclear expansion. A recent Commerce Department report identified that “SMRs can be a solution for certain markets that have smaller and less robust electricity grids and limited investment capacity.” Studies performed by Argonne National Laboratory suggest that SMRs would appear to be a feasible power option for countries that have grid capacity of 2,000-3,000 MW. Exports of SMR technology also could play an important role in furthering non-proliferation policy objectives. The design of SMR nuclear fuel management systems, such as encapsulation of the fuel, may have non-proliferation benefits that merit further assessment. Also, the development of an SMR export industry would be step toward a U.S.-centric, bundled reliable fuel services. Exports of FOAK plants help achieve learning without the need for a full array of production incentives required for domestic FOAK deployments. Projected, unsubsidized, electricity market prices will likely be higher in selected foreign markets, particularly when the electricity pricing is based on liquefied natural gas import prices. 49 This situation would enable SMRs to be in a more favorable competitive position. SMR exports would qualify, if needed, for export credit assistance under current U.S. government programs, but this assistance would not require the need for new federal funding.

### Part 2

#### Contention 2 is fragility.

#### Our world is composed of an unimaginable complexity of interacting force-fields, each following their own rules and working to their own tempo, continually being driven by their interactions and contradictions with other fields. The human is but one small piece in a play of forces involving solar energy, tectonic plate shifts, ocean currents, asteroid showers, earthquakes, volcanos, species evolutions and extinctions, rainstorms, tornadoes, and hurricanes.

#### However, human influence is accelerating in dangerous ways, such as increasing emissions of green-house gases into the air, trapping heat within the atmosphere, severely disturbing the prior functioning of ecological processes. We should take two things from this. First, humanity is not alone on the earth. We are surrounded not only by other critters, but also inorganic pulses of energy and matter with unmistakable impact on our lives. In fact, humanity itself is not closed; it too is open, changing, continuously including and excluding. Second, we still carry a disproportionate influence on things—this complex world of becoming is radically fragile, open to change, for better or for worse. And thus our social realities are also malleable, contestable, and fragile.

#### I wrote this 1AC last Wednesday, on the 11th anniversary of the 9/11 attacks in the United States. Amidst all these diffuse networks, vectors, and multiplicities, it’s hard to believe that some still hold onto ‘total’ and ‘whole’ accounts of being and identity, but if the attacks tell us anything, it’s that these totalizing world-views live on, and produce vengefulness and ressentiment when they encounter difference, leading to massive, unflinching exercises of violence. “*They”* killed 3,000 people who happened to reside within the same geographic boundaries as us, so *“we”* re-raised by invading two of their countries, resulting in the deaths of hundreds of thousands (at least). All this destruction because an impossible number of contingent factors aligned to pit two stratified social fields against each other, both trapped in absolutist ideology and unwilling to see change.

#### These are the stakes of leftist politics today. We can either resign ourselves to stratified fundamentalism or take a risk on a new strategy to contest environmental destruction, combining critical thought, social interaction, and institutional engagement in a politics of becoming.

Connolly ’11 William E. Connolly, Krieger-Eisenhower Professor of Political Science at Johns Hopkins University, A World of Becoming, 2011, p. 5-8

A force-field, roughly speaking, is any energized pattern in slow or rapid motion periodically displaying a capacity to morph, such as a climate system, biological evolution, a political economy, or human thinking. As we shall explore in chapter 1, different force-fields display differential capacities of agency. We inhabit a world of becoming composed of heterogeneous force-fields; and we also participate in two registers of temporal experience, each of which can help us to get bearings in such a world. It is when the story of multiple force-fields of different types, in and beyond the human estate, is linked to the exploration of two registers of temporal experience in the human estate that things get interesting. Nonetheless, the themes of this book may carry little weight for anyone who finds nothing of interest in the Barton Fink scene or in a moment from their own past that resonates somehow with the scene I have painted from mine. You may give singular priority to the demands of punctual time while I seek to maintain a tense balance between the incorrigible demands and pleasures of operational perception set in punctual time (the kids’ attention to that spinning bottle as it drew to a halt) and the need to dwell periodically in protean moments that exceed the operational demands of action. You may initially connect the temper I commend to ‘‘optimism’’ or ‘‘romanticism’’ rather than to the pessimism, coolness, realism, or abiding sense of the negative that you respect. I don’t see it that way, though. My sense is that those who jump to such a conclusion have too limited an arsenal of ontological alternatives available. To appreciate two registers of experience in a world of becoming can also help us come to terms with tragic possibility. Such an appreciation encourages us to embrace the world as we act and intervene resolutely in it, even though it is replete with neither divine providence nor ready susceptibility to human mastery. Indeed, I don’t read the absence of providence or mastery as a ‘‘lack,’’ finding the use of that term by some to express a hangover of previous views inadequately overcome in the view officially adopted. I also know that shared experiences of grief or loss can help to consolidate connections with others, and that collective anger, resentment, and indignation are often indispensable spurs to critical action. So there is no sense here that ‘‘thinking it is so makes it so’’ or that ‘‘optimism is always healthy.’’ These orientations are attached to a different take on existence than that advanced here, though there are people who confuse the two. I do suspect that when inordinate drives for individual self-sufficiency, unity, community, consensus, or divine redemption are severely disappointed, things can become dangerous. These disappointed drives—I am sure there are others as well—readily cross over into entrenched dispositions to take revenge on the most fundamental terms of human existence, as a person, a constituency, or a putative nation grasps those terms. If and when that happens, an exclusionary, punitive, scandal-ridden, bitter politics is apt to result, regardless of how the carriers represent themselves to others. Here actions speak louder than words. A world of becoming has considerable evidence on its side, as we shall see; and affirmation of this condition without existential resentment provides one way to act resolutely in the world while warding off individual and collective drives to existential resentment. There are others, as we shall also see. Given the human predicament (explored in chapter 4), no theological or nontheological perspective at this level carries iron-clad guarantees. A crack or fissure running through every final perspective is part of the human predicament as I construe it. On my rendering, the course of time is neither governed solely by a pattern of efficient causation—where each event is determined to occur by some prior event in linear temporal order—nor expressive of an inherent purpose revolving around the human animal as such. Neither/nor. To put it in different terms, time is neither mechanical nor organic, and its human apprehension is neither susceptible to the method of ‘‘individualism’’ nor that of ‘‘holism.’’ We participate, rather, in a world of becoming in a universe set on multiple zones of temporality, with each temporal force-field periodically encountering others as outside forces, and the whole universe open to an uncertain degree. From this perspective, tragic possibility—not inevitability but possibility—is real: tragic possibility as seen from the vantage point of your time or country or species; tragic possibility sometimes actualized through the combination of hubris and an unlikely conjunction of events. Or by some other combination. I even suspect that differential degrees of agency in other force-fields, with which we enter into encounters of many types, increases the risk of that possibility. The universe is not only open; there is an ‘‘outside’’ to every temporal force-field. We are not only limited as agents, but part of our limitation comes from the different degrees of agency in other force-fields with which we interact. The operation of multiple tiers of becoming in a world without a higher purpose amplifies the need to act with dispatch, and sometimes with militancy, in particular situations of stress. The fact that we are not consummate agents in such a world, combined with the human tendency to hubris, means that we must work to cultivate wisdom under these very circumstances. These two dictates, engendering each other while remaining in tension, constitute the problematic of political action in a world of becoming. William James, Henri Bergson, Friedrich Nietzsche, Alfred North Whitehead, and Gilles Deleuze all advance different versions of time as becoming. Perhaps Merleau-Ponty and Marcel Proust do too, with qualifications. I draw from several of them the idea that it takes both philosophical speculation linked to scientific experiment and dwelling in uncanny experiences of duration to vindicate such an adventure. Both. Luckily, as we shall see, some strains of complexity theory in the natural sciences also support the theme of time as becoming as they compose new experiments and rework classical conceptions of causality. Moreover, in everyday life fugitive glimmers of becoming are available to more people more of the time, as we experience the acceleration of many zones of life, the enhanced visibility of natural disasters across the globe, the numerous pressures to minoritize the entire world along several dimensions at a more rapid pace, the globalization of capital and contingency together, the previously unexpected ingress of capital into climate change, the growing number of film experiments with the uncanniness of time, and the enlarged human grasp of the intelligence and differential degrees of agency in other plant and animal species. Such experiences and experiments together call into question early modern conceptions of time. Many respond to such experiences by intensifying religious and secular drives to protect an established image, as either linear and progressive or infused with divine providence. I suspect, however, that such responses— unless their proponents actively engage the comparative contestability of them without deep existential resentment—can amplify the dangers and destructiveness facing our time. Or, at least, they need to be put into more active competition with a conception that speaks to an array of contemporary experiences otherwise pushed into the shadows. To amplify the experience of becoming is one affirmative way to belong to time today. Active exploration and support of such a perspective can make a positive contribution to the late-modern period by drawing more people toward such a perspective or by showing others how much work they need to do to vindicate their own perspective. I belong to a growing contingent who think that a perspective defined by active examination of becoming can make positive contributions to explorations of spirituality, economics, political action, poetic experience, and ethics.

#### Praxis can be hard. In all our critiquing, destabilizing, and disrupting, we risk losing sight of the important goals our critiques suggest—the material changes necessary to reorient institutions and social relations in less violent fashions. This obviates particular strategies for change in conjunction with broadening our theoretical lenses.

Bryant ’12 Levi Bryant, teaches philosophy at Collin College, “RSI, Discursivity, Critique, and Politics,” Larval Subjects, 7/18/2012, http://larvalsubjects.wordpress.com/2012/07/18/rsi-discursivity-critique-and-politics/

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

#### We should stop treating structures as unmovable wholes—all it takes is one crack to expose the fragility of oppressive institutions. The plan is a radical experiment in democratic politics.

Connolly ’12 William E. Connolly, Krieger-Eisenhower Professor of Political Science at Johns Hopkins University, “Steps toward an Ecology of Late Capitalism,” Theory & Event, Vol. 15, Issue 1, 2012, Muse

A philosophy attending to the acceleration, expansion, irrationalities, interdependencies and fragilities of late capitalism suggests that we do not know with confidence, in advance of experimental action, just how far or fast changes in the systemic character of neoliberal capitalism can be made. The structures often seem solid and intractable, and indeed such a semblance may turn out to be true. Some may seem solid, infinitely absorptive, and intractable when they are in fact punctuated by hidden vulnerabilities, soft spots, uncertainties and potential lines of flight that become apparent as they are subjected to experimental action, upheaval, testing, and strain. Indeed, no ecology of late capitalism, given the variety of forces to which it is connected by a thousand pulleys, vibrations, impingements, dependencies, shocks and thin threads, can specify with supreme confidence the solidity or potential flexibility of the structures it seeks to change. The strength of structural theory, at its best, was in identifying institutional intersections that hold a system together; its conceit, at its worst, was the claim to know in advance how resistant those intersections are to potential change. Without adopting the opposite conceit, it seems important to pursue possible sites of strategic action that might open up room for productive change. Today it seems important to attend to the relation between the need for structural change and identification of multiple sites of potential action. You do not know precisely what you are doing when you participate in such a venture. You combine an experimental temper with the appreciation that living and acting into the future inevitably carries a shifting quotient of uncertainty with it. The following tentative judgments and sites of action may be pertinent.

#### Role playing as the government to improve the ways we produce energy and contest climate change has a radical potential. The 1AC affirms a militant pluralist assemblage tasked with exploring new strategies for reducing inequality and changing human interaction with our so-called ‘environment.’

Connolly ’12 William E. Connolly, Krieger-Eisenhower Professor of Political Science at Johns Hopkins University, “Steps toward an Ecology of Late Capitalism,” Theory & Event, Vol. 15, Issue 1, 2012, Muse

3. Today, perhaps the initial target should be on reconstituting established patterns of consumption by a combination of direct citizen actions in consumption choices, publicity of such actions, and social movements to reconstitute the state/market supported infrastructure of consumption. By the infrastructure of consumption I mean state support for market subsystems such as a national highway system, a system of airports, medical care through private insurance, etc., etc., that enable some modes of consumption in the zones of travel, education, diet, retirement, medical care, energy use, health, and education and render others more difficult or expensive to procure.21 To shift several of these in the correct direction would already reduce extant inequalities. To change the infrastructure is also to affect the types of work and investment available. Social movements that work upon the infrastructure and ethos in tandem can make a real difference directly, encourage more people to extend their critical perspectives, and thereby open more people to a militant politics if and as a new disruptive event emerges. Perhaps a cross-state citizen goal should be to construct a pluralist assemblage by moving back and forth between shifts in role performance, revisions in political ideology, and adjustments in political sensibility, doing so to generate enough collective energy to launch a general strike simultaneously in several countries in the near future. Its aim would be to reduce inequality and to reverse the deadly future created by established patterns of climate change by fomenting significant shifts in patterns of consumption, corporate policies, state law and the priorities of interstate organizations. Again, the dilemma of today is that the fragility of things demands shifting and slowing down intrusions into several aspects of nature as we speed up shifts in identity, role performance, cultural ethos, market regulation, and citizen activism.

#### The consequences of climate change should not be underestimated or ignored for the sake of ‘theoretical purity.’ Social theory must redirect its analytical attention to climate science—refusal risks complicity with the worst violence

Lever-Tracy ‘8 Constance Lever-Tracy, “Global Warming and Sociology,” Current Sociology 56 (3), 2008, pp. 445-466, http://ireswb.cc.ku.edu/~crgc/NSFWorkshop/Readings/Lever-Tracy%20Current%20Sociology%202008.pdf

There is a mystery in this lack of interest in developments that could conceivably open the door to chaos and barbarism later this century, or whose prevention might require a transformation in the core processes of industrial society. A contingent reason for the silence may lie in the status structure of the discipline. Writers on the subject often come from the field of environmental sociology, originating in rural sociology. Given the classical focus on urbanization, rural sociology has tended to be marginalized from prestigious journals or degree courses. There are, however, more essential reasons for the silence. Arguably, it derives from the interaction of two factors. The first is our recently acquired suspicion of teleology and our mirroring of an indifference we find in contemporary society towards the future. The second factor is our continuing foundational suspicion of naturalistic explanations for social facts, which has often led us to question or ignore the authority of natural scientists, even in their own field of study. Together, these two have often blinded us to the predicted, fateful convergence of social and natural time, in a new teleological countdown to possible disaster, coming towards us from the future. While the rate of change of natural processes is shrinking towards the time scales of human society, social scientists have been theorizing a further shrinking in cultural horizons, with an emphasis on immediate gratification, and a decline in long-term direction or plans, so that even threats just decades away would now scarcely register. In his history of the 20th century, Eric Hobsbawm complained how men and women, at the century’s end, live in a ‘permanent present’ where a discounting of the past parallels inattention to the future. The editors of What the Future Holds: Insights from Social Science, note in their introduction the sharp decline, since 1980, of academic discussions on future scenarios (Cooper and Layard, 2002: 4). For those of us brought up on C. Wright Mills, historical grand narratives have seemed to be at the very foundation of our discipline, yet no sociologist contributed to this volume. To grasp this, we can contrast the classic sociological paradigms of modern society with ours. Marx and Weber were motivated to understand both the origins and the distinctive nature of modern, capitalist, industrial, urban society, and its future shape and likely trajectory. Marx expected contradictions in the society to work themselves out dialectically, through polarizing class conflict leading either to barbarism or an era of freedom and plenty, while Weber, more pessimistically, foresaw a linear trajectory, with the uninterrupted advance of the calculating, depersonalized ‘cosmos of the modern economic order . . . bound to the technical and economic conditions of machine production which today determine the lives of all individuals. . . . Perhaps it will so determine them until the last ton of fossilised coal is burnt’ (Weber, 1930: 181). Neither, however, expected any major interruption to strike suddenly from outside society. Sociologists have more recently sought to describe and understand a new social reality, resulting from the dissolution of these expectations, and have come to reject any long-term future orientation as ‘teleology’. We have no expectation now of socialist transformation, while both the progressive polarization of a collectively organized working class and an increasingly concentrated capital has been reversed. The iron cage and the onward march of rationality and bureaucracy have also been countered. In their place we see a rise in entrepreneurial small businesses and religious fundamentalisms and in mantras of competition, individualism and flexibility. This foreshortening of time horizons has often been made central to sociological theorizing in the late 20th century. Giddens saw the ‘dissolution of evolutionism’ and the ‘disappearance of teleology’ as two of the most conspicuous features of his new stage of reflexive, radicalized modernity (Giddens, 1990: 52). Lash and Urry (1987) described and theorized a transition, taking place from the 1970s, from ‘organized’ to ‘disorganized’ capitalism. As deregulation and globalization ratcheted up competition, the capacity of corporations, unions and governments to coordinate the national economy and society was undermined. Short-term, ‘flexible’ responsiveness replaced long-term planning. The French regulation school spoke of a transition from a Fordist to a flexible, post-Fordist regime of accumulation. In Britain, Harvey wrote in 1989 of the new wave of ‘space–time compression’, in which a crisis of profitability was overcome by accelerating the turnover time of capital and technology. The half-life of a Fordist product, of five to seven years, was cut by half or more, and ‘the postmodern aesthetic celebrated difference, spectacle, ephemerality and fashion’ (Harvey, 1989: 156). ‘The temporary contract in everything is the hallmark of postmodern living’ (Harvey, 1989: 291). The dominance of stock options and share turnover has increasingly subjected investment decisions everywhere to a very short-term profit motive. 9 Japanese capitalism, distinctively and, for a time, successfully based on corporate planning, made possible by reinvested profits, managerial power and lifetime employment, entered a long period of stagnation after 1991, undermining its relevance as an alternative model. The collapse of communism similarly removed another such alternative. Baumann (1988) extended the idea of postmodernity from culture to society. He described postmodern art as the paradigm of postmodern culture and of a postmodern world view that rejected historical thinking, and cited Deleuze and Guattari’s metaphor of the rhizome: ‘that peculiar rootstock which . . . seems to possess no sense of privileged direction, expanding instead sideways, upwards and backwards with the same frequency’ (Baumann, 1988: 791). However, he warned against a ‘postmodern sociology’ that would itself take on these attributes, advocating instead a ‘sociology of postmodernity’. This could study postmodernity as ‘a fully fledged comprehensive and viable type of social system’, a historical stage in which consumer freedom had been substituted for work ‘as the hub around which the life world rotates. . . . Having won the struggle for control over production . . . capitalism can now afford the free reign of the pleasure principle’ (Baumann, 1988: 808). It should not, we can add, pre-empt an awareness that a later stage might replace this rhizome-like postmodern social system by a countdown to a natural catastrophe. Where do such changes lead us? Is there life after information/ consumer/post whatever society? Too often, one suspects, Baumann’s warning has not been heeded, and sociology has taken on some of the colouration of its subject matter. Without admitting it, many sociologists have acted as if Lyotard’s postmodern evaporation of the historical ‘grand narratives’ or Fukuyama’s ‘end of history’ were in fact upon us, as suitable guides to our own practice. Sociologists have thus described at length how contemporary society has turned its eyes away from the future, its people focusing on immediate consumption and ephemeral fashions, its politicians on the next election and its industrial leaders on the next annual report. To take global warming seriously involves asking the kinds of questions about future directions that most sociologists believe they have now put behind them. Preoccupied with analysing these ‘social facts’, sociologists are unwilling to be disturbed by the voices of natural scientists, reporting from inaccessible upper atmospheres, ancient ice cores or deep oceans, where no social facts exist. Unable themselves to judge the validity of the evidence, and increasingly uncomfortable with predictions and teleologies, they prefer to avoid the subject. For the classics (Marx, Weber, Durkheim), as for most sociologists since, nature, for practical purposes, was an unproblematic, stable background constant, increasingly understood and controlled by science and technology. The role of sociology was to study social processes, trends and contradictions independently from the natural sciences. Such an insulation of society from nature has, indeed, become a major subject of debate between realists and social constructivists within environmental sociology, since Catton and Dunlap first counterposed their ‘New Ecological Paradigm’ to what they called the ‘Human Exemptionalist Paradigm’ in the late 1970s (Dunlap, 2002; Yearley, 2002). Since then, environmental sociologists have worked out an accommodation, enabling them to take seriously the findings of natural scientists. See, for example, Mol and Spaagaren’s (2000: 27) claim that ‘What is conceived of as “social” . . . cannot be explained without reference to the natural.’ Mainstream sociologists, on the other hand, have remained much closer to the social constructivist paradigm of nature. At best a middle road could be claimed for the idea that science and society are ‘partially independent levels’, but this led to the same conclusion as constructivism: that knowledge of science is rarely relevant for sociologists (Lidskog, 2001). Such a ‘partial independence’ of the levels is, however, dramatically called into question by the time convergence that has become manifest in the last decades. Social processes that impact on nature in unintended ways, such as emissions caused by economic growth and the destruction of carbon sink forests, have been speeding up exponentially since the industrial revolution. The result has been an unexpected and unprecedented speeding up also of changes in natural processes. Natural change is usually very slow. It used to be believed, for example, that it would take 10,000 years to melt an ice sheet, 10 but we can no longer assume that, for practical purposes, changes in natural processes are not relevant to social analysis. Global climate changes are now likely to impact within our own lives or those of our children. The urgency for remedial action is now measured in decades, not able to be postponed to some indefinite future. But even decades have now receded out of sight. The fact that macro theorists of late 20th century society, from Daniel Bell to Ulrich Beck, continue to see nature as either irrelevant or as socially controlled or even constructed, contributes to sociology’s marginal contribution to the discussions about global warming. In this case, where the concepts and the evidence have been entirely the product of natural scientists, and beyond the expertise of social scientists to evaluate, the latter have found themselves on uncomfortable ground and have tended to shy away. Daniel Bell, in his influential Post Industrial Society, proposed a three-part schema, comprising pre-industrial (or traditional), industrial and post-industrial stages. The third would be based on information technology, rather than on the use of energy and raw materials, and on the displacement of the secondary, manufacturing sector by what we now call ‘services’. In his schema, the ‘game against nature’ was relegated to the ‘pre-industrial stage’ (with no hint that it might return), and the ‘game against fabricated nature’ of the industrial stage was now also about to be displaced by the post-industrial ‘game between persons’ (Bell, 1974: 117). Others later added theories of ‘information society’ and of ‘dematerialized production’ (Stehr, 2001: 77) to the concept of a post-industrial society – often ignoring the fact that energy-intensive material production has been globalized rather than displaced, and continues to grow absolutely despite large increases in efficiency. Giddens has been dismissive of the relevance of direct studies of natural ‘facts’, remarking that ‘Although ecology seems to be wholly about “nature”, nature in the end has very little to do with it’ (Giddens, 1994: 189). Perhaps for this reason, he has written little about global warming: it is not mentioned in his book on Reflexive Modernization (Beck et al., 1994) or in his introduction to the more recent A Progressive Manifesto (Giddens, 2003). In Beyond Left and Right (Giddens, 1994), he did include global warming in his list of the ‘high consequence, manufactured risks’ of reflexive modernity, but devoted to it only a few lines (Giddens, 1994: 3–4, 203). He understood such ‘manufactured risks’ as essentially a product of human intervention (Giddens, 1994: 3–4, 203, 206–7) rather than (as this article argues) resulting from an, only partly understood, interaction of social and natural systems each with their own dynamic, and therefore requiring both social and natural expertise. He argued global warming was ‘not undisputed’, and rather than referring to the collective conclusions of most climatologists since 1988, or the IPCC report of 1990 (expressing the views of 700 specialist scientists) or that of the Rio Earth Summit of 1992, he preferred to cite Deepak Lal, the neoliberal economist, from his 1990 Wincott Memorial Lecture for the Institute of Economic Affairs. ‘According to Lal,’ wrote Giddens, ‘the evidence about global warming is ambiguous and scientists disagree about its interpretation. Depending on which scientist is consulted, “we could frizzle or we could freeze or there may be no change”’ (Giddens, 1994: 203); 11 easier then to ignore them all. Ulrich Beck’s concept of ‘Risk Society’ is the only grand social theory with a major explicit focus on the interface of society and nature, but on closer examination it too proves inappropriate to the question of climate change. In fact, Beck does not discuss the application of his concept to the greenhouse effect, but concentrates instead on such issues as toxicity, nuclear hazards or genetic engineering, and this is not surprising given how inappropriate his analysis is for the former purpose. 12 Beck claims that ‘risks’ are products of today’s new stage of ‘high industrialism’ and its advanced ‘science/technology’ (he rarely distinguishes the two), which often seem to be his primary enemy. But global warming does not fit, being a long-term cumulative effect, finally manifest, of the whole history of modern society. The worst impact on climate comes not from advanced technology but from the burning of fossil fuels by basic industrial production. ‘The source of danger is no longer ignorance but knowledge’, Beck (1992: 183) argues. One could counter that it is our ignorance of the risks that allowed them to accumulate. His solution to risk is often to attack the ‘dominance’ of science/technology and to seek its subjection to common experience and democratic control (e.g. Beck, 1992: 223, 1995: 46). Beck usually hedges his bets, but in one exceptionally constructionist moment, admitted he was mainly interested in cultural perceptions and definitions of risk, not in their reality. Indeed, he suggested that they ceased to count as ‘risks’ once they had became manifest (Beck, 2000: 213). Whatever his intention, this would conveniently absolve sociologists from having an opinion on the validity and implications of scientists’ factual findings. Unfortunately, this would leave sociology as an agnostic on the sidelines, continually withdrawing its concern about crucial issues dividing society, just as they become salient. But global warming has been revealed by scientific studies of ice cores, ocean depths and stratospheres, beyond the range of daily experience. In fact, we do desperately need more and better knowledge of this kind, and to protect the professional autonomy of natural scientists, under threat from capitalist interests and religious fundamentalists, well equipped to lobby democratic institutions. 13 The anti-science arguments of such neoliberals as Deepak Lal (motivated by a dogmatic opposition to any kind of government intervention) have not only been taken up by the paid sceptics of the fossil fuel lobby, but have also thus evoked an echo in the prejudices of sociologists, who should be more careful of the company they keep. In contrast, it seems to me that a respectful division of labour is essential now that natural and social change are operating in tandem, on the same time scales. Since we are not ourselves competent to evaluate the debate between climatologists and sceptics, we have no option but to accept the professional authority and integrity of the accredited experts, on questions of natural processes, as a basis for our own analyses of social causes, consequences and choices. The alternative is irrelevance or worse – an effective complicity with the vested interests of fossil fuel corporations.

#### Finally, debate is becoming, not being. Role-playing lets students safely explore the methodologies and consequences of different ideas, constructing a unique form of education and creative expression

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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 means-ends- 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 can do 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.

#### Policy debate over controversies like energy policy and global warming is a critical internal link to generating a more informed public to influence real policymakers to institute large-scale changes

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Getting to 350 parts per million CO2 in the atmosphere will require massive investments in clean-energy infrastructure—investments that can too often be foiled by a combination of special interests and political sclerosis. Take the recent approval of the Cape Wind project by the U.S. Department of the Interior. In some ways, this was great news for clean-energy advocates: the project’s 130 turbines will produce, on average, 170 megawatts of electricity, almost 75 percent of the average electricity demand for Cape Cod and the islands of Martha’s Vineyard and Nantucket.1 But, because of local opposition by well-organized opponents, the approval process was lengthy, costly, and grueling —and all for a project that will produce only 0.04 percent of the total (forecasted) U.S. electricity demand in 2010.2,3 Over the next few decades, the world will need thousands of large-scale, low-carbon electricity projects—wind, solar, and nuclear power will certainly be in the mix. But if each faces Cape Wind–like opposition, getting to 350 is unlikely. How can the decision-making process about such projects be streamlined so that public policy reflects the view of a well-informed majority, provides opportunities for legitimate critiques, but does not permit the opposition to retard the process indefinitely? One answer is found in a set of innovative policy-making tools founded on the principle of deliberative democracy, defined as “decision making by discussion among free and equal citizens.”4 Such approaches, which have been developed and led by the Center for Deliberative Democracy (cdd.stanford.edu), America Speaks (www.americaspeaks.org), and the Consensus Building Institute (cbuilding.org), among others, are gaining popularity by promising a new foothold for effective citizen participation in the drive for a clean-energy future. Deliberative democracy stems from the belief that democratic leadership should involve educating constituents about issues at hand, and that citizens may significantly alter their opinions when faced with information about these issues. Advocates of the approach state that democracy should shift away from fixed notions toward a learning process in which people develop defensible positions.5 While the approaches of the Center for Deliberative Democracy, America Speaks, and the Consensus Building Institute do differ, all of these deliberative methodologies involve unbiased sharing of information and public-policy alternatives with a representative set of citizens; a moderated process of deliberation among the selected citizens; and the collection and dissemination of data resulting from this process. For example, in the deliberative polling approach used by the Center for Deliberative Democracy, a random selection of citizens is first polled on a particular issue. Then, members of the poll are invited to gather at a single place to discuss the issue. Participants receive balanced briefing materials to review before the gathering, and at the gathering they engage in dialogue with competing experts and political leaders based on questions they develop in small group discussions. After deliberations, the sample is asked the original poll questions, and the resulting changes in opinion represent the conclusions that the public would reach if everyone were given the opportunity to become more informed on pressing issues.6 If policymakers look at deliberative polls rather than traditional polls, they will be able to utilize results that originate from an informed group of citizens. As with traditional polls, deliberative polls choose people at random to represent U.S. demographics of age, education, gender, and so on. But traditional polls stop there, asking the random sample some brief, simple questions, typically online or over the phone. However, participants of deliberative polls have the opportunity to access expert information and then talk with one another before voting on policy recommendations. The power of this approach is illustrated by the results of a global deliberative process organized by World Wide Views on Global Warming (www.wwviews.org), a citizen’s deliberation organization based in Denmark.7 On September 26, 2009, approximately 4,000 people gathered in 38 countries to consider what should happen at the UN climate change negotiations in Copenhagen (338 Americans met in five major cities). The results derived from this day of deliberation were dramatic and significantly different from results of traditional polls. Overall, citizens showed strong concern about global warming and support for climate-change legislation, contrary to the outcomes of many standard climate-change polls. Based on the polling results from these gatherings, 90 percent of global citizens believe that it is urgent for the UN negotiations to produce a new climate change agreement; 88 percent of global citizens (82 percent of U.S. citizens) favor holding global warming to within 2 degrees Celsius of pre-industrial levels; and 74 percent of global citizens (69 percent of U.S. citizens) favor increasing fossil-fuel prices in developed countries. However, a typical news poll that was conducted two days before 350.org’s International Day of Climate Action on October 24, 2009, found that Americans had an overall declining concern about global warming.7 How can deliberative democracy help to create solutions for the climate-change policy process, to accelerate the kinds of policies and public investments that are so crucial to getting the world on a path to 350? Take again the example of wind in the United States. In the mid-1990s, the Texas Public Utilities Commission (PUC) launched an “integrated resource plan” to develop long-term strategies for energy production, particularly electricity.8 Upon learning about the deliberative polling approach of James Fishkin (then at the University of Texas at Austin), the PUC set up deliberative sessions for several hundred customers in the vicinity of every major utility provider in the state. The results were a surprise: it turned out that participants ranked reliability and stability of electricity supply as more important characteristics than price. In addition, they were open to supporting renewable energy, even if the costs slightly exceeded fossil-fuel sources. Observers considered this a breakthrough: based on these public deliberations, the PUC went on to champion an aggressive renewable portfolio standard, and the state has subsequently experienced little of the opposition to wind-tower siting that has slowed development in other states.8 By 2009, Texas had 9,500 megawatts of installed wind capacity, as much as the next six states (ranked by wind capacity) in the windy lower and upper Midwest (Iowa, Minnesota, Colorado, North Dakota, Kansas, and New Mexico).9 Deliberative democracy has proven effective in a wide range of countries and settings. In the Chinese township of Zeguo, a series of deliberative polls has helped the Local People’s Congress (LPC) to become a more effective decision-making body.10 In February 2008, 175 citizens were randomly selected to scrutinize the town’s budget—and 60 deputies from the LPC observed the process. After the deliberations, support decreased for budgeting for national defense projects, while support rose for infrastructure (e.g., rural road construction) and environmental protection. Subsequently, the LPC increased support for environmental projects by 9 percent.10 In decades to come, China must be at the forefront of the world’s investments in clean-energy infrastructure. The experience of Zeguo, if scaled up and fully supported by Chinese leaders, can help to play an important role. Deliberative democracy offers one solution for determining citizen opinions, including those on pressing issues related to climate change and clean energy. If democracy is truly about representing popular opinion, policymakers should seek out deliberative polls in their decision-making process.

## 2AC

### Overview

#### Even if our aff does not resolve calculative thinking or our alienation from the environment our advocacy of policy changes to address global warming is still essential. The scientific consensus around warming is not replicated in current politics. We should recognize the proximate alienation from the natural world denies our planets heat.

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Up to this point we have explored existential theories of responsibility, social ontology, and Heidegger’s philosophy of technology as each relates to global warming. But what about public policy; what about the formal laws that often dictate the norms and behavior of citizens within a society? As we discussed in the first chapter, a green revolution is in order. A green revolution will demand action that alters the state of our current nation and reevaluates our laws towards sustainability. According to Thomas Friedman, the green revolution will hopefully transform laws, thereby causing a dramatic change in the social consciousness of this country. Friedman said, in comparing the civil rights movement to a potential green movement, “Ultimately, it was about changing laws, so that no one had an option to discriminate, and it was those laws that ultimately changed the behavior and consciousness of tens of millions of people. But the civil rights movement started with citizen activism” (398). In order for such a green revolution to occur, as was the case with the civil rights movement, citizen activism in the form of a strong social ensemble resembling Sartre’s group must emerge.¶ But, alas, we are forgetting an important part of this story: What, exactly, will these green laws entail; how will the government legislate sustainability? It is beyond the scope of this paper to speculate on the efficacy and economics of potential policies like a carbon tax or a cap-and-trade system. While new legislation certainly will not resolve Heidegger’s concerns about our loss of meditative thinking and treatment of things as standing reserve, it may still contribute significantly towards minimizing our greenhouse gas emissions and fighting global warming. However, before any law can ever realistically be pushed through Congress, a change in the attitude and beliefs towards our environment must occur.¶ Pragmatism, a largely American philosophy, promotes the belief that we should seek to bring our diverse values, experiences, and perspectives into a harmonious pluralism. For pragmatists, policy serves as a powerful tool for meeting the challenges we experience in society. As Dr. John Stuhr, a scholar in American pragmatism, says regarding the pragmatist’s view towards philosophy:¶ [I]t must be practical, critical, and reconstructive; it must aim at the successful transformation or amelioration of the experienced problems which call it forth and intrinsically situate it, and its success must be measured in terms of this goal. Thus, for the classical American philosophers, philosophy is primarily an instrument for the ongoing critical reconstruction of daily practice. (3)¶ Philosophy must reside close to our experience and serve to change our environment in such a way that the problems plaguing society can be overcome through constructive activity. Thus, pragmatism is very much a “doer’s” philosophy and does not promote the traditional image of an intellectual lost in theory, detached from the world that surrounds him; rather, pragmatists wish to shake the very norms and rules of society if such a change is called for.¶ But how can a pragmatic, policy-oriented approach to global warming that also accepts the plurality of attitudes, beliefs, and values in this country ever result in any action without undermining the very diversity of opinion on global warming? In other words, what sort of compromise, or harmonious pluralism, could possibly exist between people with fundamentally conflicting ideologies: those who adamantly believe in global warming and those who just as vigorously reject it? To make this question even more difficult to answer, research suggests that within the last decade a growing disparity between partisan ideologies over global warming has occurred. The trends indicate that Republicans are becoming increasingly skeptical of global warming while Democrats are becoming increasingly convinced of its reality.16¶ This trend was just recently epitomized in a bill (H.R. 910) authored by Republican Ed Whitfield, chairman of the Subcommittee on Energy and Power, that was approved and sent to the House of Representatives. The bill intends to prevent the Environmental Protection Agency from managing greenhouse gas emissions. According to an editorial in a major journal entitled “Into Ignorance”, during a recent subcommittee hearing on March 14, “Misinformation was presented as fact, truth was twisted and nobody showed any inclination to listen to scientists, let alone learn from them.”17 The article proceeds to say: “That this legislation is unlikely to become law doesn't make it any less dangerous. It is the attitude and ideas behind the bill that are troublesome, and they seem to be spreading” (266). These growing anti global-warming bills only exacerbate the political stalemate that continues to block progress and change. The¶ “attitude” behind this bill—namely, that global warming either is not real or that it does not pose any sort of threat to us or our environment—exemplifies the very lack of distress felt in our society over this pressing issue. We again come back to this same question: how can we foster a plurality of beliefs and find a harmonious pluralism when political ideologies clash so fundamentally; how can government representatives make any sort of progress when such a blatant partisan divide exists?¶ Unfortunately there is no easy solution to this problem. Many citizens feel demoralized and pessimistic precisely because of this very clear dissension within our government. Ironically, though, the scientific community is virtually unanimous on global warming; 97-98% of active climate researchers believe that climate change has resulted from human activities.18 Similarly, the Intergovernmental Panel on Climate Change (IPCC), the leading international body for the assessment of climate change, argued in a 2001 report that anthropogenic behavior has caused the rise in global temperatures. The IPCC, to which thousands of scientists contribute, stated in the report: “Anthropogenic factors do provide an explanation of 20th century temperature change...[and] it is unlikely that detection studies have mistaken a natural signal for an anthropogenic signal.”19 Some scientists, in fact, believe that the IPCC’s report erred on¶ the moderate side and underestimated the effects that may occur from warming the planet.20¶ So, what will it take for the virtually unanimous scientific opinion to translate into political belief and action? In other words, what will it take to persuade Republican officials that global warming is real and caused by us? We have already mentioned the need for us to unite through a green revolution, but the strength of this movement is lacking right now due to this tension in public and political opinion about climate change. Ultimately, the pluralistic attitudes towards global warming must collapse into a more unified belief in its reality. As Trevors and Saier Jr. state in a journal article entitled “A Vaccine Against Ignorance,” lies against global warming continue to be disseminated even though the scientific evidence is “unequivocal.”21 The solution they propose: education. They say, “Humanity certainly needs to be immunized with a vaccine for ignorance, and we propose that the vaccine is education.” Thus, the last two sections of this chapter will investigate two necessary areas of education on global warming. The first area of education must be in public awareness; ensuring that the public has been exposed to the large body of scientific data that shows the anthropogenic cause of global warming. Once public awareness increases and people become better informed, a more unified societal attitude towards global warming that resembles a Sartrean group (rather than our current Sartrean collective) is more likely to emerge and politicians may then be swayed by public pressure and opinion. The other area of education must stress the need for a greater appreciation of our natural environment—it must remind us of our humble¶ place within this earth’s dynamic whole, and call attention to the positioned, technological world that impairs an ethic of care towards our environment.

#### Being has not been forgotten—but totalizing accounts of technology shut themselves off from any relation to it

Latour ’93 Bruno Latour, professor at the Ecole des Mines de Paris, We Have Never Been Modern, Harvard University Press: Cambridge, 1993, p. 66-67

Who has forgotten Being? No one, no one ever has, otherwise Nature would be truly available as a pure 'stock'. Look around you: scientific objects are circulating simultaneously as subjects, objects and discourse. Networks are full of Being. As for machines, they are laden with subjects and collectives. How could a being lose its difference, its incompleteness, its mark, its trace of Being? This is never in anyone's power; otherwise we should have to imagine that we have truly been modern, we should be taken in by the upper half of the modern Constitution. Has someone, however, actually forgotten Being? Yes: anyone who really thinks that Being has really been forgotten. As Levi-Strauss says, 'the barbarian is first and foremost the man who believe in barbarism.' (Levi-Strauss, [1952] 1987. p. 12). Those who have failed to undertake empirical studies of sciences, technologies, law, politics, economics, religion or fiction have lost the traces of Being that are distributed everywhere among beings. If, scorning empiricism, you opt out of the exact sciences, then the human sciences, then traditional philosophy, then the sciences of language, and you hunker down in your forest -- then you will indeed feel a tragic loss. But what is missing is you yourself, not the world! Heidegger's epigones have converted that glaring weakness into a strength. 'We don't know anything empirical, but that doesn't matter, since your world is empty of Being. We are keeping the little flame of Being safe from everything, and you, who have all the rest, have nothing.' On the contrary: we have everything, since we have Being, and beings, and we have never lost track of the difference between Being and beings. We are carrying out the impossible project undertaken by Heidegger, who believed what the modern Constitution said about itself without understanding that what is at issue there is only half of a larger mechanism which has never abandoned the old anthropological matrix. No one can forget Being, since there has never been a modern world, or, by the same token, metaphysics. We have always remained pre-Socratic, pre-Cartesian, pre-Kantian, pre-Nietzschean. No radical revolution can separate us from these pasts, so there is no need for reactionary counter-revolutions to lead us back to what has never been abandoned. Yes, Heraclitus is a surer guide than Heidegger: 'Einai gar kai entautha theous.'

#### The K of technology misses the boat—the segregation of “nature” from “machine” is anthropocentric metaphysics

Haraway 91—Donna Haraway [Awesome philosopher with a PhD in biology], "A Cyborg Manifesto Science, Technology, and Socialist-Feminism in the Late Twentieth Century," in Simians, Cyborgs and Women: The Reinvention of Nature (New York; Routledge, 1991), pp.149-181. <http://www.egs.edu/faculty/haraway/haraway-a-cyborg-manifesto.html>

The second leaky distinction is between animal-human (organism) and machine. Pre-cybernetic machines could be haunted; there was always the spectre of the ghost in the machine. This dualism structured the dialogue between materialism and idealism that was settled by a dialectical progeny, called spirit or history, according to taste. But basically machines were not self-moving, self-designing, autonomous. They could not achieve man's dream, only mock it. They were not man, an author to himself, but only a caricature of that masculinist reproductive dream. To think they were otherwise was paranoid. Now we are not so sure. Late twentieth-century machines have made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that used to apply to organisms and machines. Our machines are disturbingly lively, and we ourselves frighteningly inert.

#### Far from simply alienating animals and reducing them to “standing reserve,” science has emerged as a tool to reshape the metaphysical divide between us and animals.

Haraway 91—Donna Haraway [Awesome philosopher with a Phd in biology], "A Cyborg Manifesto Science, Technology, and Socialist-Feminism in the Late Twentieth Century," in Simians, Cyborgs and Women: The Reinvention of Nature (New York; Routledge, 1991), pp.149-181. <http://www.egs.edu/faculty/haraway/haraway-a-cyborg-manifesto.html>

I will return to the science fiction of cyborgs at the end of this chapter, but now I want to signal three crucial boundary breakdowns that make the following political-fictional (political-scientific) analysis possible. By the late twentieth century in United States scientific culture, the boundary between human and animal is thoroughly breached. The last beachheads of uniqueness have been polluted if not turned into amusement parks--language tool use, social behaviour, mental events, nothing really convincingly settles the separation of human and animal. And many people no longer feel the need for such a separation; indeed, many branches of feminist culture affirm the pleasure of connection of human and other living creatures. Movements for animal rights are not irrational denials of human uniqueness; they are a clear-sighted recognition of connection across the discredited breach of nature and culture. Biology and evolutionary theory over the last two centuries have simultaneously produced modern organisms as objects of knowledge and reduced the line between humans and animals to a faint trace re-etched in ideological struggle or professional disputes between life and social science. Within this framework, teaching modern Christian creationism should be fought as a form of child abuse.

#### Bare life as a concept denies the radical animation present in animal and ‘natural’ life

Stanescu ‘9 James Stanescu, former debater and prolific blogger, “Calarco’s Zoographies: Jamming the Anthropological Machine – Agamben,” The Inhumanities, 9/24/2009, typos fixed in brackets, http://inhumanities.wordpress.com/2009/09/24/calarcos-zoographies-jamming-the-anthropological-machine-agamben/

I should have added this last night, but I forgot. The section on spends little time grappling with concepts like bare life and zoe and bios. One can only assume this was intentional. I continue to think that bare life does not provide a particularly emancipatory model for animals, or, for that matter, humans. I think we have to refuse a category that turns animal life into something synonymous with natural life, while giving human life a privileged or at least different place as the only form of artificial life. It ignores all we have come to know about the complex interactions, learned behaviors, strategies and mechanisms of different animal lives. Indeed, it ignores all we have come to know about the existence of animal culture and animal society. Not only that, but the concept of bare life as being the moment when a human is caught in between bios or zoe, seems to indicate that something like the Muselmann would be natural if he was an animal. Such an understanding can be found in phrases like, “They were treated as if they were animals.” But, such arguments are clearly silly. There is nothing about animals that resemble the zombie-esque descriptions of the Muselmann. Animals are full of affect, and interaction. Animal life is never mere life, and as the intensive amount of science and violence dedicated to creating increasingly docile animals for factory farms show, [they] have to [be] turned into bare life just like the human animal.

### Politics

#### Alt cedes the political—turns the K—our advocacy solves

Connolly ’12 William E. Connolly, Krieger-Eisenhower Professor of Political Science at Johns Hopkins University, “Steps toward an Ecology of Late Capitalism,” Theory & Event, Vol. 15, Issue 1, 2012, Muse

6. The democratic state, while it certainly cannot alone tame capital or reconstitute the ethos of consumption, must play a significant role in reconstituting our lived relations to climate, weather, resource use, ocean currents, tectonic instability, glacier flows, species diversity, work, local life, consumption, and investment, as it responds favorably to pressures to forge a new ethos. A New, new democratic Left will thus experimentally enact new intersections between role performance and political activity, outgrow its old disgust with the very idea of the state, and remain alert to the dangers states can pose. It will do so because, as already suggested, the fragile ecology of late capital requires state interventions of several sorts. A refusal to participate in the state today cedes too much hegemony to neoliberal markets, either explicitly or by implication. Some drives to fascism, remember, emerged the last time around in capitalist states after a total market meltdown. Most of those movements failed. But a couple became consolidated through a series of resonances (vibrations) back and forth between industrialists, state officials, and vigilante groups in neighborhoods, clubs, churches, the police, the media and pubs. You do not fight the danger of a new kind of neofascism by withdrawing from either micropolitics or state politics. You do so through a multi-sited politics designed to shift systemic interactions and to infuse a new ethos into the fabric of everyday life. Changes in ethos can sometimes open doors to new possibilities of state and interstate action, so that an advance in one domain seeds that in the other. And vice versa. A positive dynamic of mutual amplification might be generated here. Could a series of significant shifts in the routines of state and global capitalism even press the fractured system to a point where it hovers on the edge of capitalism itself? We don’t know. That is one reason it is important to focus on interim goals. Another is that in a world of becoming, replete with periodic and surprising shifts in the course of events, you cannot project far beyond an interim period. Another yet is that activism needs to project concrete, interim possibilities to gain support and propel itself forward. That being said, it does seem unlikely to me, at least, that a positive interim future includes either socialist productivism or the world projected by proponents of deep ecology.23

#### Sovereignty might get a bad rap but it isn’t nearly as bad as they make it out to be. Discourses of the law’s violent underside obscures its potential to get stuff done. We don’t always have to resist—we can see the state as strategic.

Jacques Derrida, Directeur d’Etudes at the Ecole des Hautes Etudes en Sciences Sociales in Paris, and Professor of Philosophy, French and Comparative Literature at the University of California, Irvine, 2004, For What Tomorrow? A Dialogue With Elisabeth Roudinesco, p. 91-92

J.D.: A moment ago you spoke of regicide as the necessity of an ex­ception, in sum. Well, yes, one can refer provisionally to Carl Schmitt (whatever one may think of him, his arguments are always useful for prob­lematizing the “political” or the “juridical”; I examined this question in Pol­itics of Friendship). He says in effect that a sovereign is defined by his capacity to decide the exception. Sovereign is he who effectively decides the exception. The revolutionaries decided that at that moment that it was nec­essary to suspend justice and—in order to establish the law [droit] and to give the Revolution its rights—to suspend the rule of law [l’Etat de droit]. Schmitt also gives this definition of sovereignty: to have the right to sus­pend the law, or the rule of law, the constitutional state. Without this cate­gory of exception, we cannot understand the concept of sovereignty. Today, the great question is indeed, everywhere, that of sovereignty. Omnipresent in our discourses and in our axioms, under its own name or another, liter­ally or figuratively, this concept has a theological origin: the true sovereign is God. The concept of this authority or of this power was transferred to the monarch, said to have a “divine right.” Sovereignty was then delegated to the people, in the form of democracy, or to the nation, with the same the­ological attributes as those attributed to the king and to God. Today, wher­ever the word “sovereignty” is spoken, this heritage remains undeniable, whatever internal differentiation one may recognize in it. How do we deal with this? Here we return to the question of heritage with which we began. It is necessary to deconstruct the concept of sover­eignty, never to forget its theological filiation and to be ready to call this fil­iation into question wherever we discern its effects. This supposes an in­flexible critique of the logic of the state and of the nation-state. And yet—hence the enormous responsibility of the citizen and of the heir in general, in certain situations—the state, in its actual form, can resist cer­tain forces that I consider the most threatening. What I here call “responsibility” is what dictates the decision to be sometimes for the sovereign state and sometimes against it, for its deconstruction (“theoretical and practical,” as one used to say) according to the singularity of the contexts and the stakes. There is no relativism in this, no renunciation of the injunction to “think” and to deconstruct the heritage. This aporia is in truth the very condition of decision and responsibility—if there is any. I am thinking for example of the incoherent but organized coalition of international capitalist forces that, in the name of neoliberalism or the market,31 are taking hold of the world in conditions such as the “state” form; this is what can still resist the most. For the moment. But it is neces­sary to reinvent the conditions of resistance. Once again, I would say that according to the situations, I am an antisovereignist or a sovereignist—and I vindicate the right to be antisovereignist at certain times and a sovereignist at others. No one can make me respond to this question as though it were a matter of pressing a button on some old-fashioned machine. There are cases in which I would support a logic of the state, but I ask to examine each situation before making any statement. It is also necessary to recognize that by requiring someone to be not unconditionally sovereignist but rather soyvereignist only under certain conditions, one is already calling into question the principle of sovereignty. Deconstruction begins there. It demands a dif­ficult dissociation, almost impossible but indispensable, between uncondi­tionality (justice without power) and sovereignty (right, power, or potency). Deconstruction is on the side of unconditionaliry, even when it seems im­possible, and not sovereignty, even when it seems possible.

### Perms

#### Prefer plurality over unitary theory—our world of fragility and complexity can’t be explained by singular totalizing frameworks—it always leaps outside and beyond these explanations. Mixing critique is the best strategy because it allows for greater theoretical agility—the alt alone is an anthropocentric denial of the activity of objects

Bryant ’12 Levi Bryant, teaches philosophy at Collin College, “RSI, Discursivity, Critique, and Politics,” Larval Subjects, 7/18/2012, http://larvalsubjects.wordpress.com/2012/07/18/rsi-discursivity-critique-and-politics/

What we need– or what I want –is something like the Lacanian Borromean Knot. Here the Imaginary would be the way in which one entity encounters another entity. For example, the way in which mantis shrimps encounter the world about them or the way in which people of another culture encounter the world around them. Each machine or object (the two are synonyms for me), encounters the world around it in a particular way. Each discipline encounters the world around it in a particular way and is blind to other aspects of the world. There are as many phenomenologies and transcendental structures of cognition as there are types of machines. There’s even a transcendental aesthetic, analytic, and dialectic for flowers. The symbolic would be the way in which entities capable of language signify the world through narratives, signifiers, signs, texts, etc. Who knows whether this is restricted to humans? As I’ve increasingly argued, I believe aliens live among us. They go by names like “corporation”, “army”, “government”, “institution”, etc. These beings, I believe, are irreducible to humans (the influence of Niklas Luhmann on me), and perhaps have their own symbolics. Just as we don’t know the language of dolphins, we don’t know the languages of these entities. They have their own symbolic. And perhaps likewise with bees, dolphins, octopi, and birds. Finally, the real is the dimension of irreducibility of a think to how it is perceived by another being (imaginary), or symbolized by another entity. It is the irreducible difference that a road has to affect us, for example, despite being created by us. The important caveat is 1) that there is no one borromean knot or RSI, and that 2) all three orders don’t need to be present for there to be being at work. The orders can become unglued, and in many instances some of the orders aren’t present at all. For example, I suspect that the order of the symbolic isn’t operative for bacteria (though the symbolic is at work for us when we talk about bacteria), though the order of the real and imaginary is at work for bacteria. How we work with bacteria in the symbolic, of course, does not undermine the real of bacteria or their ability to contribute differences irreducible to knowledge, signification, or belief. What’s important is that we practice something like what Bogost has call “alien phenomenology”, thinking the experiential world of nonhumans and others, and refusing to privilege one point of view on the universe.

#### Rather than fully rejecting speed, we should strategically engage it to inspire a more pluralist cosmopolitan ethic. Late modernity’s quickening pace can be redeployed to check against the most harmful outgrowths of speed while simultaneously breaking down the slow-moving dogmas left over from modernism.

Connolly 2k William E. Connolly, Krieger-Eisenhower Professor of Political Science at Johns Hopkins University, “Speed, Concentric Cultures, and Cosmopolitanism,” Political Theory, Vol. 28 No. 5, October 2000, JSTOR

It may forever be impossible for parties on either side of the transcendental/ immanent divide to appreciate fully the force of regulative ideas adopted by those on the other. Why so? Well, my ability to assess the inspirational power in the faith of the other is limited by the fact that I am not myself inhabited by it. In a world marked by the persistence of mystery and a plurality of interpretations, there is not enough time for any mortal to inhabit experimentally every challenging possibility. If we lived forever, such difficulties could be attenuated. But we do not. Where freedom is honored, then, mortals might come to terms ethically with an irreducible plurality of regulative ideas. They might practice agonistic respect toward opaque faiths that do not move them. Kant walks to the edge of this horizon when he confesses that his idea of morality rests in the last instance on recognition rather than argument. But he converts that acknowledgment into the demand that every reasonable person must recognize things as he does, and he secures that demand by leveling harsh charges against those inside and outside “the West” who do not do so. But the jig is up. As the hope to secure a single perspective is shaken by the experience of a world spinning faster than heretofore, a window of opportunity opens to negotiate a plural matrix of cosmopolitanism. The possibilities of affirmative negotiation depend on several parties relaxing the demand that all others subscribe to the transcendental, universal, or immanent basis of ethics they themselves confess. That ain’t easy. Still, a start can be made if Kantians, neo-Kantians, and Nussbaumites acknowledge the profound contestability of the conception of morality they endorse fervently and as they adopt a modest stance toward those who do not confess it. By affirming without existential resentment the element of contestability in regulative ideas that move us, we contribute to a plural matrix appropriate to the late-modern world. The possible consolidation of such a matrix involves cultivation of agonistic respect between parties who proceed from diverse, overlapping sources. Indeed, the pursuit of agonistic respect across such lines of difference sets a threshold through which to measure the element of compassion in each perspective. Unless, of course, one party dissolves the mysteries of being by proving that its thick universals, transcendental arguments, or apodictic recognition sets the frame in which everyone must participate. Do not hold your breath waiting. To do so is to forfeit the time available to pursue a plural matrix grounded in respect for diverse responses to persisting mysteries of being. And time is short. The indispensability and contestability of multiple regulative ideas set two conditions of possibility for a new matrix of cosmopolitanism in a fast-paced world. To the extent a variety of Christians, Jews, secularists, neo-Aristotelians, Islamists, Kantians, deep ecologists, Buddhists, and atheists cultivate such modest orientations, the late-modern world becomes populated by more citizens coming to terms thoughtfully with contemporary issues unsusceptible to resolution by one country, one faith, or one philosophy.

#### Their calculation of the state’s potential and naturalist ontology means no future

Derrida ‘1 Jacques Derrida, Directeur d’Etudes at the Ecole des Hautes Etudes en Sciences Sociales in Paris, 2001, A Taste for the Secret, p. 19-21

In dealing with what-is-to-come [1’avenir] ,2 with the opening to the to-come [l’avenir] — that is, not only to the future [Jutur], but to what happens [Ce qui arrive], comes [vient], has the form of an event — this opening must certainly be linked up with what we said yesterday about context: with a movement that consists not only in inscribing itself in a context — and from this point of view there is nothing but context — but thereby also in producing a context, trans­forming a given [donne] context, opening it up and bringing about a new contextual giving [donne: hand of cards]. From this point of view, a work [oeuvre] — or, for that matter, a phrase or a gesture, a mark [marque] or a chain of marks —inflects a context and, in so doing, appeals for a new one. A simple phrase takes its meaning from a given context, and already makes its appeal to another one in which it will be understood; but, of course, to be understood it has to trans­form the context in which it is inscribed. As a result, this appeal, this promise of the future, will necessarily open up the production of a new context, wherever it may happen [arrive]. The future is not present, but there is an opening onto it; and because there is a future [ii y a de l’avenir], a context is always open. What we call opening of the context is another name for what is still to come. Justice — or justice as it promises to be, beyond what it actually is — always has an eschatological dimension. I link up this value of eschatology with a certain value of messianism, in an attempt to free both dimensions from the religious and philosophical contents and manifestations usually attached to them: philosophical, for eschatology, the thought of the extreme, the eschaton; or religious, the messianism in the religions ‘of the book’. Why do I claim that justice is eschato­logical and messianic, and that this is so a priori, even for the non-believer, even for someone who does not live according to a faith determined by Judeo-Christian-Islamic revelation? Perhaps because the appeal of the future [l’avenir] that we spoke of a moment ago — which overflows any sort of onto-logical determination, which overflows everything that is and that is present, the entire field of being and beings, and the entire field of history — is committed to a promise or an appeal that goes beyond being and history. This is an extremity that is beyond any determinable end of being or of history, and this eschatology — as extreme beyond the extreme, as last beyond the last — has necessarily to be the only absolute opening towards the non-determinability of the future. It is perhaps necessary to free the value of the future from the value of ‘horizon’ that traditionally has been attached to it — a horizon being, as the Greek word indicates, a limit from which I pre-comprehend the future. I wait for it, I pre­determine it, and thus I annul it. Teleology is, at bottom, the negation of the future, a way of knowing beforehand the form that will have to be taken by what is still to come. Here, what I call the eschatological or the messianic is nothing other than a relation to the future so despoiled and indeterminate that it leaves being ‘to come’ [a venir], i.e., undetermined. As soon as a determinate outline is given to the future, to the promise, even to the Messiah, the messianic loses its purity, and the same is true of the eschatological in the sense we are giving it now. We would find ourselves with a sort of messianic eschatology so desertic that no religion and no ontology could identify themselves with it. If we had the texts on hand, it would be interesting to look at the passages where Heidegger talks about eschatology. In any case, what we have here is an affirmation that is, more­over, a decision, implicit within any relation to the future — a reaffirmation of the eschatological and messianic as a struc­tured relation to the future as such. If there is a future as such, it cannot even announce itself, it cannot be pre­announced or over-announced [Se sur-annoncer] except in the eschatological and messianic — but in a messianic and an eschatological that would be the kenosis of the eschatological and messianic. This kenosis does not necessarily have to be the object of a mystical exercise or ascetic despoilment. Nevertheless, we do have to recognize the fact that it works messianically and eschatologically on our present, our ‘now, our everydayness. And this ‘now’ is not a present. How can the desert of this kenosis be linked to justice? It may be said: ‘with a despoilment of this sort, even if it be granted you, you will never render justice to justice; justice has nothing to do with it.’ But I do not agree. What has to be ‘saved’ by this kenosis, if it is the irruption of a future that is absolutely non-reappropriable, has to have the shape of the other, which is not simply the shape of something in space that cannot be reached. That which defies anticipation, reappropriation, calculation — any form of pre-determination — is singularity. There can be no future as such unless there is radical otherness, and respect for this radical otherness. It is here — in that which ties together as non-reappropriable the future and radical otherness — that justice, in a sense that is a little enigmatic, analytically participates in the future. Justice has to be thought of as what overflows law [droit], which is always an ensemble of determinable norms, posit­ively incarnated and positive. But justice has to be distin­guished not only from law, but also from what is in general.

# Rd 4 vs UNLV BV

## 1AC

### Inherency

#### Contention one is the status quo

#### Despite feasibility, thorium tech hasn’t caught on in the US

Niiler ’12 Eric Niiler, “Nuclear power entrepreneurs push thorium as a fuel,” Washington Post, 2/20/2012, http://www.washingtonpost.com/national/health-science/nuclear-power-entrepreneurs-push-thorium-as-a-fuel/2011/12/15/gIQALTinPR\_story.html

The proposed fuel is thorium, an abundant silver-gray element named for the Norse god of thunder. It is less radioactive than the uranium that has always powered U.S. plants, and advocates say that not only does it produce less waste, it also is more difficult to turn into nuclear weapons. They’re pushing the idea of adapting plants to use thorium as a fuel or replacing them with a completely new kind of reactor called a liquid-fluoride thorium reactor, or LFTR (pronounced “lifter”). The LFTR would use a mixture of molten chemical salts to cool the reactor and to transfer energy from the fission reaction to a turbine. Proponents say such a system would be more efficient and safer than existing plants, which use pressurized water to cool uranium fuel rods and boiling water or steam to transfer the energy they create. “A molten-salt reactor is not a pressurized reactor,” said John Kutsch, director of the Thorium Energy Alliance, a trade group based in Harvard, Ill. “It doesn’t use water for cooling, so you don’t have the possibility of a hydrogen explosion, as you did in Fukushima.” Kutsch and others say that a thorium-fueled reactor burns hotter than uranium reactors, consuming more of the fuel. “Ninety-nine percent of the thorium is burned up,” he said. “Instead of 10,000 pounds of waste, you would have 300 pounds of waste.” ‘Small boatloads of fanatics’ Although the idea of thorium power has been around for decades — and some countries are planning to build thorium-powered plants — it has not caught on with the companies that design and build nuclear plants in the United States or with the national research labs charged with investigating future energy sources.

#### Budget request triggers perception links

Green Car Congress 12 (Green Car Congress, edited by Mike Millikin, editor and analyst in the IT industry for more than 15 years, "President’s Budget for FY 2013 boosts discretionary funds for DOE, cuts fossil fuel subsidies," Feb 13, [www.greencarcongress.com/2012/02/budget-20120213.html], jam)

The President’s Budget for FY 2013 provides $27.2 billion in discretionary funds for the US Department of Energy (DOE), a 3.2% increase above the 2012 enacted level. The request includes increased funding for clean energy, research and development to spur innovation, and advanced manufacturing. Savings and efficiencies are achieved through eliminating more than $4 billion annually in fossil fuel subsidies; eliminating low-priority and low-performing programs, and by concentrating resources on full utilization of existing facilities and infrastructure. Total outlays for FY 2013 are estimated to be $34,963 billion, compared to the estimated $40,561 billion in outlays for FY 2012. Other key elements in the proposed budget for the DOE include: Increases funding for applied research, development, and demonstration in the Office of Energy Efficiency and Renewable Energy ($2.3 billion). These funds are part of a broad energy strategy that emphasizes priorities in clean energy and advanced manufacturing, through grants, financing assistance, and tax incentives that accelerate fundamental research, technology development, and commercialization. Within EERE, the Budget increases funding by nearly 80% for energy efficiency activities and increases funding for the development of the next generation of advanced vehicles and biofuels. It maintains support for research, development, and demonstration of renewable electricity generation, including: $310 million for the SunShot Initiative; $95 million for wind energy, including off-shore wind technologies; and $65 million for geothermal energy and enhanced geothermal systems. The Budget also provides $770 million for the Office of Nuclear Energy, which includes funding for advanced small modular reactors R&D. Other priority activities include R&D on storage, transportation, and disposal of nuclear waste that supports the implementation of recommendations put forward by the Blue Ribbon Commission on America’s Nuclear Future. The Budget also includes $350 million for the Advanced Research Projects Agency–Energy. $421 million for fossil energy R&D, including $12 million to fund a multi-year research initiative aimed at advancing technology and methods to develop domestic natural gas resources. Specifically, DOE, in collaboration with the Environmental Protection Agency and the US Geological Survey, will focus on understanding and reducing the environmental, health, and safety risks of natural gas and oil production from hydraulic fracturing in shale and other geologic formations. More than doubles research and development on advanced manufacturing processes and advanced industrial materials, enabling companies to cut costs by using less energy while improving product quality. Promotes basic research through $5 billion in funding to the Office of Science. Works through the President’s Better Building Initiative to make non-residential buildings more energy efficient by catalyzing private sector investment. Creates jobs through mandatory funding for HomeStar incentives to consumers to make their homes more energy efficient. Positions the Environmental Management program to meet its legally enforceable cleanup commitments at sites across the country. Continues investments to maintain a nuclear weapons stockpile in support of the planned decrease in deployed US and Russian weapons under the New Strategic Arms Reduction Treaty. Provides funding for securing, disposing of, and detecting nuclear and radiological material worldwide.

### Prolif Adv

#### Advantage one is prolif

#### Nuclear terrorism is inevitable absent fissile material disposal—Bin Laden was only the beginning—expert consensus

Smith 11 (James F., Communications Director, Belfer Center for Science and International Affairs, Jun 6, [www.nti.org/newsroom/news/first-joint-us-russia-assessment/], jam)

Researchers from the United States and Russia today issued a joint assessment of the global threat of nuclear terrorism, warning of a persistent danger that terrorists could obtain or make a nuclear device and use it with catastrophic consequences. The first joint threat assessment by experts from the world’s two major nuclear powers concludes: “If current approaches toward eliminating the threat are not replaced with a sense of urgency and resolve, the question will become not if but when, and on what scale, the first act of nuclear terrorism occurs.” The study recommends measures to tighten security over existing nuclear weapons and the nuclear materials terrorists would need to make a crude nuclear bomb, along with expanded police and intelligence cooperation to interdict nuclear smuggling and stop terrorist nuclear plots. The report also calls for improved protection of nuclear facilities that might be sabotaged, and of radiological materials that might be used in a dirty bomb. The report, titled "The U.S.-Russia Joint Threat Assessment on Nuclear Terrorism," released on Monday, June 6, in Cambridge, Mass., and in Moscow, results from a nearly year-long partnership by nuclear security experts from the Belfer Center for Science and International Affairs at Harvard Kennedy School and The Institute for U.S. and Canadian Studies in Moscow, a leading Russian research center. The lead U.S. and Russian authors are Rolf Mowatt-Larssen, a senior fellow in the Belfer Center and a former director of intelligence and counter-intelligence at the U.S. Department of Energy, and Pavel S. Zolotarev, a retired army general who is deputy director of Moscow’s Institute for U.S. and Canadian Studies, at the Russian Academy of Sciences, and former head of the Information and Analysis Center of the Russian Ministry of Defense. “ If you look at the U.S. and Russia together, we own about 90% of the problem – more of the weapons, less of the nuclear materials. So it’s only right that these two countries share their expertise and look hard at ways to work together to lower the risks,” said Mowatt-Larssen. “The United States and Russia have never produced a document that could be said to represent a common understanding of the nuclear terrorism threat. This can now be used as a basis for driving action in both governments.” Zolotarev said: "Russia and the United States have paid more attention to nuclear weapons and nuclear deterrence, even though neither of our two countries has a political need to rely threat of nuclear terrorism, which constitutes a more real threat than the enormous arsenals of nuclear weapons in both countries. The threat of nuclear terrorism is increasing. Our response should anticipate the dynamics of the threat rather than lag behind it." The researchers’ joint assessment was reviewed and endorsed by a group of retired U.S. and Russian senior military and intelligence officers, led by General Anatoliy S. Kulikov (former Minister of Interior) and General Eugene E. Habiger (former STRATCOM commander). This “Elbe Group” was established in October 2010 to create an informal communication channel on security issues of concern to both the United States and Russia. The Joint Threat Assessment was coordinated by the Kennedy School’s U.S.-Russia Initiative to Prevent Nuclear Terrorism, which is directed by William Tobey, a senior fellow in the BelferCenter and former top official in the National Nuclear Security Administration. The assessment project was supported by the Nuclear Threat Initiative, a non-profit organization in Washington that works to reduce threats from nuclear, chemical and biological weapons. “The joint threat assessment accomplishes something that so far governments have been unable to do: gauge the threat of nuclear terrorism from differing national perspectives, and thereby form the basis for effective action to defeat it,” said Tobey. “This will help to overcome the number one barrier to improved nuclear security--complacency." Key Findings The joint assessment examines potential terrorist pathways to a nuclear attack, among them buying or stealing an existing weapon, or getting highly enriched uranium or plutonium and fashioning a crude nuclear bomb of their own, which the study warns is distressingly plausible. It also concludes that while the killing of Osama bin Laden damages al Qaeda’s capacity to carry out nuclear terrorism, surviving leaders of the group retain nuclear terror ambitions. The joint report documents that al Qaeda has been working for years to acquire the nuclear materials and expertise needed to make a crude nuclear bomb, getting as far as carrying out explosive tests for their nuclear program in the Afghan desert. The report outlines the steps terrorists could follow and envisions how a terrorist nuclear plot might be structured – and how countries should work together to stop it. The study notes that in addition to al Qaeda, terrorists from the North Caucasus region remain committed to carrying out catastrophic attacks, have carried out reconnaissance at nuclear weapon storage sites, have plotted to hijack a nuclear submarine with nuclear weapons on board, have planted radiological materials in Moscow, and have repeatedly threatened to attack nuclear power plants. These groups include factions in Chechnya, Dagestan, Ingushetia and elsewhere. Among the joint assessment’s recommendations: All stocks of nuclear weapons, highly enriched uranium and plutonium must be protected against all plausible terrorist and criminal threats, and the number of locations where these stocks exist must be reduced as much as practicable. Coordinated U.S.-Russian leadership is vital for this international effort because the two countries hold the largest nuclear stockpiles and are most experienced in dealing with nuclear security. This joint effort should promote and support enhanced intelligence and law enforcement by UN, the International Atomic Energy Agency, and international police organizations.

#### We’re overdue for a nuclear attack – it is too easy to steal weapons grade plutonium from reactors

Tirone ‘12 (Jonathan, reporter for Bloomberg News, 3/22/2012, "Missing Nukes Fuel Terror Concern," [www.businessweek.com/news/2012-03-22/missing-nukes-fuel-terror-concern-as-seoul-meeting-draws-obama#p1], jam)

A nuclear-armed terrorist attack on the U.S. port in Long Beach, California, would kill 60,000 people and cost as much as $1 trillion in damage and cleanup, according to a 2006 Rand study commissioned by the Department of Homeland Security. Even a low-level radiological or dirty-bomb attack on Washington, while causing a limited number of deaths, would lead to damages of $100 billion, according to Igor Khripunov, the Soviet Union’s former arms-control envoy to the U.S. He is now at the Athens, Georgia-based Center for International Trade and Security. Because a terrorist needs only about 25 kilograms of highly-enriched uranium or 8 kilograms of plutonium to improvise a bomb, the margin of error for material accounting is small. There are at least 2 million kilograms (4.4 million pounds) of stockpiled weapons-grade nuclear material left over from decommissioned bombs and atomic-fuel plants, according to the International Panel on Fissile Materials, a nonprofit Princeton, New Jersey research institute that tracks nuclear material. That’s enough to make at least 100,000 new nuclear weapons on top of the 20,000 bombs already in weapon-state stockpiles. ‘Poorly Secured’ “The elements of a perfect storm are gathering,” said former Democratic Senator Sam Nunn, founder of the Washington- based Nuclear Threat Initiative, in an e-mail. “There is a large supply of plutonium and highly enriched uranium-weapons- usable nuclear materials spread across hundreds of sites in 32 countries, too much of it poorly secured. There is also greater know-how to build a bomb widely available, and there are terrorist organizations determined to do it.” Greenpeace, the anti-nuclear environmental group, has shown the ease with which intruders could breach security at Electricite de France SA reactors. Activists on Dec. 5 exposed lapses at EDF nuclear reactors near Paris and in southern France, hiding inside one for 14 hours and unfurling a banner reading “Safe Nuclear Doesn’t Exist” on the roof of another. Invading Power Plants Since then, EDF has reviewed existing barriers around reactor sites and added patrols with guard dogs and tasers, said Dominique Miniere, the company’s director of nuclear production. If saboteurs were to penetrate a reactor site and disable the power supply, creating a similar effect as when the tsunami struck the Fukushima Dai-Ichi plant in Japan last year, there would be a danger of the nuclear fuel rods melting and radioactive particles being released into the air. Criminals breached South Africa’s Pelindaba nuclear facility in 2007, overpowering guards who oversaw the country’s stock of bomb-grade material. The U.S. Defense Threat Reduction Agency dismissed staff over nuclear security concerns in May 2008 at a North Dakota base that dispatched nuclear bombs without proper controls. In November 2010, Belgian activists evaded North Atlantic Treaty Organization guards to expose weak security protecting nuclear weapons at a base in Kleine Brogel. Activists spent several hours taking pictures of a bunker containing nuclear warheads before security guards apprehended them. The Global Zero Initiative, whose U.S. arm is headed by former nuclear negotiator Richard Burt, said in a report last month that the greatest nuclear security threat in Russia comes from bases in the country’s west that house tactical nuclear warheads targeting Europe. These bases provide inadequate security against theft or sabotage, according to the report, whose authors included Russian former arms-control negotiators. At the end of the Cold War, the Soviet Union had about 22,000 nuclear weapons in storage in Russia and such satellite states as Armenia, Belarus, Kazakhstan and Ukraine. Allison says there are doubts that all the weapons-usable material was recovered when many warheads were repatriated and dismantled because of the chaos at the time and incomplete records. About 100 grams of highly enriched uranium, lodged inside a nuclear fission chamber, was plucked out of a Rotterdam scrap- metal yard in 2009 by Jewometaal Stainless Processing BV’s radiation-safety chief, Paul de Bruin. The scrap probably came from a decommissioned Soviet nuclear facility, he said. Low Detection Chance The discovery illustrated the ease with which nuclear material can bypass accounting checks and international radiation monitors. The shipment containing the uranium had already been checked for radioactivity. “The inability to accurately account for weapon-usable nuclear material around the world is a major obstacle to eliminating the threat of nuclear terrorism,” said Edwin Lyman, a senior physicist at the Cambridge, Massachusetts-based Union for Concerned Scientists, on March 14. Plutonium can be smuggled from some facilities “without a high probability of detection,” he said. One issue threatening to hobble the security summit is that all nations aren’t invited, wrote Burt, who is also a managing director at Washington’s McLarty Associates. He negotiated nuclear-weapons cuts with the Soviets under President George H.W. Bush. IAEA Role Other countries that weren’t invited include Belarus, home to about 500 pounds of high-enriched uranium that the U.S. wants removed, and Niger, the West African nation falsely accused of supplying uranium to Iraq before the 2003 war over an alleged nuclear-weapons program. Organizers opted to keep participation narrow in 2010 to foster more substantive debate, South Korea’s International Atomic Energy Agency envoy, Cho Hyun, said in a March 15 interview. By excluding some nuclear nations from the proceedings, the summit organizers risk undercutting the role of the Vienna-based IAEA, which verifies nuclear material worldwide. “The summit’s lack of universality affects the ability of the IAEA to take a visible role in nuclear security,” said Cho, who was previously South Korea’s chief negotiator for U.S. nuclear agreements. “The IAEA has been playing an essential role in strengthening international efforts for nuclear security.” Not Yet? The 153-member IAEA, whose powers are granted by consensus, has published guides and helped install detection equipment, in addition to making sure fissile material isn’t diverted for weapons in places like Iran. Lebanon asked the Vienna-based agency in 2008 to help install radiation monitors in Masnaa, along its border with Syria. “Nuclear security is a global issue and it requires a global response,” IAEA spokeswoman Gill Tudor said today in an e-mail, adding that the agency’s security budget will need to grow in order for it to help member states. “The need to improve nuclear security greatly exceeds inflation.” In the absence of binding oversight or an international verification treaty, Harvard’s Allison said he was surprised terrorists haven’t already used nuclear materials in an attack. “There is general agreement in national security circles that” a dirty bomb attack “is long overdue,” he said. “Terrorists have known for a long time that nuclear reactors are potentially vulnerable to attack or sabotage.” Other officials say the threat of nuclear terrorism should be taken seriously without being overplayed in public. “Those of us who are ringing the nuclear terrorism alarm take care to not overstate the odds of such an attack,” former U.S. Energy Department Director of Intelligence Rolf Mowatt- Larssen wrote March 18 in an e-mail. “The population is also suffering from terror-warning fatigue.” “Governments are only now beginning to think about how to raise nuclear security standards worldwide,” Washington-based Arms Control Association President Daryl Kimball said March 14. “Terrorists only need to exploit the weakest link in order to acquire nuclear material that could eventually lead to a detonation that would make the Fukushima disaster pale in comparison.”

#### Nuclear terrorism causes global nuclear exchange

Ayson 10 (Robert, Professor of Strategic Studies and Director of the Centre for Strategic Studies: New Zealand at the Victoria University of Wellington, “After a Terrorist Nuclear Attack: Envisaging Catalytic Effects,” Studies in Conflict & Terrorism, Volume 33, Issue 7, July, informaworld)

A terrorist nuclear attack, and even the use of nuclear weapons in response by the country attacked in the first place, would not necessarily represent the worst of the nuclear worlds imaginable. Indeed, there are reasons to wonder whether nuclear terrorism should ever be regarded as belonging in the category of truly existential threats. A contrast can be drawn here with the global catastrophe that would come from a massive nuclear exchange between two or more of the sovereign states that possess these weapons in significant numbers. Even the worst terrorism that the twenty-first century might bring would fade into insignificance alongside considerations of what a general nuclear war would have wrought in the Cold War period. And it must be admitted that as long as the major nuclear weapons states have hundreds and even thousands of nuclear weapons at their disposal, there is always the possibility of a truly awful nuclear exchange taking place precipitated entirely by state possessors themselves. But these two nuclear worlds—a non-state actor nuclear attack and a catastrophic interstate nuclear exchange—are not necessarily separable. It is just possible that some sort of terrorist attack, and especially an act of nuclear terrorism, could precipitate a chain of events leading to a massive exchange of nuclear weapons between two or more of the states that possess them. In this context, today’s and tomorrow’s terrorist groups might assume the place allotted during the early Cold War years to new state possessors of small nuclear arsenals who were seen as raising the risks of a catalytic nuclear war between the superpowers started by third parties. These risks were considered in the late 1950s and early 1960s as concerns grew about nuclear proliferation, the so-called n+1 problem. t may require a considerable amount of imagination to depict an especially plausible situation where an act of nuclear terrorism could lead to such a massive inter-state nuclear war. For example, in the event of a terrorist nuclear attack on the United States, it might well be wondered just how Russia and/or China could plausibly be brought into the picture, not least because they seem unlikely to be fingered as the most obvious state sponsors or encouragers of terrorist groups. They would seem far too responsible to be involved in supporting that sort of terrorist behavior that could just as easily threaten them as well. Some possibilities, however remote, do suggest themselves. For example, how might the United States react if it was thought or discovered that the fissile material used in the act of nuclear terrorism had come from Russian stocks,40 and if for some reason Moscow denied any responsibility for nuclear laxity? The correct attribution of that nuclear material to a particular country might not be a case of science fiction given the observation by Michael May et al. that while the debris resulting from a nuclear explosion would be “spread over a wide area in tiny fragments, its radioactivity makes it detectable, identifiable and collectable, and a wealth of information can be obtained from its analysis: the efficiency of the explosion, the materials used and, most important … some indication of where the nuclear material came from.”41 Alternatively, if the act of nuclear terrorism came as a complete surprise, and American officials refused to believe that a terrorist group was fully responsible (or responsible at all) suspicion would shift immediately to state possessors. Ruling out Western ally countries like the United Kingdom and France, and probably Israel and India as well, authorities in Washington would be left with a very short list consisting of North Korea, perhaps Iran if its program continues, and possibly Pakistan. But at what stage would Russia and China be definitely ruled out in this high stakes game of nuclear Cluedo? In particular, if the act of nuclear terrorism occurred against a backdrop of existing tension in Washington’s relations with Russia and/or China, and at a time when threats had already been traded between these major powers, would officials and political leaders not be tempted to assume the worst? Of course, the chances of this occurring would only seem to increase if the United States was already involved in some sort of limited armed conflict with Russia and/or China, or if they were confronting each other from a distance in a proxy war, as unlikely as these developments may seem at the present time. The reverse might well apply too: should a nuclear terrorist attack occur in Russia or China during a period of heightened tension or even limited conflict with the United States, could Moscow and Beijing resist the pressures that might rise domestically to consider the United States as a possible perpetrator or encourager of the attack? Washington’s early response to a terrorist nuclear attack on its own soil might also raise the possibility of an unwanted (and nuclear aided) confrontation with Russia and/or China. For example, in the noise and confusion during the immediate aftermath of the terrorist nuclear attack, the U.S. president might be expected to place the country’s armed forces, including its nuclear arsenal, on a higher stage of alert. In such a tense environment, when careful planning runs up against the friction of reality, it is just possible that Moscow and/or China might mistakenly read this as a sign of U.S. intentions to use force (and possibly nuclear force) against them. In that situation, the temptations to preempt such actions might grow, although it must be admitted that any preemption would probably still meet with a devastating response.

#### Thorium reactors can’t produce weapons grade waste – stymies all state and non-state proliferation attempts

Donohue 8/17 (Nathan, George Washington University, Elliott School of International Affairs,

research intern for the Project on Nuclear Issues, Center for Strategic and International Studies, 2012, "Thorium and its Value in Nonproliferation," [csis.org/blog/thorium-and-its-value-nonproliferation], jam)

The Federation of American Scientists (FAS) recently featured an article on their Science Wonk blog entitled “What about thorium?” As the article discussed, thorium is an element, which like uranium, has the ability to be utilized to produce nuclear power. More importantly, thorium fueled reactors are reported to be more proliferation resistant than uranium fueled reactors. However, despite these assertions, thorium has almost universally been ignored in favor of uranium based nuclear power reactors. The purpose of this piece is to conduct a review of thorium and to develop a better understanding of thorium’s nonproliferation benefits as it relates to nuclear power production. As FAS notes, natural thorium is a fertile material, while not itself fissionable, can be converted into a fissile material suitable to sustain a nuclear fission chain reaction. Accordingly, when natural thorium captures neutrons it becomes a new isotope of thorium which then goes through a process of decay where over a period of weeks, the thorium actually turns into uranium in the form of U-233. Unlike natural thorium, this U-233 is a fissile material suitable to sustain a nuclear fission chain reaction. The use of thorium to produce nuclear power is not a new concept. Research into thorium began in the late 1950’s and in 1965, Alvin Weinberg, the head of the Oak Ridge National Laboratory, and his team built a working thorium reactor using a molten salt bath design. Thorium was used to power one of the first commercial nuclear power plants in the U.S. in Shippingport, Pennsylvania in 1977. Nevertheless, research into thorium never found a foothold in the U.S. nuclear power infrastructure. By 1973, thorium research and development was fading to the uranium based focus of the U.S. nuclear industry, which was in the process of developing 41 new nuclear plants, all of which used uranium. The Shippingport facility was one of the last vestiges of thorium research in the U.S. for decades. Recently there has been a renewed focus on thorium based nuclear power, specifically in regards to the benefits related to spent fuel, including research involving the European Commission, India, Canada, Slovakia, the Russian Federation, China, France and the Republic of Korea. The utilization of thorium is purported to have the ability to reduce spent fuel waste by upwards of 50% while at the same time reducing the amount of plutonium within the fuel. To that end, thorium fuel designs are regarded as a better alternative for power production in terms of the plutonium proliferation risk inherent in spent fuel from uranium-fueled reactors. For example, all 104 reactors in the U.S. use uranium fuel. In these reactors, when the uranium in the form of U-238 captures extra neutrons, it goes through a process of decay whereby plutonium in the form of Pu-239 is produced. The spent fuel can then be reprocessed to isolate and remove this plutonium, which can then be used in the core of a nuclear weapon. Roughly 13 kilograms (kg) of reactor grade plutonium is necessary to power a nuclear weapon. In total, these 104 U.S. reactors accumulate roughly 2,000 tons of spent fuel per year. The 2,000 tons of waste produced annually by these nuclear utilities, contains roughly 25,520 kg of plutonium or enough plutonium to build 1,963 nuclear weapons a year. Globally, the total world generation of reactor-grade plutonium in spent fuel is equal to roughly 70 tons annually; more than two times what the U.S. produces. Conversely, there is the thorium seed and blanket design. This reactor concept is based on a design comprised of inner seed rods of uranium which provide neutrons to an outer blanket of thorium-uranium dioxide rods, creating U-233, which in turn powers the nuclear reactor. The important difference with this design is in the nature of the spent fuel. As advocates of thorium such as the U.S. company Lightbridge purport, this process would realize a significant reduction in the “quantity and quality” of plutonium produced within the spent fuel, achieving upwards of an 80% reduction in plutonium. For example, “a thorium-fueled reactor …would produce a total of 92 kilograms of plutonium per gigawatt-year of electricity generated, whereas a conventional water-cooled reactor would result in 232 kilograms.” In addition to a lower percentage of plutonium in the spent fuel, the composition of the plutonium produced is different as well, featuring a higher content of the plutonium isotopes Pu-238, Pu-240, and Pu-242. Weapons-grade plutonium requires roughly 90% plutonium in the form of Pu-239. Plutonium with higher contents of Pu-238 and Pu-240 is inherently unpredictable, and can spontaneously fission, making it “difficult or impossible to compress a bomb core containing several kilograms of plutonium to supercriticality before the bomb [disassembles] with a greatly reduced yield.” This reduces the reliability of a given nuclear weapon, thus making the thorium process less suitable for the development of plutonium for a nuclear weapon. The International Atomic Energy Agency considers plutonium containing more than 81% Pu-238 “not weapons-usable.” Although thorium offers the ability to reduce the plutonium risk inherent in spent fuel, it does not eliminate the need for enriched uranium. Specifically, Lightbridge’s seed and blanket fuel technology would require uranium enriched to less than 20 % in both the seed and blanket fuel rods. Equally significant, the U-233 that is produced in the seed and blanket design poses its own proliferation concern. A nuclear weapon can be constructed with a significant quantity of U-233, which the IAEA defines as 8 kg of U-233, and both the U.S. and India have detonated nuclear devices which utilized U-233. At the same time though, U-233 produced through this design also contains a small amount of the uranium isotope U-232, which emits a powerful, highly penetrating gamma ray. As noted by Ray Sollychin, the Executive Director of the Neopanora Institute-Network of Energy Technologies, this reportedly makes “U233 weapons significantly more difficult to conceal and much more dangerous to handle.” In addition, reactors which use a thorium based seed and blanket design are engineered so that the U-233 which is produced is simultaneously denatured or blended with U-238, further reducing its suitability for a nuclear weapon. Moreover, the blanket is designed to remain within the reactor for upwards of nine to twelve years. This allows for the U-233 that is produced within the blanket to burn “in situ.” Lastly, any attempt to prematurely remove the blanket and separate the U-233 from the U-238, U-234 and U-236 isotopes will also “remove the fissile U-235 from the resulting enriched steam,” once again making it unsuitable for a nuclear weapon. From this brief review of thorium and its properties, it appears clear that from a proliferation standpoint, that thorium fueled reactors provide for a safer nuclear power production process. In fact, it begs the question why thorium was overlooked in the first place. The simple answer is that the U.S. nuclear infrastructure was originally designed to facilitate mass quantities of plutonium for the production of a nuclear weapons arsenal. According to an article by Richard Martin in Wired magazine, “Locked in a struggle with a nuclear- armed Soviet Union, the U.S. government in the 60’s chose to build uranium-fueled reactors — in part because they produce plutonium that can be refined into weapons-grade material.” During the Cold War, maintaining nuclear parity with the Soviets was an overarching goal. Yet, with the end of the Cold War, the focus has shifted from acquiring nuclear weapons to stymying their development by both state and non-state actors. Therefore, the plutonium byproduct of the global nuclear power infrastructure has now become a liability and a proliferation risk. As the IAEA has noted, “for nuclear power to be accepted as a significant contributor of primary energy in the next century, it should be based on a fuel cycle, which is highly proliferation-resistant.” For this reason, further research and development of thorium needs to be explored, not only in terms of seed and blanket technology but other thorium based designs as well, including thorium-based Pebble Bed Reactor, fast reactors (liquid metal cooled and gas cooled); and advanced designs such as Molten Salt Reactor and Accelerator Driven System.

#### Thorium reactors reprocess existing stockpiles and waste ridding us of vulnerable fissile material in the process

Lerner 12 (George, president of Lerner Consulting, a consulting firm, "Can Use LFTRs to Consume Nuclear Waste," Jan 17, [liquidfluoridethoriumreactor.glerner.com/2012-can-use-lftrs-to-consume-nuclear-waste/], jam)

A LFTR can use all three of the available nuclear fuels: uranium-235 (what most reactors use, only 0.72% of naturally occurring uranium), uranium-233 (which is bred in the reactor from thorium-232), or plutonium-239 (bred from uranium-238, 99.28% of natural uranium). LFTRs can consume long-term nuclear waste from other reactors, nuclear weapons, or depleted uranium (any isotope of U, Pu or transuranic elements). Because a LFTR fissions 99%+ of the fuel (whether from Thorium or nuclear waste), it consumes all the uranium and transuranics leaving no long-term radioactive waste. 83% of the waste products are safely stabilized within 10 years. The remaining 17% need to be stored less than 350 years to become completely benign. “LFTR technology can also be used to reprocess and consume the remaining fissile material in spent nuclear fuel stockpiles around the world and to extract and resell many of the other valuable fission byproducts that are currently deemed hazardous waste in their current spent fuel rod form. The U.S. nuclear industry has already allocated $25 billion for storage or reprocessing of spent nuclear fuel and the world currently has over 340,000 tonnes of spent LWR fuel with enough usable fissile material to start one 100 MWe LFTR per day for 93 years. (A 100 MW LFTR requires 100 kg of fissile material (U-233, U-235, or Pu-239) to start the chain reaction). LFTR can also be used to consume existing U-233 stockpiles at ORNL ($500 million allocated for stockpile destruction) and plutonium from weapons stockpiles.” FLiBe Energy FS-MSRs essentially avoid the entire fuel qualification issue in that they are tolerant of any fissile material composition, with their inherent strong negative thermal reactivity feedback providing the control necessary to accommodate a shifting fuel feed stream. Fast Spectrum Molten Salt Reactor Options, Oak Ridge National Laboratory Transuranics (Np, Pu, Am, Cm) are the real reason for “Yucca Mountain” repositories [with PWR/LWR]. All MSR designs can take TRUs from other reactors into the reactor to fission off. TEAC3 Dr. David LeBlanc A 1GW MSR would consume almost 1 ton of “spent” nuclear fuel/year. 340,000 tons of spent nuclear fuel in the world (and more each year). Although costly to extract from fuel rods, 6600 tons of it in MSRs could replace all the coal, oil, natural gas, and uranium the world used in 2007. Since MSRs can be built on assembly lines, build 6600 x 1GW Molten Salt Reactors, have them operate for 30 years and rebuild once, and we eliminate All current spent nuclear fuel stockpiles. Generates 6600 GW electricity for 60 years, and/or use heat from the reactors, water and CO2, to make carbon-neutral car and truck fuel!

#### Plan makes the U.S. a leader in thorium tech – formal mechanisms allow for international adoption

Johnson 6 (Brian, BS Nuclear Engineering from Oregon State U, later received a Ph.D. in Nuclear Science and Engineering from M.I.T., "Thorium for Use in Plutonium Disposition,Proliferation-Resistant Fuels for DevelopingCountries, and Future Reactor Designs," [www.wise-intern.org/journal/2006/Johnson-ANS.pdf], jam)

As it stands, the joint plutonium disposition plans of the United State and Russia have stalled. This is because MOX, the technology chosen to undertake disposition, has taken more time and money than expected. In addition to this, Russia refuses to bear any of the cost of plutonium disposition through the use of MOX. This has opened the door to other options including thorium based fuels. A program in Russia examining thorium-based fuels has made a lot of progress and promises to be an excellent way to dispose of plutonium. The United States cannot directly benefit from this research and should start a program equal in size to the Russian program so that if thorium-based fuels turn out to be a better option for disposition there will be less delay in implementation. The United States outlines a desire in the Global Nuclear Energy Partnership (GNEP) to establish reactors in developing nations to provide potable water, heat for industrial processes, and electricity to growing populations. There are currently no designs that have all of the characteristics desired for reactors to be deployed in developing countries. Thorium-based, proliferation-resistant fuels can provide an evolutionary step until better technologies are developed. The design of this fuel shares a lot of the same technology as thorium-based fuel for plutonium disposition. Because of this, the same program could cover both research objectives with marginal added cost. Molten salt reactors meet all of the goals of next generation fuel cycles. However, the United States is not currently funding research into the technology. Recent research done in France has shown that some of the issues that prohibited development can be resolved. The United States is the only country with operating experience with molten salt reactors. Considering these facts, it makes sense for the United States to fund some research into this promising technology. Thorium could be used to reach several goals in the United States. The technology is not ready for implementation. The United States should fund research into thorium to reach these goals. In doing so, the United States could become a leader in thorium-based technology.

#### Formal mechanisms mean we’ll export SMR technology globally once we use it in the U.S.

Rosner & Goldberg 11 (Robert, William E. Wrather Distinguished Service Professor, Departments of Astronomy and Astrophysics, and Physics, and the College at the U of Chicago, and Stephen, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, "Small Modular Reactors - Key to Future Nuclear Power Generation in the U.S.," November 2011, [https://epic.sites.uchicago.edu/sites/epic.uchicago.edu/files/uploads/EPICSMRWhitePaperFinalcopy.pdf], jam)

Previous studies have documented the potential for a significant export market for U.S. SMRs, mainly in lesser developed countries that do not have the demand or infrastructure to accommodate GW-scale LWRs. Clearly, the economics of SMR deployment depends not only on the cost of SMR modules, but also on the substantial upgrades in all facets of infrastructure requirements, particularly in the safety and security areas, that would have to be made, and as exemplified by the ongoing efforts in this direction by the United Arab Emirates (and, in particular, by Abu Dhabi). This is a substantial undertaking for these less developed countries. Thus, such applications may be an attractive market opportunity for FOAK SMR plants, even if the cost of such plants may not have yet achieved all of the learning benefits. The Department of Commerce has launched the Civil Nuclear Trade Initiative, which seeks to identify the key trade policy challenges and the most significant commercial opportunities. The Initiative encompasses all aspects of the U.S. nuclear industry, and, as part of this effort, the Department identified 27 countries as “markets of interest” for new nuclear expansion. A recent Commerce Department report identified that “SMRs can be a solution for certain markets that have smaller and less robust electricity grids and limited investment capacity.” Studies performed by Argonne National Laboratory suggest that SMRs would appear to be a feasible power option for countries that have grid capacity of 2,000-3,000 MW. Exports of SMR technology also could play an important role in furthering non-proliferation policy objectives. The design of SMR nuclear fuel management systems, such as encapsulation of the fuel, may have non-proliferation benefits that merit further assessment. Also, the development of an SMR export industry would be step toward a U.S.-centric, bundled reliable fuel services. Exports of FOAK plants help achieve learning without the need for a full array of production incentives required for domestic FOAK deployments. Projected, unsubsidized, electricity market prices will likely be higher in selected foreign markets, particularly when the electricity pricing is based on liquefied natural gas import prices. 49 This situation would enable SMRs to be in a more favorable competitive position. SMR exports would qualify, if needed, for export credit assistance under current U.S. government programs, but this assistance would not require the need for new federal funding.

### #Based Islands Adv

#### Advantage two is military base islanding

#### *Long-term* grid outages are devastating and highly probable – degrading infrastructure, solar storm, EMP, cyberattack, pandemic, or physical attack

Bartlett et al 12 (Roscoe, Congressman 6th district of Maryland, Rich Andres, Energy Security Chair, National Defense University, Jack Markey, Director, Division of Emergency Management in Frederick County, Maryland, Marshall Hanson, Legislative Director, Reserve Officers Association, R. James Woolsey, Chairman, Foundation for the Defense of Democracies, and Former Director of Central Intelligence, The Honorable Robert McFarlane, former National Security Advisor to President Reagan, Aug 3, [bartlett.house.gov/news/documentsingle.aspx?DocumentID=305763], jam)

Congressman Bartlett noted, “The U.S. electric grid is one of our nation’s 18 critical infrastructures. However, none of the other 17 will function without electricity. America’s grid is vulnerable to widespread blackouts of extended duration. The federal government and the North American Electric Reliability Cor­poration (NERC) agree that there are five separate Low Frequency – High Impact (LFHI) events that could each inflict extended duration grid blackouts, potentially continent-wide including: cyber attack; solar geomagnetic storm electro-magnetic pulse (EMP), coordinated physical attack; nuclear EMP; or a pandemic. In light of these known risks, my legislation encourages communities and organizations to generate at least 20% of their own electricity demand to ensure independent operation of critical infrastructure and vital national security missions and to provide adequate supplies of basic necessities and services. It is critical that we in Congress send the message that it is in the interest of national security that every community and institution, especially our military, reestablish their capabilities to be self-sufficient independent of the grid. We also need to encourage individuals to develop and implement a plan that will provide for themselves and their family sufficient food, water and other emergency supplies necessary to weather an electricity outage when there is no one there to call.” Rich Andres, Energy Security Chair, National Defense University (NDU), said that NDU for the past three years had coordinated workshops in conjunction with other federal government agencies, academics and private sector organizations about the threat to the grid from solar geomagnetic storms. The most recent was Secure Grid 2011 held October 4-5, 2011. “Widespread grid collapse from a solar storm is a serious threat. There are two take aways from these exercises that relate to the legislation introduced today,” said Dr. Andres. “The first is that the federal government does not have the resources to adequately respond to an extended duration grid outage. Local, state, and private sector organizations do have these civil defense capabilities and resources. The second is that what these local organizations lack and that the federal government can provide is threat and risk assessment capabilities.” Jack Markey, Director, Division of Emergency Management in Frederick County, Maryland, reviewed a litany of electricity outages that have affected residents in recent years including the derecho of June 29-30, 2012, the snowmaggeddon blizzard, and hurricanes. He said, “These events illustrate that loss of electricity is not unprecedented, but rather a predictable event. I am pleased by Congressman Bartlett’s introduction of this legislation because it’s important to raise the public’s awareness of threats to the grid in order to garner support for necessary investments and preparation by families, businesses and local community organizations for measures such as generating 20% of their electricity demand.” Mr. Markey also said that his office is actively collaborating with the local utility, First Energy, on measures to improve recovery from electricity outages. Chuck Manto, Lead, National InfraGard Electro Magnetic Pulse Special Interest Group (EMP SIG) and CEO Instant Access Network, LLC, (IAN) explained the history of InfraGard. “InfraGard was initiated in the mid-1990's in Ohio. It was formed to address the reluctance of companies and organizations to share their vulnerabilities out of fear that it would hurt them with competitors or become known to bad guys. Members sign non-disclosure agreements. The FBI performs background checks on prospective members and coordinates information sharing by members nationwide. There are now 50,000 members.” He added, “In the last year and a half, InfraGard established an interest group called EMP SIG. It is focused on an all-hazards approach to mitigate any threat that could cause a nationwide collapse of infrastructure for more than a month. That work is what led to the recommendation of local distributed generation of 20% of electricity and a great deal of interest in renewable sources, such as solar and wind.” Mary Lasky, Business Continuity, Johns Hopkins Applied Physics Lab (JHU-APL) and also chair of Howard County, Maryland's Community Emergency Response Network as well as President of the Maryland Chapter of Contingency Planners, coordinated an exercise at JHU-APL on October 6, 2011 as an adjunct to the NDU Secure Grid 2011. She said that “Americans have become too reliant upon government to take care of them after an emergency. That's just not realistic in the event of a widespread grid outage. Trying to ignite citizen preparation as this bill does is extremely valuable. Generating 20% of electricity locally is important because none of our other critical functions, such as hospitals, work at all or work well without electricity.” Marshall Hanson, Legislative Director, Reserve Officers Association (ROA) said, “I was in the Navy and learned in my training that that the EMP nuclear threat is real. It was intensively studied by the Soviet Union. Nuclear capability is being pursued by Iran. A non-state actor, such as al Qaeda, could inflict a crippling EMP attack if they acquired the capability to launch a crude nuclear weapon from a scud launcher on a tramp steamer. The importance of this new legislation is that it refocuses attention and effort at the community level. That is consistent with the mission and history of the ROA. ROA not only supports this bill but will encourage members to become involved in their community preparations.” A number of distinguished supporters of the bill were unable to attend the news conference but released statements about it. R. James Woolsey, Chairman, Foundation for the Defense of Democracies, and Former Director of Central Intelligence: “Congressman Roscoe Bartlett has been an indefatigable leader to change the dangerous vulnerability at the heart of our civilization's ability to operate: multiple natural and man-made threats to the electric grid. Each could cause extended outages for tens of millions of Americans, our nation’s critical infrastructures and vital national security assets and missions. We could see a repeat of what is now happening in India but with outages lasting months not days. Congressman Bartlett’s new bill sounds this alarm once more with a different tack. It will encourage America’s best in the world hackers, inventors, engineers, first responders and entrepreneurs to help lead the rest of us toward having a much more resilient electric grid. Local communities and organizations that take steps to generate 20% of their electricity load independent of the grid will strengthen our national security by becoming more self-reliant and self-sustaining.” The Honorable Robert McFarlane, former National Security Advisor to President Reagan: "It's human nature to welcome technologies that enhance the quality of our lives while ignoring how our dependence on them poses catastrophic risks. Throughout his life and service in the House of Representatives, Congressman Roscoe Bartlett has been virtually alone in understanding the complex family of natural and man-made risks. He has made it his business to focus on what could go horribly wrong and to propose measures designed to prevent them or to prepare for and cope with the results. He has been the persistent leader of efforts to identify the vulnerabilities of our national electric power grid, as well as the risks we are running by relying on a single fuel -- a fuel that is priced by a foreign cartel -- to power over 90% of all air, sea and land transportation in our country. More importantly, having defined the problems, he has taken the initiative to introduce measures that offer a solution. His leadership in shaping the Open Fuel Standard -- a measure that will enable competition in transportation fuels -- is a landmark measure that will add immeasurably to our national and economic security. It is a measure of his standing on energy issues that he has garnered such solid bipartisan support for his initiatives. Every member of the House knows that Roscoe Bartlett is the go-to man on energy and environmental policies."

#### The military needs to be independent from the civilian grid – blackouts will wreck national command authority, fracture global military operations, collapse deterrence, and escalate to nuclear war – vulnerability independently invites cyber attacks and only small modular reactors can solve

Andres & Breetz 11 (Richard B., Professor of national Security Strategy at the national War College and a Senior fellow and energy and environmental Security and Policy Chair in the Center for Strategic research, institute for national Strategic Studies, at the national Defense University, Hanna L., doctoral candidate in the Department of Political Science at the Massachusetts institute of technology, "Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications," February 2011, [www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf], jam)

Grid Vulnerability. DOD is unable to provide its bases with electricity when the civilian electrical grid is offline for an extended period of time. Currently, domestic military installations receive 99 percent of their electricity from the civilian power grid. As explained in a recent study from the Defense Science Board: DOD’s key problem with electricity is that critical missions, such as national strategic awareness and national command authorities, are almost entirely dependent on the national transmission grid . . . [which] is fragile, vulnerable, near its capacity limit, and outside of DOD control. In most cases, neither the grid nor on-base backup power provides sufficient reliability to ensure continuity of critical national priority functions and oversight of strategic missions in the face of a long term (several months) outage. 7 The grid’s fragility was demonstrated during the 2003 Northeast blackout in which 50 million people in the United States and Canada lost power, some for up to a week, when one Ohio utility failed to properly trim trees. The blackout created cascading disruptions in sewage systems, gas station pumping, cellular communications, border check systems, and so forth, and demonstrated the interdependence of modern infrastructural systems. 8 More recently, awareness has been growing that the grid is also vulnerable to purposive attacks. A report sponsored by the Department of Homeland Security suggests that a coordinated cyberattack on the grid could result in a third of the country losing power for a period of weeks or months. 9 Cyberattacks on critical infrastructure are not well understood. It is not clear, for instance, whether existing terrorist groups might be able to develop the capability to conduct this type of attack. It is likely, however, that some nation-states either have or are working on developing the ability to take down the U.S. grid. In the event of a war with one of these states, it is possible, if not likely, that parts of the civilian grid would cease to function, taking with them military bases located in affected regions. Government and private organizations are currently working to secure the grid against attacks; however, it is not clear that they will be successful. Most military bases currently have backup power that allows them to function for a period of hours or, at most, a few days on their own. If power were not restored after this amount of time, the results could be disastrous. First, military assets taken offline by the crisis would not be available to help with disaster relief. Second, during an extended blackout, global military operations could be seriously compromised; this disruption would be particularly serious if the blackout was induced during major combat operations. During the Cold War, this type of event was far less likely because the United States and Soviet Union shared the common understanding that blinding an opponent with a grid blackout could escalate to nuclear war. America’s current opponents, however, may not share this fear or be deterred by this possibility. In 2008, the Defense Science Board stressed that DOD should mitigate the electrical grid’s vulnerabilities by turning military installations into “islands” of energy self-sufficiency. 10 The department has made efforts to do so by promoting efficiency programs that lower power consumption on bases and by constructing renewable power generation facilities on selected bases. Unfortunately, these programs will not come close to reaching the goal of islanding the vast majority of bases. Even with massive investment in efficiency and renewables, most bases would not be able to function for more than a few days after the civilian grid went offline. Unlike other alternative sources of energy, small reactors have the potential to solve DOD’s vulnerability to grid outages. Most bases have relatively light power demands when compared to civilian towns or cities. Small reactors could easily support bases’ power demands separate from the civilian grid during crises. In some cases, the reactors could be designed to produce enough power not only to supply the base, but also to provide critical services in surrounding towns during long-term outages. Strategically, islanding bases with small reactors has another benefit. One of the main reasons an enemy might be willing to risk reprisals by taking down the U.S. grid during a period of military hostilities would be to affect ongoing military operations. Without the lifeline of intelligence, communication, and logistics provided by U.S. domestic bases, American military operations would be compromised in almost any conceivable contingency. Making bases more resilient to civilian power outages would reduce the incentive for an opponent to attack the grid. An opponent might still attempt to take down the grid for the sake of disrupting civilian systems, but the powerful incentive to do so in order to win an ongoing battle or war would be greatly reduced.

#### Loss of national command authority and cyber attack causes miscalc and extinction

Lawson 9 (Sean - assistant professor in the Department of Communication at the University of Utah, Cross-Domain Response to Cyber Attacks and the Threat of Conflict, 5/13, http://www.seanlawson.net/?p=477)

At a time when it seems impossible to avoid the seemingly growing hysteria over the threat of cyber war,[1] network security expert Marcus Ranum delivered a refreshing talk recently, “The Problem with Cyber War,” that took a critical look at a number of the assumptions underlying contemporary cybersecurity discourse in the United States. He addressed one issue in partiuclar that I would like to riff on here, the issue of conflict escalation–i.e. the possibility that offensive use of cyber attacks could escalate to the use of physical force. As I will show, his concerns are entirely legitimate as current U.S. military cyber doctrine assumes the possibility of what I call “cross-domain responses” to cyberattacks. Backing Your Adversary (Mentally) into a Corner Based on the premise that completely blinding a potential adversary is a good indicator to that adversary that an attack is iminent, Ranum has argued that “The best thing that you could possibly do if you want to start World War III is launch a cyber attack. [...] When people talk about cyber war like it’s a practical thing, what they’re really doing is messing with the OK button for starting World War III. We need to get them to sit the f-k down and shut the f-k up.” [2] He is making a point similar to one that I have made in the past: Taking away an adversary’s ability to make rational decisions could backfire. [3] For example, Gregory Witol cautions that “attacking the decision maker’s ability to perform rational calculations may cause more problems than it hopes to resolveÃ¢â‚Â¦ Removing the capacity for rational action may result in completely unforeseen consequences, including longer and bloodier battles than may otherwise have been.” [4] Ã¯Â»Â¿Cross-Domain Response So, from a theoretical standpoint, I think his concerns are well founded. But the current state of U.S. policy may be cause for even greater concern. It’s not just worrisome that a hypothetical blinding attack via cyberspace could send a signal of imminent attack and therefore trigger an irrational response from the adversary. What is also cause for concern is that current U.S. policy indicates that “kinetic attacks” (i.e. physical use of force) are seen as potentially legitimate responses to cyber attacks. Most worrisome is that current U.S. policy implies that a nuclear response is possible, something that policy makers have not denied in recent press reports. The reason, in part, is that the U.S. defense community has increasingly come to see cyberspace as a “domain of warfare” equivalent to air, land, sea, and space. The definition of cyberspace as its own domain of warfare helps in its own right to blur the online/offline, physical-space/cyberspace boundary. But thinking logically about the potential consequences of this framing leads to some disconcerting conclusions. If cyberspace is a domain of warfare, then it becomes possible to define “cyber attacks” (whatever those may be said to entail) as acts of war. But what happens if the U.S. is attacked in any of the other domains? It retaliates. But it usually does not respond only within the domain in which it was attacked. Rather, responses are typically “cross-domain responses”–i.e. a massive bombing on U.S. soil or vital U.S. interests abroad (e.g. think 9/11 or Pearl Harbor) might lead to air strikes against the attacker. Even more likely given a U.S. military “way of warfare” that emphasizes multidimensional, “joint” operations is a massive conventional (i.e. non-nuclear) response against the attacker in all domains (air, land, sea, space), simultaneously. The possibility of “kinetic action” in response to cyber attack, or as part of offensive U.S. cyber operations, is part of the current (2006) National Military Strategy for Cyberspace Operations [5]: (U) Kinetic Actions. DOD will conduct kinetic missions to preserve freedom of action and strategic advantage in cyberspace. Kinetic actions can be either offensive or defensive and used in conjunction with other mission areas to achieve optimal military effects. Of course, the possibility that a cyber attack on the U.S. could lead to a U.S. nuclear reply constitutes possibly the ultimate in “cross-domain response.” And while this may seem far fetched, it has not been ruled out by U.S. defense policy makers and is, in fact, implied in current U.S. defense policy documents. From the National Military Strategy of the United States (2004): “The term WMD/E relates to a broad range of adversary capabilities that pose potentially devastating impacts. WMD/E includes chemical, biological, radiological, nuclear, and enhanced high explosive weapons as well as other, more asymmetrical ‘weapons’. They may rely more on disruptive impact than destructive kinetic effects. For example, cyber attacks on US commercial information systems or attacks against transportation networks may have a greater economic or psychological effect than a relatively small release of a lethal agent.” [6] The authors of a 2009 National Academies of Science report on cyberwarfare respond to this by saying, “Coupled with the declaratory policy on nuclear weapons described earlier, this statement implies that the United States will regard certain kinds of cyberattacks against the United States as being in the same category as nuclear, biological, and chemical weapons, and thus that a nuclear response to certain kinds of cyberattacks (namely, cyberattacks with devastating impacts) may be possible. It also sets a relevant scale–a cyberattack that has an impact larger than that associated with a relatively small release of a lethal agent is regarded with the same or greater seriousness.” [7]

#### Thorium is the only energy capable of reliably supporting bases

Ackerman 11 (Spencer, senior reporter at Wired, "Latest Pentagon Brainstorm: Nuke-Powered War Bases," Feb 18, [www.wired.com/dangerroom/2011/02/nuke-bases/], jam)

Imagine the snow-capped peaks of mountainous eastern Afghanistan. Wouldn’t it be better topped off with a cooling tower for a nuclear reactor? The Pentagon’s way-out research arm thinks so. It’s all part of a big push to make the military more eco-friendly.

Buried within Darpa’s 2012 budget request under the innocuous name of “Small Rugged Reactor Technologies” is a $10 million proposal to fuel wartime Forward Operating Bases with nuclear power. It springs from an admirable impulse: to reduce the need for troops or contractors to truck down roads littered with bombs to get power onto the base. It’s time, Darpa figures, for a “self-sufficient” FOB. Only one problem. “The only known technology that has potential to address the power needs of the envisioned self-sufficient FOB,” the pitch reads, “is a nuclear-fuel reactor.” Now, bases could mitigate their energy consumption, like the solar-powered Marine company in Helmand Province, but that’s not enough of a game-changer for Darpa. Being self-sufficient is the goal; and that requires going nuclear; and that requires … other things. To fit on a FOB, which can be anywhere from Bagram Air Field’s eight square miles to dusty collections of wooden shacks and concertina wire, the reactor would have to be “well below the scale of the smallest reactors that are being developed for domestic energy production,” Darpa acknowledges. That’s not impossible, says Christine Parthemore, an energy expert at the Center for a New American Security. The Japanese and the South Africans have been working on miniature nuclear power plants for the better part of a decade; Bill Gates has partnered with Toshiba to build mini-nuke sites. (Although it’s not the most auspicious sign that one prominent startup for modular reactors suspended its operations after growing cash-light last month.) Those small sites typically use uranium enriched to about 2 percent. “It would be really, really difficult to divert the fuel” for a bomb “unless you really knew what you were doing,” Parthemore says. But Darpa doesn’t want to take that chance. Only “non-proliferable fuels (i.e., fuels other than enriched uranium or plutonium) and reactor designs that are fundamentally safe will be required of reactors that may be deployed to regions where hostile acts may compromise operations.” Sensible, sure. But it limits your options: outside of uranium or plutonium, thorium is the only remaining source for generating nuclear fuel. The Indians and now the Chinese have experimented with thorium for their nuclear programs, but, alas, “no one has ever successfully found a way” to build a functioning thorium reactor, Parthemore says, “in a safe and economical manner.” For now, Darpa proposes to spend $10 million of your money studying the feasibility of the project. But it’s just one part of the researchers’ new push to green the military. Another $10 million goes to a project called Energy Distribution, which explores bringing down energy consumption on the FOBs. An additional $5 million will look at ways to keep fuel storage from degrading in extreme temperatures. For $50 million, Darpa proposes to build a turbine engine that uses 20 percent less energy. But all of that is mere isotopes compared to the Nuclear FOB. Darpa appears to have thought about it a lot. It says it plans to work with the Department of Energy “to ensure that existing advanced reactor development activities are being exploited and/or accelerated as appropriate, based on the military’s needs.” Still, if it can’t find the right non-proliferable fuel, it suggests that it might look to the “development of novel fuels.” Says a stunned Parthemore, “I have no idea why you’d want to bring that upon the world.”

### Meltdowns Adv

#### Advantage three is meltdowns

#### Conventional nuclear meltdowns are inevitable and cause extinction – plan solves

Lendman 11 – Research Associate of the Centre for Research on Globalization (Stephen, 03/ 13, “Nuclear Meltdown in Japan,” http://www.thepeoplesvoice.org/TPV3/Voices.php/2011/03/13/nuclear-meltdown-in-japan)

For years, Helen Caldicott warned it's coming. In her 1978 book, "Nuclear Madness," she said: "As a physician, I contend that nuclear technology threatens life on our planet with extinction. If present trends continue, the air we breathe, the food we eat, and the water we drink will soon be contaminated with enough radioactive pollutants to pose a potential health hazard far greater than any plague humanity has ever experienced." More below on the inevitable dangers from commercial nuclear power proliferation, besides added military ones. On March 11, New York Times writer Martin Fackler headlined, "Powerful Quake and Tsunami Devastate Northern Japan," saying: "The 8.9-magnitude earthquake (Japan's strongest ever) set off a devastating tsunami that sent walls of water (six meters high) washing over coastal cities in the north." According to Japan's Meteorological Survey, it was 9.0. The Sendai port city and other areas experienced heavy damage. "Thousands of homes were destroyed, many roads were impassable, trains and buses (stopped) running, and power and cellphones remained down. On Saturday morning, the JR rail company" reported three trains missing. Many passengers are unaccounted for. Striking at 2:46PM Tokyo time, it caused vast destruction, shook city skyscrapers, buckled highways, ignited fires, terrified millions, annihilated areas near Sendai, possibly killed thousands, and caused a nuclear meltdown, its potential catastrophic effects far exceeding quake and tsunami devastation, almost minor by comparison under a worst case scenario. On March 12, Times writer Matthew Wald headlined, "Explosion Seen at Damaged Japan Nuclear Plant," saying: "Japanese officials (ordered evacuations) for people living near two nuclear power plants whose cooling systems broke down," releasing radioactive material, perhaps in far greater amounts than reported. NHK television and Jiji said the 40-year old Fukushima plant's outer structure housing the reactor "appeared to have blown off, which could suggest the containment building had already been breached." Japan's nuclear regulating agency said radioactive levels inside were 1,000 times above normal. Reuters said the 1995 Kobe quake caused $100 billion in damage, up to then the most costly ever natural disaster. This time, from quake and tsunami damage alone, that figure will be dwarfed. Moreover, under a worst case core meltdown, all bets are off as the entire region and beyond will be threatened with permanent contamination, making the most affected areas unsafe to live in. On March 12, Stratfor Global Intelligence issued a "Red Alert: Nuclear Meltdown at Quake-Damaged Japanese Plant," saying: Fukushima Daiichi "nuclear power plant in Okuma, Japan, appears to have caused a reactor meltdown." Stratfor downplayed its seriousness, adding that such an event "does not necessarily mean a nuclear disaster," that already may have happened - the ultimate nightmare short of nuclear winter. According to Stratfor, "(A)s long as the reactor core, which is specifically designed to contain high levels of heat, pressure and radiation, remains intact, the melted fuel can be dealt with. If the (core's) breached but the containment facility built around (it) remains intact, the melted fuel can be....entombed within specialized concrete" as at Chernobyl in 1986. In fact, that disaster killed nearly one million people worldwide from nuclear radiation exposure. In their book titled, "Chernobyl: Consequences of the Catastrophe for People and the Environment," Alexey Yablokov, Vassily Nesterenko and Alexey Nesterenko said: "For the past 23 years, it has been clear that there is a danger greater than nuclear weapons concealed within nuclear power. Emissions from this one reactor exceeded a hundred-fold the radioactive contamination of the bombs dropped on Hiroshima and Nagasaki." "No citizen of any country can be assured that he or she can be protected from radioactive contamination. One nuclear reactor can pollute half the globe. Chernobyl fallout covers the entire Northern Hemisphere." Stratfor explained that if Fukushima's floor cracked, "it is highly likely that the melting fuel will burn through (its) containment system and enter the ground. This has never happened before," at least not reported. If now occurring, "containment goes from being merely dangerous, time consuming and expensive to nearly impossible," making the quake, aftershocks, and tsunamis seem mild by comparison. Potentially, millions of lives will be jeopardized. Japanese officials said Fukushima's reactor container wasn't breached. Stratfor and others said it was, making the potential calamity far worse than reported. Japan's Nuclear and Industrial Safety Agency (NISA) said the explosion at Fukushima's Saiichi No. 1 facility could only have been caused by a core meltdown. In fact, 3 or more reactors are affected or at risk. Events are fluid and developing, but remain very serious. The possibility of an extreme catastrophe can't be discounted. Moreover, independent nuclear safety analyst John Large told Al Jazeera that by venting radioactive steam from the inner reactor to the outer dome, a reaction may have occurred, causing the explosion. "When I look at the size of the explosion," he said, "it is my opinion that there could be a very large leak (because) fuel continues to generate heat." Already, Fukushima way exceeds Three Mile Island that experienced a partial core meltdown in Unit 2. Finally it was brought under control, but coverup and denial concealed full details until much later. According to anti-nuclear activist Harvey Wasserman, Japan's quake fallout may cause nuclear disaster, saying: "This is a very serious situation. If the cooling system fails (apparently it has at two or more plants), the super-heated radioactive fuel rods will melt, and (if so) you could conceivably have an explosion," that, in fact, occurred. As a result, massive radiation releases may follow, impacting the entire region. "It could be, literally, an apocalyptic event. The reactor could blow." If so, Russia, China, Korea and most parts of Western Asia will be affected. Many thousands will die, potentially millions under a worse case scenario, including far outside East Asia. Moreover, at least five reactors are at risk. Already, a 20-mile wide radius was evacuated. What happened in Japan can occur anywhere. Yet Obama's proposed budget includes $36 billion for new reactors, a shocking disregard for global safety. Calling Fukushima an "apocalyptic event," Wasserman said "(t)hese nuclear plants have to be shut," let alone budget billions for new ones. It's unthinkable, he said. If a similar disaster struck California, nuclear fallout would affect all America, Canada, Mexico, Central America, and parts of South America. Nuclear Power: A Technology from Hell Nuclear expert Helen Caldicott agrees, telling this writer by phone that a potential regional catastrophe is unfolding. Over 30 years ago, she warned of its inevitability. Her 2006 book titled, "Nuclear Power is Not the Answer" explained that contrary to government and industry propaganda, even during normal operations, nuclear power generation causes significant discharges of greenhouse gas emissions, as well as hundreds of thousands of curies of deadly radioactive gases and other radioactive elements into the environment every year. Moreover, nuclear plants are atom bomb factories. A 1000 megawatt reactor produces 500 pounds of plutonium annually. Only 10 are needed for a bomb able to devastate a large city, besides causing permanent radiation contamination. Nuclear Power not Cleaner and Greener Just the opposite, in fact. Although a nuclear power plant releases no carbon dioxide (CO2), the primary greenhouse gas, a vast infrastructure is required. Called the nuclear fuel cycle, it uses large amounts of fossil fuels. Each cycle stage exacerbates the problem, starting with the enormous cost of mining and milling uranium, needing fossil fuel to do it. How then to dispose of mill tailings, produced in the extraction process. It requires great amounts of greenhouse emitting fuels to remediate. Moreover, other nuclear cycle steps also use fossil fuels, including converting uranium to hexafluoride gas prior to enrichment, the enrichment process itself, and conversion of enriched uranium hexafluoride gas to fuel pellets. In addition, nuclear power plant construction, dismantling and cleanup at the end of their useful life require large amounts of energy. There's more, including contaminated cooling water, nuclear waste, its handling, transportation and disposal/storage, problems so far unresolved. Moreover, nuclear power costs and risks are so enormous that the industry couldn't exist without billions of government subsidized funding annually. The Unaddressed Human Toll from Normal Operations Affected are uranium miners, industry workers, and potentially everyone living close to nuclear reactors that routinely emit harmful radioactive releases daily, harming human health over time, causing illness and early death. The link between radiation exposure and disease is irrefutable, depending only on the amount of cumulative exposure over time, Caldicott saying: "If a regulatory gene is biochemically altered by radiation exposure, the cell will begin to incubate cancer, during a 'latent period of carcinogenesis,' lasting from two to sixty years." In fact, a single gene mutation can prove fatal. No amount of radiation exposure is safe. Moreover, when combined with about 80,000 commonly used toxic chemicals and contaminated GMO foods and ingredients, it causes 80% of known cancers, putting everyone at risk everywhere. Further, the combined effects of allowable radiation exposure, uranium mining, milling operations, enrichment, and fuel fabrication can be devastating to those exposed. Besides the insoluble waste storage/disposal problem, nuclear accidents happen and catastrophic ones are inevitable. Inevitable Meltdowns Caldicott and other experts agree they're certain in one or more of the hundreds of reactors operating globally, many years after their scheduled shutdown dates unsafely. Combined with human error, imprudently minimizing operating costs, internal sabotage, or the effects of a high-magnitude quake and/or tsunami, an eventual catastrophe is certain. Aging plants alone, like Japan's Fukushima facility, pose unacceptable risks based on their record of near-misses and meltdowns, resulting from human error, old equipment, shoddy maintenance, and poor regulatory oversight. However, under optimum operating conditions, all nuclear plants are unsafe. Like any machine or facility, they're vulnerable to breakdowns, that if serious enough can cause enormous, possibly catastrophic, harm.

#### Al-Qaeda will successfully attack across the globe – causes meltdowns

Kimery 11 – Homeland Security Today's senior reporter and online editor (Anthony, W. Scott Malone, multiple Emmy and Peabody award-winning investigative journalist and former senior editor of NavySEALs.com. He runs the website's counterterrorism newsletter spin-off, “BlackNET Intelligence Channel,” 05/12, “Al Qaeda Could Try to Replicate Fukushima-type Meltdowns,” http://www.hstoday.us/blogs/the-kimery-report/blog/al-qaeda-could-try-to-replicate-fukushima-type-meltdowns/aa96292934d83bb8c9f97fd9d685f32b.html)

A May 5 "intelligence brief" prepared by a Department of Homeland Security (DHS) official at the Pacific Regional Information Clearinghouse (PacClear) in Hawaii, warned Al Qaeda might try to cause the meltdown of certain vulnerable nuclear power plants in the US and Europe by replicating the failure of the electric supply that pumped cooling water to the reactors at the Fukushima Daiichi nuclear power plant in Japan. The plant's primary and backup power supplies were knocked out by the earthquake and tsunami that struck Japan in March, resulting in partial meltdowns of the plant's reactors. Only a week after the intelligence brief was circulated, federal officials dispatched a security alert notifying US power plant operators to raise the level of their security awareness. According to the analysis in the “for official use only” intelligence brief, which was obtained by Homeland Security Today, “the earthquake and tsunami in Japan were ‘acts of nature,’ but a catastrophic nuclear reactor meltdown could potentially be engineered by Al Qaeda” by replicating the cascading loss of electric power that knocked out the Fukushima nuclear power plant’s ability to cool its reactors’ fuel rods, which led to the partial meltdowns of the reactors, causing the worst nuclear disaster since Chernobyl. Even today, highly radioactive fuel rods are fully exposed in the No. 1 reactor at the plant. The six-reactor complex has been bellowing radiation since March 11, and the International Atomic Energy Agency said the "overall situation ... remains very serious." On Thursday, plant operator, Tokyo Electric Power Co., said the amount of water leaking from the No. 1 reactor is more serious than previously believed, meaning it's likely there is severe damage to the reactor. The intelligence brief issued by PacClear, “Recreating Fukushima: A Possible Response to the Killing of Usama Bin Laden - The Nuclear Option,” cautioned that “the death of [O]sama Bin Laden may serve as an impetus to apply lessons learned from Fukushima to attack the United States or another Western country.” Several senior counterterrorism officials told Homeland Security Today that despite the apparent amateurism of some Al Qaeda attacks and plots that were thwarted in recent years, “we still must remain cognizant of the fact that Al Qaeda is capable of sophisticated attacks,” one said, noting in the same breath that the terrorist organization “is now under increased pressure to avenge their leader’s murder at the hands of infidels with something spectacular.” Indeed. Intelligence collected from Bin Laden's compound in Pakistan during the May 2 raid in which he was killed, has disclosed that he continued to urge his lieutenants to focus on carrying out another 9/11-scale attack on US soil that would kill many thousands - or more. The intelligence further showed that the terrorist leader remained obsessed with acquiring, and using, weapons of mass destruction. "I consider Al Qaeda, now being pushed by Anwar Al Awlaki [the leader of Al Qaeda in the Arabian Peninsula, AQAP, and a possible heir to Bin Laden], in the position to begin planning for a new '9/11 style' attack using a weapon of mass destruction ... not to say they will not continue their recruiting of 'lone wolf' types - I do believe the long term goal of Al Qaeda 2.0 to be a spectacular attack to the US infrastructure that would cause significant and permanent damage to a significant portion of the continental US," Homeland Security Today was told by former Army Special Forces Lt. Col. Anthony Shaffer, author of, Operation Dark Heart: Spycraft and Special Ops on the Frontlines of Afghanistan - and the Path to Victory. A successful attack resulting in a reactor meltdown could potentially cause hundreds of thousands of deaths from cancer, at a minimum. The ensuing panic would probably be the most immediate danger. Besides the immense clean-up costs and potential environmental damage, the economic blow to the nuclear power industry would be devastating worldwide. It’s no secret that US authorities have uncovered numerous efforts by Al Qaeda to obtain nuclear weapons and radiological materials over the years. “Although we know from their own statements as well as intelligence and security success in blocking a number of efforts, Al Qaeda has been determined to acquire deliverable weapons of mass destruction [WMD], including nuclear, for a long time,” veteran CIA operations officer and Islamist jihad expert, Clare Lopez, told Homeland Security Today. The new intelligence brief pointed out that “the disaster in Fukushima may have provided the knowledge Al Qaeda needs to carry out such an operation” in lieu of possessing “a prepositioned [nuclear] weapon.” "While the Al Qaeda organization may, or may not, possess either a nuclear device or radiological material," the brief stated, "the pressure on the organization to fulfill that threat is now enormous. If Al Qaeda does possess such a weapon, the danger is obvious. If, however, there is no such device or material in Al Qaeda’s control, then it is likely that Al Qaeda and [Bin Laden’s] supporters may attempt an attack comparable in scale that will at least be perceived as a ‘nuclear’ response to Bin Laden’s death.” “Surely, the determination to strike, and especially now after the killing of [Bin Laden], remains intense,” Lopez said. And “the scenario described [in the PacClear alert] is completely believable,” maintained Charles Faddis, a 20-year career covert CIA operations officer who headed the National Counterterrorism Center’s WMD terrorism unit when he retired several years ago. “All you have to do to cause a meltdown is kill the cooling system. Cutting the power would do that. So would blowing up the pumps or rupturing the right pipes.” Author of, Willful Neglect: The Dangerous Illusion of Homeland Security, which discussed at length the vulnerability of nuclear power plants to terrorist attacks, Faddis stressed to Homeland Security Today that “security at nuclear plants is not adequate, and there are no moves afoot to improve it. Nothing has changed in the last few years.” Faddis also outlined his concerns about the security and vulnerability of US nuclear power facilities in an op-ed he wrote in March 2010. Similarly, US State Department cables leaked to Wikileaks revealed that US officials have been concerned that Japan has not provided adequate security at its nuclear power plants to defend against potential terrorist attacks, Asahi Shimbun reported Tuesday. The intelligence briefing stated that “the disaster in Fukushima may have provided the knowledge Al Qaeda needs to carry out such an operation. The global focus on the disaster in Japan has made the vulnerabilities of our aging nuclear infrastructure painfully apparent. In the past, preparations to defend a nuclear facility mostly focused on protecting the reactor vessel from breach.” The briefing pointed out that “studies commissioned after the 9/11 attacks were mostly concerned with the capability of an airplane strike in effecting such a breach,” but “the March 11th earthquake and tsunami demonstrated that simply turning the power off [with] some reactor designs can result in a catastrophic failure within a matter of hours …” “[I]t is conceivable," the briefing stated, "that Al Qaeda may attempt to recreate this series of failures at another nuclear facility in the West as a way of fulfilling their pledge of a ‘nuclear’ revenge,” which is a reference to Bin Laden’s May 1998 endorsement of the use of nuclear weapons against the US and its allies. In a statement called, "The Nuclear Bomb of Islam," which was issued under the auspices of the "International Islamic Front for Fighting the Jews and Crusaders,” Bin Laden stated "it is the duty of Muslims to prepare as much force as possible to terrorize the enemies of God." Earlier that year, in February, Bin Laden and his number two, Ayman Al Zawahiri, had endorsed a fatwa, published in the Al Quds Al Arabi newspaper, that stated Muslims should kill Americans - including civilians - anywhere in the world where they can be found. Then, towards the end of 2004, Michael Scheuer, the former CIA officer who headed the Agency’s Bin Laden unit from 1996 to 1999, revealed that on May 21, 2003, a prominent Saudi cleric had issued a formal fatwa that authorized Bin Laden and other terrorist leaders to use weapons of mass destruction against the US and its allies. The intelligence brief on a potential Al Qaeda threat to Western nuclear power plants began by pointing out that “statements under interrogation by the imprisoned Khalid Sheikh Mohammed put Al Qaeda on record as threatening to detonate a nuclear weapon presently hidden in a Western country if [O]sama Bin Laden were to be captured or killed.”

#### Only a fraction of reactors need to meltdown to cause extinction from agricultural collapse

IB Times 9/14 (International Business Times, Mike Adams – author and journalist, Solar Flare Could Unleash Nuclear Holocaust Across Planet Earth, Forcing Hundreds of Nuclear Power Plants Into Total Meltdowns, <http://au.ibtimes.com/articles/213249/20110914/solar-flare-could-unleash-nuclear-holocaust-across-planet-earth-forcing-hundreds-of-nuclear-power-pl.htm>, AV)  
 But here's the real issue: There are 700 nuclear power facilities in the world, remember? Let's suppose that in the aftermath of a massive solar flare, the nations of the world are somehow able to control half of those facilities and nurse them into cold shutdown status. That still leaves roughly 350 nuclear facilities at risk. Now let's suppose half of those are somehow luckily offline and not even functioning when the solar flare hits, so they need no special attention. This is a very optimistic assumption, but that still leaves 175 nuclear power plants where all attempts fail. Let's be outrageously optimistic and suppose that a third of those somehow don't go into a total meltdown by some miracle of God, or some bizarre twist in the laws of physics. So we're still left with 115 nuclear power plants that "go Chernobyl." Fukushima was one power plant. Imagine the devastation of 100+ nuclear power plants, all going into meltdown all at once across the planet. It's not the loss of electricity that's the real problem; it's the global tidal wave of invisible radiation that blankets the planet, permeates the topsoil, irradiates everything that breathes and delivers the final crushing blow to human civilization as we know it today. Because if you have 100 simultaneous global nuclear meltdowns, the tidal wave of radiation will make farming nearly impossible for years. That means no food production for several years in a row. And that, in turn, means a near-total collapse of the human population on our planet. How many people can survive an entire year with no food from the farms? Not one in a hundred people. Even beyond that, how many people can essentially live underground and be safe enough from the radiation that they can have viable children and repopulate the planet? It's a very, very small fraction of the total population. Solar flares far more likely to hit nuclear power plants than tidal waves or earthquakes What's the chance of all this actually happening? A report by the Oak Ridge National Laboratory said that "...over the standard 40-year license term of nuclear power plants, solar flare activity enables a 33 percent chance of long-term power loss, a risk that significantly outweighs that of major earthquakes and tsunamis." ([http://www.IBTimes.com/articles/194](http://www.ibtimes.com/articles/194)...) The world's reliance on nuclear power, you see, has doomed us to destroy our own civilization. Of course, this is all preventable if we would only dismantle and shut down ALL nuclear power plants on the planet. But what are the chances of that happening? Zero, of course. There are too many commercial and political interests invested in nuclear power. So the power plants will stay, and we will therefore be vulnerable to a solar flare which could strike us at any time and unleash a global nuclear holocaust. Planet Earth has been struck by solar flares before, of course, but all the big hits in recorded human history took place long before the age of modern electronics, so the impacts were minimal. Today, society cannot function without electronics. Nor can nuclear facility coolant pumps. Once you realize that, you begin to understand the true danger in which humanity has placed itself by relying on nuclear power. By relying on nuclear power, we are risking everything. And we're doing it blindly, with no real acknowledgement of the dangers of running 700+ nuclear facilities in a constant state of "near meltdown" while foolishly relying on the steady flow of electricity to keep the fuel rods cool. If Fukushima, all by itself, could unleash a tidal wave of deadly radiation all by itself, imagine a world where hundreds of nuclear facilities go into a total meltdown simultaneously.

#### Meltdowns are *impossible* with LFTRs – passive design and chemically inert liquid salt

Lerner 12 (George, president of Lerner Consulting, a consulting firm, "Can Use LFTRs to Consume Nuclear Waste," Jan 17, [liquidfluoridethoriumreactor.glerner.com/2012-can-use-lftrs-to-consume-nuclear-waste/], jam)

If the reactor overheats, a frozen plug melts and the fuel quickly drains out of the core into tanks where nuclear reaction is physically impossible. Radiation is contained by materials that remain solid at temperatures much higher than inside the reactor, with passive air cooling. (In solid-fueled reactors, you have to override everything that normally happens in the core and bring in coolant.) Fuel draining to the storage tanks could be triggered by seismic alert, chemical or temperature sensors, power outage, or the operators. [The 1989 Loma Prieta earthquake about 60 miles from Oakland, CA, reached Oakland about 30 seconds later. Japan has a seismic alert network, industrial plants shut down, elevators open at the nearest floor, trains stop, etc. California is building one.] “LFTR designs have a freeze plug at the bottom of the core—a plug of salt, cooled by a fan to keep it at a temperature below the freezing point of the salt. If temperature rises beyond a critical point, the plug melts, and the liquid fuel in the core is immediately evacuated, pouring into a subcritical geometry in a catch basin. This formidable safety tactic is only possible if the fuel is a liquid.” Hargraves, American Scientist, July 2010 “A passive core drain system activated by a melt plug enables draining the radioactive inventory into geometrically subcritical drain tanks that are passively thermally coupled to the environment.” Fast Spectrum Molten Salt Reactor Options, Oak Ridge National Laboratory, July 2011 “One of the current requirements of the Nuclear Regulatory Commission (NRC) for certification of a new nuclear plant design is that in the event of a complete electricity outage, the reactor remain at least stable for several days if it is not automatically deactivated. As it happens, the freeze-plug safety feature is as old as Alvin Weinberg’s 1965 Molten Salt Reactor Experiment design, yet it meets the NRC’s requirement; at ORNL, the [engineers] would routinely shut down the reactor by simply cutting the power to the freeze-plug cooling system. This setup is the ultimate in safe poweroutage response. Power isn’t needed to shut down the reactor, for example by manipulating control elements. Instead power is needed to prevent the shutdown of the reactor.” Hargraves, American Scientist, July 2010 Inherent Safety: Low Pressure LFTRs operate at atmospheric pressure. No high pressure to contain, no risk of pressure containment explosively failing. In a LFTR, there is no coolant boiling away. “A signature safety feature of the LFTR design is that the coolant — liquid fluoride salt — is not under pressure. The fluoride salt does not boil below 1400 degrees Celsius. Neutral pressure reduces the cost and the scale of LFTR plant construction by reducing the scale of the containment requirements, because it obviates the need to contain a pressure explosion. Disruption in a transport line would result in a leak, not an explosion, which would be captured in a noncritical configuration in a catch basin, where it would passively cool and harden.” Hargraves, American Scientist Volume 98, July 2010 “Only a low pressure vessel is needed as the salts run near atmospheric pressure as opposed to the thick walled vessels needed for LWR or PBMR. No water or sodium means no possible steam explosion or hydrogen production within the containment. In designs without graphite moderator, there is not even combustible material present.” D. LeBlanc / Nuclear Engineering and Design 240 (2010) p.1644-1656 “The containment walls are only required to contain a low-pressure internal environment and endure when subjected to external seismic and impact stressors. Halide salts are chemically inert, so they do not have exothermic reactions with the environment (oxygen, water) as would hot sodium or hot zirconium. With a greater than 500°C margin to boiling, the halide salts also do not have a credible route to pressurizing containment as would a water-cooled reactor. FS-MSRs also do not have any hydrogenous material within containment; thus they cannot generate hydrogen.” Fast Spectrum Molten Salt Reactor Options, Oak Ridge National Laboratory, July 2011 Inherent Safety: Containing Radioactive Material Radioactive cesium and iodine that were released in Fukushima-Daiichi would not be released in a LFTR accident. Cesium fluoride, strontium bi-fluoride are very stable salts. “Fluoride combines ionically with almost any transmutation product. This is an MSFR’s first level of containment. It is especially good at containing biologically active ‘salt loving’ wastes such as Cesium 137. The salts do not burn, explode or degrade in air or water, and the fluoride salts of the radioactive actinides and fission products are generally not soluble in water or air.” Wikipedia There are much less fissile materials (compared with LWR) in the fuel salt at any time, as continuous refueling enables operating with just enough to sustain reactivity. About half of the total fissile material is in the reactor core, the rest in the heat transfer and chemical processing loops. Thorium is one of the least radioactive materials, so (unless the LFTR is for waste burning, at a high security storage site) there is no hazardous fuel storage. Gasseous fission byproducts are easily and continuously removed from the reactor and safely stored. There is far less radioactive gas (that could leak in an accident) than in a LWR, and it isn’t pressurized. Inherent Safety: Self-Regulating The temperature in the reactor is self-regulating. The liquid fuel naturally expands if it gets hotter, slowing nuclear reaction, and contracts if it gets cooler (strong negative temperature coefficient of reactivity). [The nuclear reaction in the poorly-designed Chernobyl reactor got Hotter and Stronger as coolant boiled away.] Remove less heat (making less electricity), and the reactor throttles down. Remove more heat (making more electricity) and the reactor throttles up. “Most MSR designs have very strong negative temperature and void coefficients which act instantly, aiding safety and allowing automatic load following operation.” D. LeBlanc / Nuclear Engineering and Design 240 (2010) 1644-1656 Gasseous fission products are easily removed from the molten salt, making the reactor much more stable. (Xenon gas in LWR absorbs neutrons so readily it affects fission rate, so restarting the LWR must be done very carefully.) “Removing the most significant neutron poison xenon-135 made the reactor safer and easier to restart. In solid-fuel reactors, on restart the 135Xe in the fuel absorbs neutrons, followed by a sudden jump in reactivity as the 135Xe is burned out. Conventional reactors may have to wait hours until xenon-135 decays after shutting down and not immediately restarting.” Wikipedia – Molten Salt Reactor Experiment “The MSRE confirmed expectations and predictions. For example, it was demonstrated that: the fuel salt was immune to radiation damage, the graphite was not attacked by the fuel salt, and the corrosion of Hastelloy-N was negligible. Noble gases were stripped from the fuel salt by a spray system, reducing the 135Xe poisoning by a factor of about 6. The bulk of the fission product elements remained stable in the salt. Additions of uranium and plutonium to the salt during operation were quick and uneventful, and recovery of uranium by fluorination was efficient.” Wikipedia – Molten Salt Reactor Experiment Inherent Safety: Stable Chemistry “FS-MSRs have a negative salt void coefficient (expanded fuel is pushed out of the core) and a negative thermal reactivity feedback that avoids a set of major design constraints in solid-fuel fast reactors. A passive core drain system activated by a melt plug enables draining the radioactive inventory into geometrically subcritical drain tanks that are passively thermally coupled to the environment. FS-MSRs have a low operating pressure even at high temperatures; and FS-MSR salts are chemically inert, thermodynamically lacking the energetic reactions with environmental materials seen in other reactor types (hot zirconium and sodium with water). FS-MSRs do involve more intensive manipulation of highly radioactive materials than other reactor classes and thus small spills and contamination accidents appear to be more likely with this reactor class.” Fast Spectrum Molten Salt Reactor Options, Oak Ridge Nat’l Lab 2011

### Solvency

#### Text: The Department of Defense should substantially increase market-fixed production cost incentives for domestic deployment of thorium small modular nuclear reactors.

#### Contention two is solvency

#### DoD can authorize thorium SMRs independent of the NRC – also spurs widespread commercialization

Hunt 11 (Gary L, 30 years experience in the energy, software and information technology industries, Tech&Creative Labs, "Is there a Small Modular Nuke in our Distributed Energy Future?," May 31, [www.tclabz.com/2011/05/31/is-there-a-small-modular-nuke-in-our-distributed-energy-future/], jam)

What the US military needs according to Colonel Roege is clean, modular, transportable energy sources for forward operating bases, the lift to get them there and move them around, and a fast-track path to development and commercialization to supply them anywhere in the world. This Army Colonel said the US military already has a solution in mind based upon the experience of the US Navy. That solution is small scale, modular nuclear power plants like the ones used on aircraft carriers and submarines. Only the new version would be likely smaller, more portable and safer by design with passive safety systems. The Colonel says the military does not believe the NRC will license such a modular design anytime soon enough to meet the military need so he is recommending that the Department of Defense use its authority to license such technology for military purposes since doing so does not require NRC approval. Once proven and deployed, these military applications should speed the path to small modular nuclear units in civilian applications. GO ARMY! Speeding the development of transportable, small scale, safe microgrid solutions based upon small modular nuclear plants could transform the power system not just for the US military but for civilian applications as well. By substituting the economies of scale from modular design for the economy of scale from building large sized nuclear plants as was done in the first generation nukes, the hope is that nuclear energy will find a larger market share place in our clean energy economy. It may not be the fuel cell alchemy the military would love to have, but it is technology the military knows made better, safer and, they hope, cheaper by modern design and manufacturing methods. WHY THIS IS A DER BIG DEAL Transforming our energy future with clean, sustainable, low emission choices is the goal of much of our energy strategy today. In a distributed energy future we need more choices with greater efficiency than currently available from wind and solar. Small modular nuclear reactors meet that need and give both our military and potentially, a wide range of civilian applications the best available technology with the capability to displace coal and replace the first generation nuclear units as they retire.

#### The military can enter into purchase power agreements for SMRs – this market pull makes nuclear economically competitive

Rosner & Goldberg 11 (Robert, William E. Wrather Distinguished Service Professor, Departments of Astronomy and Astrophysics, and Physics, and the College at the U of Chicago, and Stephen, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, "Small Modular Reactors - Key to Future Nuclear Power Generation in the U.S.," November 2011, [https://epic.sites.uchicago.edu/sites/epic.uchicago.edu/files/uploads/EPICSMRWhitePaperFinalcopy.pdf], jam)

Similar to other important energy technologies, such as energy storage and renewables, “market pull” activities coupled with the traditional “technology push” activities would significantly increase the likelihood of timely and successful commercialization. Market transformation incentives serve two important objectives. They facilitate demand for the off-take of SMR plants, thus reducing market risk and helping to attract private investment without high risk premiums. In addition, if such market transformation opportunities could be targeted to higher price electricity markets or higher value electricity applications, they would significantly reduce the cost of any companion production incentives. There are three special market opportunities that may provide the additional market pull needed to successfully commercialize SMRs: the federal government, international applications, and the need for replacement of existing coal generation plants. 6.2.1 Purchase Power Agreements with Federal Agency Facilities Federal facilities could be the initial customer for the output of the LEAD or FOAK SMR plants. The federal government is the largest single consumer of electricity in the U.S., but its use of electricity is widely dispersed geographically and highly fragmented institutionally (i.e., many suppliers and customers). Current federal electricity procurement policies do not encourage aggregation of demand, nor do they allow for agencies to enter into long-term contracts that are “bankable” by suppliers. President Obama has sought to place federal agencies in the vanguard of efforts to adopt clean energy technologies and reduce greenhouse gas emissions. Executive Order 13514, issued on October 5, 2009, calls for reductions in greenhouse gases by all federal agencies, with DOE establishing a target of a 28% reduction by 2020, including greenhouse gases associated with purchased electricity. SMRs provide one potential option to meet the President’s Executive Order. One or more federal agency facilities that can be cost effectively connected to an SMR plant could agree to contract to purchase the bulk of the power output from a privately developed and financed LEAD plant. 46 A LEAD plant, even without the benefits of learning, could offer electricity to federal facilities at prices competitive with the unsubsidized significant cost of other clean energy technologies. Table 4 shows that the LCOE estimates for the LEAD and FOAK-1plants are in the range of the unsubsidized national LCOE estimates for other clean electricity generation technologies (based on the current state of maturity of the other technologies). All of these technologies should experience additional learning improvements over time. However, as presented earlier in the learning model analysis, the study team anticipates significantly greater learning improvements in SMR technology that would improve the competitive position of SMRs over time. Additional competitive market opportunities can be identified on a region-specific, technology-specific basis. For example, the Southeast U.S. has limited wind resources. While the region has abundant biomass resources, the estimated unsubsidized cost of biomass electricity is in the range of $90-130 per MWh (9-13¢/kWh), making LEAD and FOAK plants very competitive (prior to consideration of subsidies). 47 Competitive pricing is an important, but not the sole, element to successful SMR deployment. A bankable contractual arrangement also is required, and this provides an important opportunity for federal facilities to enter into the necessary purchase power arrangements. However, to provide a “bankable” arrangement to enable the SMR project sponsor to obtain private sector financing, the federal agency purchase agreement may need to provide a guaranteed payment for aggregate output, regardless of actual generation output. 48 Another challenge is to establish a mechanism to aggregate demand among federal electricity consumers if no single federal facility customer has a large enough demand for the output of an SMR module. The study team believes that high-level federal leadership, such as that exemplified in E.O. 13514, can surmount these challenges and provide critical initial markets for SMR plants.

#### All existing reactors can run on thorium

Cox 11 (Patrick, two decades of experience in software, public policy, medical economics and biotechnology, editor of the Breakthrough Technology Alert and Technology Profits Confidential, studied at Boise State University and has written for USA Today, Wall Street Journal, Los Angeles Times and Reason Magazine, Sep 12, [dailyresourcehunter.com/investing-thorium-interview-patrick-cox/], jam)

Rodricks: Patrick Cox, another question about thorium. If it’s so great, how come — well, you said it’s a regulatory issue why it’s not in more nuclear power plants. But could you put thorium in 104 U.S. nuclear power plants and make them all safer? I mean, could you transition to that? Cox: Yes. As a matter of fact, one company that is the leader in this technology, they’re consulting with the Gulf states, with French, Russian, and probably will end up consulting with the Indians and the Chinese, as well. There are many different strategies for getting thorium into this fuel stream. Some of them are as simple as dropping a different fuel rod into the existing light water reactors, which would somewhat improve safety, though in the long run — I think the thing we should realize is these reactors in Japan were 40 years old. I mean, you don’t drive a car that’s 40 years old. They had made some serious mistakes. On expert points out that the backup systems on these reactors were all on one circuit, which is absurd. It’s mind-boggling that people who are known for their technical competence had done something that stupid. I mean, the problem of what we really need to do in terms of safety is to move to the next generation of nuclear reactors, which are going to be an order of the magnitude safer than what we have now operating in Japan, in the United States.

#### Transition takes 30 months

Sorensen 11 (Kirk, studying thorium technology since 2000 and has been a public advocate for its use and development since 2006, masters’ degree in aerospace engineering from the Georgia Institute of Technology and is studying nuclear engineering at the University of Tennessee under Dr. Laurence Miller, May 28, [www.financialsense.com/financial-sense-newshour/big-picture/2011/05/28/03/kirk-sorensen/thorium-could-be-our-energy-silver-bullet], jam)

Jim: (32:00) Let me throw another idea, and I've often had this conversation, with the late Matt Simmons, who was a big believer in peak oil, and was kind of looking for that silver bullet. And that is, could it take a crisis? I know in the midst of a crisis, World War II, you know, we discovered nuclear power and also weapon grade uranium in the Manhattan project where we basically produced a bomb in a short period of time. So if we were faced with a severe energy crisis, global warming, or just shortages of fuel, could we turn this into a Manhattan project and turn thorium? In other words, how quickly can we turn the table and really start to get this thing running? Kirk: (32:47) If we were talking Manhattan project, and that’s where you're taking the smartest people out of society. You’re putting them in a place and they work on it six days a week, 18 hours a day, we could probably have one of these reactors up and running within 18 months. And we could be to a production level within a year or so after that. I mean, it would be a lot like World War II. Imagine the factories turning out B-29 bombers, you know, it would be like that. Jim: (33:11) Wow. Kirk: (33:11) Now Manhattan style projects, that’s a severe disruption though, to the flow society. That is a heavy governmental hand reaching and deciding how to allocate resources. And that’s really not what I would hope would happened. What I would hope would happen would be a much more market-driven approach where a fair and clear regulatory environment allows businesses and investors to make wise decisions, with a high certainty that if they fulfill the obligations laid out, and the regulations, they will be able to build and operate the machines they have designed. In that scenario, which I would call more the skunk works approach, having worked at Lockheed when I was younger, I think we could have this ready in four or five years. With abundant private financing and a clear and realistic regulatory environment. That's not really the world we live in right now. Now that may change, but that's not how it is right now. Right now we have a regulatory challenge and we are looking for ways to move the technology forward under situations that have a stronger need for the technology. For instance, the military's need for base islanding, and so, in that scenario that does stretch out the time. But I guess maybe I’m getting past your original question, which was could we do this in a Manhattan style project, and the answer is absolutely yes. And it would go quite quickly.

#### LFTRs are super cheap and get cheaper

Hargraves and Moir ’10 Robert Hargraves, teaches energy policy at the Institute for Lifelong Education at Dartmouth, PhD in physics from Brown, and Ralph Moir, Sc.D. in nuclear engineering from MIT, published 10 papers on molten-salt reactors during his career at Lawrence Livermore National Laboratory, “Liquid Fluoride Thorium Reactors: An old idea in nuclear power gets reexamined,” American Scientist, Vol. 98, No. 4, July-August 2010, http://www.americanscientist.org/issues/feature/liquid-fluoride-thorium-reactors

In terms of cost, the ideal would be to compete successfully against coal without subsidies or market-modifying legislation. It may well be possible. Capital costs are generally higher for conventional nuclear versus fossil-fuel plants, whereas fuel costs are lower. Capital costs are outsized for nuclear plants because the construction, including the containment building, must meet very high standards; the facilities include elaborate, redundant safety systems; and included in capital costs are levies for the cost of decommissioning and removing the plants when they are ultimately taken out of service. The much-consulted MIT study The Future of Nuclear Power, originally published in 2003 and updated in 2009, shows the capital costs of coal plants at $2.30 per watt versus $4 for light-water nuclear. A principal reason why the capital costs of LFTR plants could depart from this ratio is that the LFTR operates at atmospheric pressure and contains no pressurized water. With no water to flash to steam in the event of a pressure breach, a LFTR can use a much more close-fitting containment structure. Other expensive high-pressure coolant-injection systems can also be deleted. One concept for the smaller LFTR containment structure is a hardened concrete facility below ground level, with a robust concrete cap at ground level to resist aircraft impact and any other foreseeable assaults. Other factors contribute to a favorable cost structure, such as simpler fuel handling, smaller components, markedly lower fuel costs and significantly higher energy efficiency. LFTRs are high-temperature reactors, operating at around 800 degrees Celsius, which is thermodynamically favorable for conversion of thermal to electrical energy—a conversion efficiency of 45 percent is likely, versus 33 percent typical of coal and older nuclear plants. The high heat also opens the door for other remunerative uses for the thermal energy, such as hydrogen production, which is greatly facilitated by high temperature, as well as driving other industrial chemical processes with excess process heat. Depending on the siting of a LFTR plant, it could even supply heat for homes and offices. Thorium must also compete economically with energy-efficiency initiatives and renewables. A mature decision process requires that we consider whether renewables and efficiency can realistically answer the rapidly growing energy needs of China, India and the other tiers of the developing world as cheap fossil fuels beckon—at terrible environmental cost. Part of the cost calculation for transitioning to thorium must include its role in the expansion of prosperity in the world, which will be linked inexorably to greater energy demands. We have a pecuniary interest in avoiding the enviromental blowback of a massive upsurge in fossil-fuel consumption in the developing world. The value of providing an alternative to that scenario is hard to monetize, but the consequences of not doing so are impossible to hide from. Perhaps the most compelling idea on the drawing board for pushing thorium-based power into the mainstream is mass production to drive rapid deployment in the U.S. and export elsewhere. Business economists observe that commercialization of any technology leads to lower costs as the number of units increases and the experience curve delivers benefits in work specialization, refined production processes, product standardization and efficient product redesign. Given the diminished scale of LFTRs, it seems reasonable to project that reactors of 100 megawatts can be factory produced for a cost of around $200 million. Boeing, producing one $200 million airplane per day, could be a model for LFTR production. Modular construction is an important trend in current manufacturing of traditional nuclear plants. The market-leading Westinghouse AP1000 advanced pressurized-water reactor can be built in 36 months from the first pouring of concrete, in part because of its modular construction. The largest module of the AP1000 is a 700-metricton unit that arrives at the construction site with rooms completely wired, pipefitted and painted. Quality benefits from modular construction because inspection can consist of a set of protocols executed by specialists operating in a dedicated environment. One potential role for mass-produced LFTR plants could be replacing the power generation components of existing fossil-fuel fired plants, while integrating with the existing electrical-distribution infrastructure already wired to those sites. The savings from adapting existing infrastructure could be very large indeed.

## 2AC

### Grid Adv

#### DOD cyberdefense is terrible and more spending fails

Strassman 11 - president of The Information Economics Press, Senior Advisor to the Science Applications International Corporation, and Distinguished Professor of Information Sciences, George Mason School of Information Technology and Engineering (Paul, “Operating in Cyberspace,” 2/9, <http://pstrassmann.blogspot.com/2011/02/operating-in-cyberspace.html>)

The current hardware, software and networks within the Defense Department are obsolete and dysfunctional. The department continues to operate with a culture that does not as yet acknowledge that its computer systems are technically unsuited for operations in the age of cyber warfare. The existing cyber defense deficiencies are deeply rooted in the ways the Defense Department acquired information technologies over the past decades. The existing flaws are enterprise-wide and pervasive. Regardless how much money is spent on cyber security protection most of it is inadequate to make the existing proliferation of networks adequately secure. The total number of DoD systems projects in FY10 was 5,300. \*\*\* Each of these programs is subdivided into subcontracts, many of which are legislatively dictated. The total number of DoD data centers was 772, which makes their defenses unaffordable. \*\*\*\* The information technology environment in the Defense Department is fractured. Instead of using a comprehensive and defensible infrastructure, which presently consumes 57% of the total information technology budget, money is spread over thousands of mini-infrastructures that operate in separate silo-like structures, which are almost entirely managed by contractors. Such profligacy is guaranteed to be incompatible and indefensible. Over ten percent of the total Defense Department IT budget is spent on cyber defenses to protect tens of thousands of points of vulnerability. The increasing amount of money spent on firewalls, virus protection and other protective measures cannot keep up with the rapidly rising virulence of the attackers.

### T-Financial Incentives

#### We meet—production cost incentives are financial incentives in context of SMRs

Rosner & Goldberg 11 (Robert, William E. Wrather Distinguished Service Professor, Departments of Astronomy and Astrophysics, and Physics, and the College at the U of Chicago, and Stephen, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, "Small Modular Reactors - Key to Future Nuclear Power Generation in the U.S.," November 2011, [https://epic.sites.uchicago.edu/sites/epic.uchicago.edu/files/uploads/EPICSMRWhitePaperFinalcopy.pdf], jam)

Production Cost Incentive: A production cost incentive is a performance-based incentive. With a production cost incentive, the government incentive would be triggered only when the project successfully operates. The project sponsors would assume full responsibility for the upfront capital cost and would assume the full risk for project construction. The production cost incentive would establish a target price, a so-called “market-based benchmark.” Any savings in energy generation costs over the target price would accrue to the generator. Thus, a production cost incentive would provide a strong motivation for cost control and learning improvements, since any gains greater than target levels would enhance project net cash flow. Initial SMR deployments, without the benefits of learning, will have significantly higher costs than fully commercialized SMR plants and thus would benefit from production cost incentives. Because any production cost differential would decline rapidly due to the combined effect of module manufacturing rates and learning experience, the financial incentive could be set at a declining rate, and the level would be determined on a plant-by-plant basis, based on the achievement of cost reduction targets. 43 The key design parameters for the incentive include the following: 1. The magnitude of the deployment incentive should decline with the number of SMR modules and should phase out after the fleet of LEAD and FOAK plants has been deployed. 2. The incentive should be market-based rather than cost-based; the incentive should take into account not only the cost of SMRs but also the cost of competing technologies and be set accordingly. 3. The deployment incentive could take several forms, including a direct payment to offset a portion of production costs or a production tax credit. The Energy Policy Act of 2005 authorized a production tax credit of $18/MWh (1.8¢/kWh) for up to 6,000 MW of new nuclear power plant capacity. To qualify, a project must commence operations by 2021. Treasury Department guidelines further required that a qualifying project initiate construction, defined as the pouring of safety-related concrete, by 2014. Currently, two GW-scale projects totaling 4,600 MW are in early construction; consequently, as much as 1,400 MW in credits is available for other nuclear projects, including SMRs.

#### Counter-interp—financial incentives are cash payments

Joanna I. Lewis and Ryan H. Wiser in 2007, Fostering a renewable energy technology industry: An international comparison of wind industry policy support mechanisms, Energy Policy 35 (2007) 1844–1857, Cited by Malgor [exceptional dancer] in his wording paper “RE Incentives wording paper”

Financial incentives of various forms, whether based on electrical production or capital investment and whether paid as a direct cash incentive or as a favorable loan program, can also be used to encourage renewable energy development. Without a long-term power purchase agreement, however, this policy mechanism has been found to generally play a supplemental role to other policies in encouraging stable and sizable growth in renewable energy markets. Virtually all of the countries included in this survey have used ﬁnancial incentives of various types to encourage wind development. Many governments also provide a variety of tax-related incentives to promote investment in or production of renewable power generation. These incentives can come in the form of capital- or production-based income tax deductions or credits, accelerated depreciation, property tax incentives, sales or excise tax reductions, and VAT reductions. One of the most successful tax incentives in terms of contributing to installed capacity is the US’s PTC. Though the PTC has certainly been effective at promoting wind installations, its on-again, off-again nature has resulted in a very unstable market for wind farm investment, as was illustrated in Fig. 2. In the 1990s, India’s market was also driven in large part by various tax incentives, including 100 percent depreciation of wind equipment in the ﬁrst year of project installation, as well as a 5-year tax holiday (Rajsekhar et al., 1999). China has VAT reductions and income tax exemptions on electricity from wind, and a number of other countries have also used or continue to use a variety of tax-based incentives. As with ﬁnancial incentives, tax-based incentives are generally found to play a supplemental role to other policies, and countries that have relied heavily on tax-based strategies (e.g., US and India) have often been left with unstable markets for wind power.

#### Cash production incentives are uniquely predictable—confirmed by DEO program language

The Law ‘12 -- US Code of Federal Regulation , 2012, 10 CFR 451 – “RENEWABLE ENERGY PRODUCTION INCENTIVES,”

§ 451.9 Procedures for processing applications. (a) Supplemental information. DOE may request supplementary information relating to the application. (b) Audits. DOE may require the applicant to conduct at its own expense and submit an independent audit, or DOE may conduct an audit, to verify the number of kilowatt-hours claimed to have been generated and sold by the qualified renewable energy facility and for which an incentive payment has been requested or made. (c) DOE determinations. The Assistant Secretary for Energy Efficiency and Renewable Energy shall determine the extent to which appropriated funds are available to be obligated under this program for each fiscal year. Upon evaluating each application and any other relevant information, DOE shall further determine: (1) Eligibility of the applicant for receipt of an incentive payment, based on the criteria for eligibility specified in this part; (2) The number of kilowatt-hours to be used in calculating a potential incentive payment, based on the net electric energy generated from a qualified renewable energy source at the qualified renewable energy facility and sold during the prior fiscal year; (3) The number of kilowatt-hours to be used in calculating a potential additional incentive payment, based on the total quantity of accrued energy generated during prior fiscal years; (4) The amounts represented by 60 percent of available funds and by 40 percent of available funds; and (5) Whether justification exists for altering the 60:40 payment ratio specified in paragraph (e) of this section. If DOE intends to modify the 60:40 ratio, the Department shall notify Congress, setting forth reasons for such change. (d) Calculating payments. Subject to the provisions of paragraph (e) of this section, potential incentive payments under this part shall be determined by multiplying the number of kilowatt- hours determined under §451.9(c)(2) by 1.5 cents per kilowatt-hour, and adjusting that product for inflation for each fiscal year beginning after calendar year 1993 in the same manner as provided in section 29(d)(2)(B) of the Internal Revenue Code of 1986, except that in applying such provisions calendar year 1993 shall be substituted for calendar year 1979. Using the same procedure, a potential additional payment shall be determined for the number of kilowatt-hours determined under paragraph (c)(3) of this section. If the sum of these calculated payments does not exceed the funds determined to be available by the Assistant Secretary for Energy Efficiency and Renewable Energy under §451.9(c), DOE shall make payments to all qualified applicants.

### F-35 T/O DA

#### Small modular reactors solve blackouts – preserves military readiness and turns the f-36

Baker 12 (Matthew, Adjunct Junior Fellow at the American Security Project, expertise in The Asia-Pacific; Energy; Climate Change, Jun 22, [americansecurityproject.org/blog/2012/do-small-modular-reactors-present-a-serious-option-for-the-militarys-energy-needs/], jam)

The Defense Energy Security Caucus (DESC) held a briefing yesterday afternoon with proposals to surge the usage of small modular reactors (SMRs). The speakers at the briefing, included Rep. Bartlett (R-MD) and representatives from the American Nuclear Society, recommended that Congress and the White House need to do more “encourage the development and deployment of multiple SMR designs.” SMRs are small, nuclear-powered reactors with power levels less than or equal to 300 MW and the capacity to produce as little as 25MW at a time. SMRs differ from conventional nuclear reactors, which are capable of producing upward of 1,000MW, is that they are much smaller and cheaper. That makes them more capable of catering to our modern energy needs. SMRs are able to be constructed in factories, with manufacturing capabilities already available in the United States. Their smaller size means that they require less construction time and can be deployed in areas that cannot accommodate conventional reactors. Although still in the design stage, SMRs could support small townships and military bases once manufactured. The flexibility of the new technology is particularly important to the DESC audience because SMRs can support remote military bases. The speakers at the DESC briefing suggested a surge is needed in SMR production to combat a major vulnerability in America’s national security: possible attacks to the power grid. Such attacks could cause blackouts for over a year according to Congressman Bartlett, leading to blackouts never before experienced in the United States. In such an event the U.S. military would still need to function 24/7. Current predictions made by the DESC suggest that up to 90% of the US military’s energy needs could be supplied by SMRs. Congressman Bartlett also pointed out that current military bases such as Guam – which is fueled by the transport of diesel – are extremely vulnerable should the energy transport system be disrupted. Fuel supplies are even more unstable in Afghanistan, where one out of every twenty-four convoys results in a casualty. According to Congressman Bartlett, SMRs could make such bases energy self-sufficient.

#### No impact to airpower – constrained by weather, opponents

Mueller, ’10 (Karl, senior political scientist at the RAND Corporation specializing in military and national security, “Air Power”, RAND Corporation, <http://www.rand.org/content/dam/rand/pubs/reprints/2010/RAND_RP1412.pdf>, LH)

The first is the ability of air power to bypass the enemy’s army and navy, and terrain that would impede or prevent the movement of land or naval forces. This not only gives air power unique ability to act across a wide area, but also allows it to strike at targets deep in hostile territory without first achieving success on the surface battlefield. It is easy to overstate the extent of this freedom of action, and air power advocates have often done so. Weather and darkness, the “terrain” of the atmosphere, constrain air operations even today, although these limits have eroded dramatically over the years. Moreover, although aircraft can fly above armies, penetrating enemy air defenses has almost never been a simple matter except when facing grossly inferior opponents – hence the preeminent importance airmen tend to place on achieving air superiority as a precondition for military operations. Yet there are important differences between air and land warfare in this respect: although it is not true that “the bomber will always get through,” it is usually the case that some bombers will do so, if they are willing to suffer losses. Even effective air defenses tend to be permeable compared to front lines on conventional land battlefields, where successful attacks usually result either in driving the enemy back en masse or shattering them.

#### Airpower’s resilient and strong – your internal link’s also not key

Mueller, ’10 (Karl, senior political scientist at the RAND Corporation specializing in military and national security, “Air Power”, RAND Corporation, <http://www.rand.org/content/dam/rand/pubs/reprints/2010/RAND_RP1412.pdf>, LH)

For some 65 years the United States has been the world’s leading aerial power, and today its preeminence is in many respects greater than ever following two decades of Russian air power decline and dramatic contractions in military investment by many Western states, most of which anticipate conducting high-intensity air campaigns only as part of a US-led coalition (Posen 2003; see also Seversky 1942). This is not merely, and arguably not even primarily, due to the quantity and quality of the US armed forces’ combat aircraft and aircrew, but is also a function of years of massive, unrivaled US investment in “enabling” capabilities including airlift, aerial refueling, command and control, intelligence, surveillance and reconnaissance (ISR), communications, and basing that make possible the sustained generation and coordination of large numbers of sorties, often over long ranges and far from the United States itself (Lambeth 2000).

### Private Coop CP

#### Federal cost incentives are the only way to make SMRs competitive – this is the critical internal link to global adoption and the CP can’t solve it

Rosner & Goldberg 11 (Robert, William E. Wrather Distinguished Service Professor, Departments of Astronomy and Astrophysics, and Physics, and the College at the U of Chicago, and Stephen, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, "Small Modular Reactors - Key to Future Nuclear Power Generation in the U.S.," November 2011, [https://epic.sites.uchicago.edu/sites/epic.uchicago.edu/files/uploads/EPICSMRWhitePaperFinalcopy.pdf], jam)

Stage 4. SMR Commercial Learning: Deployment of additional SMR plants and ¶ modules in sufficient quantity to achieve the benefits of learning in manufacturing. Based ¶ on a hypothetical SMR plant configuration (consisting of six 100-MW modules per ¶ plant), the study team estimated that up to nine SMR plants (a LEAD plant and up to ¶ eight FOAK plants) will be needed to achieve the full benefits of learning, at a 10% ¶ learning rate. The present analysis suggests that the estimated LCOE from several of the ¶ early FOAK plants would be higher than market competitive costs. As discussed earlier, ¶ closing this gap will require some combination of innovative business arrangements, ¶ carefully targeted markets, possible federal market transformation efforts (such as clean ¶ electricity purchases), and production cost incentives. The size of any production cost ¶ incentive would be determined case by case based on learning rate targets and would ¶ diminish as FOAK plants move down the learning curve. In the aggregate, the average ¶ magnitude of the incentive would be less than the current $18/MWh (1.8¢/kWh) credit ¶ currently available for new renewable and GW-scale nuclear electric generation plants. ¶ The study team believes that perhaps several FOAK plants could be exported for ¶ deployment in foreign markets, contributing to the learning process while avoiding the ¶ cost of domestic production incentives. Electricity market prices are higher in many ¶ countries that may be interested in SMR plants than those in the U.S., creating an ¶ opportunity for early FOAK plants to be cost competitive. Any FOAK plants for export ¶ would need to be targeted to countries that have established nuclear energy ¶ infrastructures and regulatory regimes, particularly in the areas of nuclear safety and ¶ nuclear nonproliferation; these infrastructures and regimes would also need to have been ¶ reviewed thoroughly by international organizations. The FOAK plants exported to ¶ foreign markets might qualify under existing federal export credit assistance programs, ¶ especially in instances where U.S. companies are in competition with state-owned or ¶ state-aligned enterprises with access to financing on favorable terms. ¶ Success at this stage would be determined by the actual rate of learning in FOAK ¶ modules and the ability to successfully deploy SMR plants within cost, performance, and ¶ incentive target levels. ¶ Stage 5. Fully Commercial, Competitive SMR Industry: Fully commercial SMR ¶ industry, competitive with natural gas-fired generation as a base-load generation ¶ technology. If the learning process for the LEAD and FOAK plants is successful in ¶ meeting the cost parameters identified in the present analysis, there would be no need for ¶ any federal incentives for NOAK plants. If a price for carbon is established, this would ¶ further enhance the competitiveness of NOAK SMR plants relative to fossil fuel ¶ generation alternatives.

### Renewables T/O DA

#### This would trigger key reductions in carbon emissions—that’s essential to slow and reverse anthropogenic climate change

Hargraves and Moir ’11 Robert Hargraves, teaches energy policy at the Institute for Lifelong Education at Dartmouth, PhD in physics from Brown, and Ralph Moir, Sc.D. in nuclear engineering from MIT, published 10 papers on molten-salt reactors during his career at Lawrence Livermore National Laboratory, “Liquid Fuel Nuclear Reactors,” Physics & Society, January 2011, http://www.aps.org/units/fps/newsletters/201101/hargraves.cfm

Burning coal for power is the largest source of atmospheric CO2, which drives global warming. We seek alternatives such as burying CO2 or substituting wind, solar, and nuclear power. A source of energy cheaper than coal would dissuade nations from burning coal while affording them a ready supply of electric power. Can a LFTR produce energy cheaper than is currently achievable by burning coal? Our target cost for energy cheaper than from coal is $0.03/kWh at a capital cost of $2/watt of generating capacity. Coal costs $40 per ton, contributing $0.02/kWh to electrical energy costs. Thorium is plentiful and inexpensive; one ton worth $300,000 can power a 1,000 megawatt LFTR for a year. Fuel costs for thorium would be only $0.00004/kWh. The 2009 update of MIT’s Future of Nuclear Power shows that the capital cost of new coal plants is $2.30/watt, compared to LWRs at $4/watt. The median of five cost studies of large molten salt reactors from 1962 to 2002 is $1.98/watt, in 2009 dollars. Costs for scaled-down 100 MW reactors can be similarly low for a number of reasons, six of which we summarize briefly: Pressure. The LFTR operates at atmospheric pressure, obviating the need for a large containment dome. At atmospheric pressure there is no danger of an explosion. Safety. Rather than creating safety with multiple defense-in-depth systems, LFTR’s intrinsic safety keeps such costs low. A molten salt reactor cannot melt down because the normal operating state of the core is already molten. The salts are solid at room temperature, so if a reactor vessel, pump, or pipe ruptured they would spill out and solidify. If the temperature rises, stability is intrinsic due to salt expansion. In an emergency an actively cooled solid plug of salt in a drain pipe melts and the fuel flows to a critically safe dump tank. The Oak Ridge MSRE researchers turned the reactor off this way on weekends. Heat. The high heat capacity of molten salt exceeds that of the water in PWRs or liquid sodium in fast reactors, allowing compact geometries and heat transfer loops utilizing high-nickel metals. Energy conversion efficiency. High temperatures enable 45% efficient thermal/electrical power conversion using a closed-cycle turbine, compared to 33% typical of existing power plants using traditional Rankine steam cycles. Cooling requirements are nearly halved, reducing costs and making air-cooled LFTRs practical where water is scarce. Mass production. Commercialization of technology lowers costs as the number of units produced increases due to improvements in labor efficiency, materials, manufacturing technology, and quality. Doubling the number of units produced reduces cost by a percentage termed the learning ratio, which is often about 20%. In The Economic Future of Nuclear Power, University of Chicago economists estimate it at 10% for nuclear power reactors. Reactors of 100 MW size could be factory-produced daily in the way that Boeing Aircraft produces one airplane per day. At a learning ratio of 10%, costs drop 65% in three years. Ongoing research. New structural materials include silicon-impregnated carbon fiber with chemical vapor infiltrated carbon surfaces. Such compact thin-plate heat exchangers promise reduced size and cost. Operating at 950°C can increase thermal/electrical conversion efficiency beyond 50% and also improve water dissociation to create hydrogen for manufacture of synthetic fuels such that can substitute for gasoline or diesel oil, another use for LFTR technology. In summary, LFTR capital cost targets of $2/watt are supported by simple fluid fuel handling, high thermal capacity heat exchange fluids, smaller components, low pressure core, high temperature power conversion, simple intrinsic safety, factory production, the learning curve, and technologies already under development. A $2/watt capital cost contributes $0.02/kWh to the power cost. With plentiful thorium fuel, LFTRs may indeed generate electricity at less than $0.03/kWh, underselling power generated by burning coal. Producing one LFTR of 100 MW size per day could phase out all coal burning power plants worldwide in 38 years, ending 10 billion tons per year of CO2 emissions from coal plants.

## 1AR

### F-35 DA

#### No war—interdependence and liberalization

Vannarith ’10 Chheang Vannarith, Executive Director of the Cambodian Institute for Cooperation and Peace. PhD in Asia Pacific Studies, Ritsumeikan Asia Pacific U, “Asia Pacific Security Issues: Challenges and Adaptive Mechanism,” CICP Policy Brief No. 3, July 2010, http://www.cicp.org.kh/download/CICP%20Policy%20brief/CICP%20Policy%20brief%20No%203.pdf

Some people look to China for economic and strategic interests while others still stick to the US. Since, as a human nature, change is not widely acceptable due to the high level of uncertainty. It is therefore logical to say that most of the regional leaders prefer to see the status quo of security architecture in the Asia Pacific Region in which US is the hub of security provision. But it is impossible to preserve the status quo since China needs to strategically outreach to the wider region in order to get necessary resources especially energy and raw materials to maintain her economic growth in the home country. It is understandable that China needs to have stable high economic growth of about 8 percent GDP growth per year for her own economic and political survival. Widening development gap and employment are the two main issues facing China. Without China, the world will not enjoy peace, stability, and development. China is the locomotive of global and regional economic development and contributes to global and regional peace and stability. It is understandable that China is struggling to break the so-called containment strategy imposed by the US since the post Cold War. Whether this tendency can lead to the greater strategic division is still unknown. Nevertheless, many observers agree that whatever changes may take place, a multi-polar world and multilateralism prevail. The reasons or logics supporting multilateralism are mainly based on the fact that no one country can really address the security issues embedded with international dimension, no one country has the capacity to adapt and adopt to new changes alone, and it needs cooperation and coordination among the nation states and relevant stakeholders including the private sector and civil societies. Large scale interstate war or armed conflict is unthinkable in the region due to the high level of interdependency and democratization. It is believed that economic interdependency can reduce conflicts and prevent war. Democracy can lead to more transparency, accountability, and participation that can reduce collective fears and create more confidence and trust among the people in the region. In addition, globalism and regionalism are taking the center stage of national and foreign policy of many governments in the region except North Korea. The combination of those elements of peace is necessary for peace and stability in the region and those elements are present and being improved in this region.

#### Middle East conflict is impossible—their ev is biased

Kahn ’11 Jeremy Kahn, “Crude reality,” Boston Globe, 2/13/2011, http://www.boston.com/bostonglobe/ideas/articles/2011/02/13/crude\_reality/?page=full

In their Security Studies paper, Gholz and Press argue that there are indeed a few threats in the Persian Gulf that might overwhelm the oil market and threaten US energy security. One of these would be an attempt by a single power to conquer the majority of the region. Another is Iran blocking the Strait of Hormuz, the only irreplaceable sea channel. The third is revolution in Saudi Arabia. The first two scenarios are highly unlikely, Press and Gholz argue, and could be countered by moving in US forces stationed elsewhere in the world, such as the neighboring Mediterranean and Indian Ocean. (There is debate among security analysts about whether Iran has the military capability to close the strait, or could itself economically survive such a move.) A revolt in Saudi Arabia, on the other hand, is looking increasingly possible given the recent events in Tunisia and Egypt — but it could not be prevented by the US military deployed in the Gulf. Our presence could even make such unrest more likely, if soldiers became flashpoints for revolutionary anger. Gholz’s and Press’s argument has gained some currency in academic circles. “I have believed for a long time that the US presence in the Gulf has been ‘under argued’ strategically,” Barry Posen, a professor of political science at the Massachusetts Institute of Technology, where both Gholz and Press received their PhDs, wrote in an e-mail response to questions about this topic. “Press and Gholz undermine the usual ‘simple’ arguments for being there. That leaves us looking for other arguments that may be the ‘true’ ones, or suspecting that there is no strong argument.” But it has gained little traction so far either on Capitol Hill or in the corridors of the Pentagon. “Did it immediately change people’s minds? Not really,” Gholz said of his paper. Auerswald, who has grown frustrated by the lack of response to his own research on this topic, said that the problem is that the fear of Middle Eastern oil shocks is now politically useful to a whole spectrum of powerful interest groups. “This argument is like the familiar old jeans of American politics,” he said. “They are nice and cozy and comfortable and everyone can wear them. Because of ethanol, the farm lobby loves it; for coal, well it’s their core argument; for the offshore drilling folks, they love it.” Even the environmental movement relies on it, he said, because they use it as bogeyman to scare Americans into taking renewable energy and energy conservation more seriously. As for the US military, “The US Navy is not interested in hearing that one of their two main theaters of operation has no justification for being,” Auerswald said. The costs to US foreign policy, of course, cannot be calculated in dollars and cents alone, although certainly the cost here has been very high. But it looks even higher wshen one considers the lost opportunities and squandered chances — what we could be achieving if we weren’t so concerned about a threat that looks increasingly like an illusion. “If we are going to commit our troops to prevent something from happening, it should be something that would be an existential threat to the United States,” said Auerswald. “Having people wait in line for five days for gas in one part of the US is not an existential threat.”

# Rd 5 vs UTSA NR

## 1AC

See rd 1

## 2AC

Speech doc is probably around somewhere on the underground speech doc exchange; but not on our computers