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### Plan

**Plan --- The United States federal government should obtain electricity from small modular reactors for mission critical military installations in the United States and exempt the Department of Defense from relevant small modular reactor licensing restrictions.**

### Adv 1

**Advantage One---The DoD**

**Cyber-attack’s coming---actors are probing US grid weaknesses.**

**Reed 10/11** (John, Reports on the frontiers of cyber war and the latest in military technology for Killer Apps at Foreign Policy, "U.S. energy companies victims of potentially destructive cyber intrusions", 2012)

Foreign actors are probing the networks of key American companies in an attempt to gain control of industrial facilities and transportation systems, Defense Secretary Leon Panetta revealed tonight.¶ "We know that foreign cyber actors are probing America's critical infrastructure networks," said Panetta, disclosing previously classified information during a speech in New York laying out the Pentagon's role in protecting the U.S. from cyber attacks. "They are targeting the computer control systems that operate chemical, electricity and water plants, and those that guide transportation thorough the country."¶ He went on to say that the U.S. government knows of "specific instances where intruders have gained access" to these systems -- frequently known as Supervisory Control and Data Acquisition (or SCADA) systems -- and that "they are seeking to create advanced tools to attack these systems and cause panic, destruction and even the loss of life," according to an advance copy of his prepared remarks.¶ The secretary said that a coordinated attack on enough critical infrastructure could be a "**cyber Pearl Harbor**" that would "cause physical destruction and loss of life, paralyze and shock the nation, and create a profound new sense of vulnerability."¶ While there have been reports of criminals using 'spear phishing' email attacks aimed at stealing information about American utilties, Panetta's remarks seemed to suggest more sophisticated, nation-state backed attempts to actually gain control of and damage power-generating equipment. ¶ Panetta's comments regarding the penetration of American utilities echo those of a private sector cyber security expert Killer Apps spoke with last week who said that the networks of American electric companies were penetrated, perhaps in preparation for a **Stuxnet-style attack**.¶ Stuxnet is the famous cyber weapon that infected Iran's uranium-enrichment centrifuges in 2009 and 2010. Stuxnet is believed to have caused some of the machines to spin erratically, thereby destroying them.¶ "There is hard evidence that there has been penetration of our power companies, and given Stuxnet, that is a staging step before destruction" of electricity-generating equipment, the expert told Killer Apps. Because uranium centrifuges and power turbines are both spinning machines, "the attack is identical -- the one to take out the centrifuges and the one to take out our power systems is the same attack."¶ "If a centrifuge running at the wrong speed can blow apart" so can a power generator, said the expert. "If you do, in fact, spin them at the wrong speeds, you can blow up any rotating device."¶ Cyber security expert Eugene Kaspersky said two weeks ago that one of his greatest fears is someone reverse-engineering a sophisticated cyber weapon like Stuxnet -- a relatively easy task -- and he noted that Stuxnet itself passed through power plants on its way to Iran. "Stuxnet infected thousands of computer systems all around the globe, I know there were power plants infected by Stuxnet very far away from Iran," Kaspersky said.

**Risk of attacks is exceptionally high.**

**Habiger 10** (Eugene, Commander in Chief – United States Strategic Command, Served as Director of Security and Emergency Operations – U.S. Department of Energy, Previously Deputy chief of staff for personnel – Headquarters U.S. Air Force, Vice commander – Headquarters Air Education and Training Command, Deputy Director, Later director, Programs and Evaluation, Office of the Deputy Chief of Staff, Programs and Resources, Headquarters U.S. Air Force, He was also the chairman of the Program Review Committee and the Air Force Board, *CYBERWARFARE AND CYBERTERRORISM: THE NEED FOR A NEW U.S. STRATEGIC APPROACH*, The Cyber Security Institute, http://www.army-technology.com/downloads/whitepapers/vehicle-protection/file1552/)

However, there are reasons to believe that what is going on now amounts to a fundamental shift as opposed to business as usual. Today’s network exploitation or information operation trespasses possess a number of characteristics that suggest that the line between espionage and conflict has been, or is close to being, crossed. (What that suggests for the proper response is a different matter.) First, the **number of cyber attacks** we are facing is growing significantly. Andrew Palowitch, a former CIA official now consulting with the US Strategic Command (STRATCOM), which oversees the Defense Department’s Joint Task Force‐Global Network Operations, recently told a meeting of experts that the Defense Department has experienced almost **80,000 computer attacks**, and some number of these assaults have actually “reduced” the military’s “operational capabilities.”20 Second, the nature of these attacks is starting to shift from penetration attempts aimed at gathering intelligence (cyber spying) to offensive efforts aimed at taking down systems (cyberattacks). Palowitch put this in stark terms last November, “We are currently in a cyber war and war is going on today.”21 Third, these recent attacks need to be taken in a broader strategic context. Both Russia and China have stepped up their offensive efforts and taken a much more aggressive cyber warfare posture. The Chinese have developed an openly discussed cyberwar strategy aimed at achieving electronic dominance over the U.S. and its allies by 2050. In 2007 the Department of Defense reported that for the first time China has developed first strike viruses, marking a major shift from prior investments in defensive measures.22 And in the intervening period China has launched a series of offensive cyber operations against U.S. government and private sector networks and infrastructure. In 2007, Gen. James Cartwright, the former head of STRATCOM and now the Vice Chairman of the Joint Chiefs of Staff, told the US‐China Economic and Security Review Commission that China’s ability to launch “denial of service” attacks to overwhelm an IT system is of particular concern. 23 Russia also has already begun to wage offensive cyberwar. At the outset of the recent hostilities with Georgia, Russian assets launched a series of cyberattacks against the Georgian government and its critical infrastructure systems, including media, banking and transportation sites.24 In 2007, cyberattacks that many experts attribute, directly or indirectly, to Russia shut down the Estonia government’s IT systems. Fourth, the current geopolitical context must also be factored into any effort to gauge the degree of threat of cyberwar. The start of the new Obama Administration has begun to help reduce tensions between the United States and other nations. And, the new administration has taken initial steps to improve bilateral relations specifically with both China and Russia. However, it must be said that over the last few years the posture of both the Chinese and Russian governments toward America has clearly become more assertive, and at times even aggressive. Some commentators have talked about the prospects of a cyber Pearl Harbor, and the pattern of Chinese and Russian behavior to date gives reason for concern along these lines: both nations have offensive cyberwarfare strategies in place; both nations have taken the cyber equivalent of building up their forces; both nations now regularly probe our cyber defenses looking for gaps to be exploited; both nations have begun taking actions that cross the line from cyberespionage to cyberaggression; and, our bilateral relations with both nations are increasingly fractious and complicated by areas of marked, direct competition. Clearly, there a sharp differences between current U.S. relations with these two nations and relations between the US and Japan just prior to World War II. However, from a strategic defense perspective, there are enough warning signs to warrant preparation. In addition to the threat of cyberwar, the limited resources required to carry out even a large scale cyberattack also makes likely the potential for a significant cyber terror attack against the United States. However, the lack of a long list of specific incidences of cyberterrorism should provide no comfort. There is **strong evidence** to suggest that al Qaeda has the ability to conduct cyberterror attacks against the United States and its allies. Al Qaeda and other terrorist organizations are extremely active in cyberspace, using these technologies to communicate among themselves and others, carry out logistics, recruit members, and wage information warfare. For example, al Qaeda leaders used email to communicate with the 9‐11 terrorists and the 9‐11 terrorists used the Internet to make travel plans and book flights. Osama bin Laden and other al Qaeda members routinely post videos and other messages to online sites to communicate. Moreover, there is evidence of efforts that al Qaeda and other terrorist organizations are actively developing cyberterrorism capabilities and seeking to carry out cyberterrorist attacks. For example, the Washington Post has reported that “U.S. investigators have found evidence in the logs that mark a browser's path through the Internet that al Qaeda operators spent time on sites that offer software and programming instructions for the digital switches that run power, water, transport and communications grids. In some interrogations . . . al Qaeda prisoners have described intentions, in general terms, to use those tools.”25 Similarly, a 2002 CIA report on the cyberterror threat to a member of the Senate stated that al Qaeda and Hezbollah have become "more adept at using the internet and computer technologies.”26 The FBI has issued bulletins stating that, “U. S. law enforcement and intelligence agencies have received indications that Al Qaeda members have sought information on Supervisory Control And Data Acquisition (SCADA) systems available on multiple SCADA‐related web sites.”27 In addition a number of jihadist websites, such as 7hj.7hj.com, teach computer attack and hacking skills in the service of Islam.28 While al Qaeda may lack the cyber‐attack capability of nations like Russia and China, there is every reason to believe its operatives, and those of its ilk, are as capable as the cyber criminals and hackers who routinely effect great harm on the world’s digital infrastructure generally and American assets specifically. In fact, perhaps, the most troubling indication of the level of the cyberterrorist threat is the countless, serious non‐terrorist cyberattacks routinely carried out by criminals, hackers, disgruntled insiders, crime syndicates and the like. If run‐of‐the‐mill criminals and hackers can **threaten power grids**, hack vital military networks, steal vast sums of money, take down a city’s of traffic lights, compromise the Federal Aviation Administration’s air traffic control systems, among other attacks, it is **overwhelmingly likely** that terrorists can carry out similar, if not more malicious attacks. Moreover, even if the world’s terrorists are unable to breed these skills, they can certainly buy them. There are untold numbers of cyber mercenaries around the world—sophisticated hackers with advanced training who would be willing to offer their services for the right price. Finally, given the nature of our understanding of cyber threats, there is always the possibility that we have already been the victim or a cyberterrorist attack, or such an attack has already been set but not yet effectuated, and we don’t know it yet. Instead, a well‐designed cyberattack has the capacity to cause widespread chaos, sow societal unrest, undermine national governments, spread paralyzing fear and anxiety, and create a state of utter turmoil, all without taking a single life. A sophisticated cyberattack could throw a nation’s banking and finance system into chaos causing markets to crash, prompting runs on banks, degrading confidence in markets, perhaps even putting the nation’s currency in play and making the government look helpless and hapless. In today’s difficult economy, imagine how Americans would react if vast sums of money were taken from their accounts and their supporting financial records were destroyed. A truly nefarious cyberattacker could carry out an attack in such a way (akin to Robin Hood) as to engender populist support and deepen rifts within our society, thereby making efforts to restore the system all the more difficult. A modestly advanced enemy could use a cyberattack to shut down (if not physically damage) one or more regional power grids. An entire region could be cast into total darkness, power‐dependent systems could be shutdown. An attack on one or more regional power grids could also cause cascading effects that could jeopardize our entire national grid. When word leaks that the blackout was caused by a cyberattack, the specter of a foreign enemy capable of sending the entire nation into darkness would only increase the fear, turmoil and unrest. While the finance and energy sectors are considered prime targets for a cyberattack, an attack on any of the 17 delineated critical infrastructure sectors could have a major impact on the United States. For example, our healthcare system is already technologically driven and the Obama Administration’s e‐health efforts will only increase that dependency. A cyberattack on the U.S. e‐health infrastructure could send our healthcare system into chaos and put countless of lives at risk. Imagine if emergency room physicians and surgeons were suddenly no longer able to access vital patient information. A cyberattack on our nation’s water systems could likewise cause widespread disruption. An attack on the control systems for one or more dams could put entire communities at risk of being inundated,and could create ripple effects across the water, agriculture, and energy sectors. Similar water control system attacks could be used to at least temporarily deny water to otherwise arid regions, impacting everything from the quality of life in these areas to agriculture. In 2007, the U.S. Cyber Consequences Unit determined that the destruction from a single wave of cyberattacks on critical infrastructures could exceed $700 billion, which would be the rough equivalent of 50 Katrina‐esque hurricanes hitting the United States all at the same time.29 Similarly, one IT security source has estimated that the impact of a single day cyberwar attack that focused on and disrupted U.S. credit and debit card transactions would be approximately $35 billion.30 Another way to gauge the potential for harm is in comparison to other similar noncyberattack infrastructure failures. For example, the August 2003 regional power grid blackout is estimated to have cost the U.S. economy up to $10 billion, or roughly .1 percent of the nation’s GDP. 31 That said, a cyberattack of the exact same magnitude would most certainly have a much larger impact. The origin of the 2003 blackout was almost immediately disclosed as an atypical system failure having nothing to do with terrorism. This made the event both less threatening and likely a single time occurrence. Had it been disclosed that the event was the result of an attack that could readily be repeated the impacts would likely have grown substantially, if not exponentially. Additionally, a cyberattack could also be used to disrupt our nation’s defenses or distract our national leaders in advance of a more traditional conventional or strategic attack. Many military leaders actually believe that such a disruptive cyber pre‐offensive is the most effective use of offensive cyber capabilities. This is, in fact, the way Russia utilized cyberattackers—whether government assets, governmentdirected/ coordinated assets, or allied cyber irregulars—in advance of the invasion of Georgia. Widespread distributed denial of service (DDOS) attacks were launched on the Georgian governments IT systems. Roughly a day later Russian armor rolled into Georgian territory. The cyberattacks were used to prepare the battlefield; they denied the Georgian government a critical communications tool isolating it from its citizens and degrading its command and control capabilities precisely at the time of attack. In this way, these attacks were the functional equivalent of conventional air and/or missile strikes on a nation’s communications infrastructure.32 One interesting element of the Georgian cyberattacks has been generally overlooked: On July 20th, weeks before the August cyberattack, the website of Georgian President Mikheil Saakashvili was overwhelmed by a more narrowly focused, but technologically similar DDOS attack.33 This should be particularly chilling to American national security experts as our systems undergo the same sorts of focused, probing attacks on a constant basis. The ability of an enemy to use a cyber attack to counter our offensive capabilities or soften our defenses for a wider offensive against the United States is much more than mere speculation. In fact, in Iraq it is already happening. Iraq insurgents are now using off‐the‐shelf software (costing just $26) to hack U.S. drones (costing $4.5 million each), allowing them to intercept the video feed from these drones.34 By hacking these drones the insurgents have succeeded in greatly reducing one of our most valuable sources of real‐time intelligence and situational awareness. If our enemies in Iraq are capable of such an effective cyberattack against one of our more sophisticated systems, consider what a more technologically advanced enemy could do. At the strategic level, in 2008, as the United States Central Command was leading wars in both Iraq and Afghanistan, a cyber intruder compromised the security of the Command and sat within its IT systems, monitoring everything the Command was doing. 35 This time the attacker simply gathered vast amounts of intelligence. However, it is clear that the attacker could have used this access to wage cyberwar—altering information, disrupting the flow of information, destroying information, taking down systems—against the United States forces already at war. Similarly, during 2003 as the United States prepared for and began the War in Iraq, the IT networks of the Department of Defense were hacked 294 times.36 By August of 2004, with America at war, these ongoing attacks compelled then‐Deputy Secretary of Defense Paul Wolfowitz to write in a memo that, "Recent exploits have reduced operational capabilities on our networks."37 This wasn’t the first time that our national security IT infrastructure was penetrated immediately in advance of a U.S. military option.38 In February of 1998 the Solar Sunrise attacks systematically compromised a series of Department of Defense networks. What is often overlooked is that these attacks occurred during the ramp up period ahead of potential military action against Iraq. The attackers were able to obtain vast amounts of sensitive information—information that would have certainly been of value to an enemy’s military leaders. There is no way to prove that these actions were purposefully launched with the specific intent to distract American military assets or degrade our capabilities. However, such ambiguities—the inability to specifically attribute actions and motives to actors—are the very nature of cyberspace. Perhaps, these repeated patterns of behavior were mere coincidence, or perhaps they weren’t. The potential that an enemy might use a cyberattack to soften physical defenses, increase the gravity of harms from kinetic attacks, or both, significantly increases the potential harms from a cyberattack. Consider the gravity of the threat and risk if an enemy, rightly or wrongly, believed that it could use a cyberattack to degrade our strategic weapons capabilities. Such an enemy might be convinced that it could win a war—conventional or even nuclear—against the United States. The effect of this would be to undermine our **deterrence**‐based defenses, making us significantly more at risk of a **major war.**

**These attacks jeopardize critical DoD military operations.**

**Robitaille 12** (George, Department of Army Civilian & US Army War College, *Small Modular Reactors: The Army’s Secure Source of Energy?*, March, Strategy Research Project)

In recent years, the U.S Department of Defense (DoD) has identified a security issue at our installations related to the dependence on the civilian electrical grid. 1 The DoD depends on a steady source of electricity at military facilities to perform the functions that secure our nation. The flow of electricity into military facilities is controlled by a public grid system that is susceptible to being compromised because of the age of the infrastructure, damage from **natural disasters** and the potential for **cyber attacks**. Although most major functions at military installations employ diesel powered generators as temporary backup, the public grid may not be available to provide electricity when it is needed the most. The United States electrical infrastructure system is prone to failures and susceptible to **terrorist attacks**. 2 It is critical that the source of electricity for our installations is reliable and secure. In order to ensure that our military facilities possess a secure source of electricity, either the public system of electric generation and distribution is upgraded to increase its reliability as well as reducing its susceptibility to cyber attack or another source of electricity should be pursued. Although significant investments are being made to upgrade the electric grid, the current **investment levels** are not keeping up with the aging system. Small modular reactors (SMRs) are nuclear reactors that are about an order of magnitude smaller than traditional commercial reactor used in the United States. SMRs are capable of generating electricity and at the same time, they are not a significant contributor to global warming because of green house gas emissions. The DoD needs to look at small modular nuclear reactors (SMRs) to determine if they can provide a safe and secure source of electricity. Electrical Grid Susceptibility to Disruptions According to a recent report by the Defense Science Board, the DoD gets ninety nine percent of their electrical requirements from the civilian electric grid. 3 The electric grid, as it is currently configured and envisioned to operate for the foreseeable future, may not be reliable enough to ensure an uninterrupted flow of electricity for our critical military facilities given the influences of the aging infrastructure, its susceptibility to severe weather events, and the potential for cyber attacks. The DoD dependency on the grid is reflected in the $4.01 Billion spent on facilities energy in fiscal year 2010, the latest year which data was available. 4 The electricity used by military installations amounts to $3.76 billion. 5 As stated earlier, the DoD relies on the commercial grid to provide a secure source of energy to support the operations that ensure the security of our nation and it may not be available when we need it. The system could be taken down for extended periods of time by failure of aging components, acts of nature, or intentionally by cyber attacks. Aging Infrastructure. The U.S electric power grid is made up of independently owned power plants and transmission lines. The political and environmental resistance to building new electric generating power plants combined with the rise in consumption and aging infrastructure increases the potential for grid failure in the future. There are **components** in the U.S. electric grid that are over one hundred years old and some of the recent outages such as the 2006 New York blackout can be directly attributed to this out of date, aging infrastructure. 6 Many of the components of this system are at or exceeding their operational life and the general trend of the utility companies is to not replace power lines and other equipment until they fail. 7 The government led deregulation of the electric utility industry that started in the mid 1970s has contributed to a three decade long deterioration of the electric grid and an increased state of instability. Although significant investments are being made to upgrade the electric grid, the many years of prior neglect will require a considerable amount of time and funding to bring the aging infrastructure up to date. Furthermore, the current investment levels to upgrade the grid are not keeping up with the aging system. 8 In addition, **upgrades** to the digital infrastructure which were done to increase the systems efficiency and reliability, have actually made the system more susceptible to cyber attacks. 9 Because of the aging infrastructure and the impacts related to weather, the extent, as well as frequency of failures is expected to increase in the future. Adverse Weather. According to a 2008 grid reliability report by the Edison Electric Institute, sixty seven per cent of all power outages are related to **weather**. Specifically, lightning contributed six percent, while adverse weather provided thirty one percent and vegetation thirty percent (which was predominantly attributed to wind blowing vegetation into contact with utility lines) of the power outages. 10 In 1998 a falling tree limb damaged a transformer near the Bonneville Dam in Oregon, causing a cascade of related black-outs across eight western states. 11 In August of 2003 the lights went out in the biggest blackout in North America, plunging over fifty million people into darkness over eight states and two Canadian provinces. Most areas did not have power restored four or five days. In addition, drinking water had to be distributed by the National Guard when water pumping stations and/or purification processes failed. The estimated economic losses associated with this incident were about five billion dollars. Furthermore, this incident also affected the operations of twenty two nuclear plants in the United States and Canada. 12 In 2008, Hurricane Ike caused approximately seven and a half million customers to lose power in the United States from Texas to New York. 13 The electric grid suffered numerous power outages every year throughout the United States and the number of outages is expected to increase as the infrastructure ages without sufficient upgrades and weather-related impacts continue to become more frequent. Cyber Attacks. The civilian grid is made up of three unique electric networks which cover the East, West and Texas with approximately one hundred eighty seven thousand miles of power lines. There are several weaknesses in the electrical distribution infrastructure system that could compromise the flow of electricity to military facilities. The flow of energy in the network lines as well as the main distribution hubs has become totally dependent on **computers** and internet-based communications. Although the digital infrastructure makes the grid more efficient, it also makes it more susceptible to cyber attacks. Admiral Mr. Dennis C. Blair (ret.), the former Director of National Intelligence, testified before Congress that “the growing connectivity between information systems, the Internet, and other infrastructures creates opportunities for attackers to disrupt telecommunications, electrical power, energy pipelines, refineries, financial networks, and other critical infrastructures. 14 ” The Intelligence Community assesses that a number of nations already have the technical capability to conduct such attacks. 15 In the 2009 report, Annual Threat Assessment of the Intelligence Community for the Senate Armed Services Committee, Adm. Blair stated that “Threats to cyberspace pose one of the most serious economic and national security challenges of the 21st Century for the United States and our allies.”16 In addition, the report highlights a growing array of state and non-state actors that are targeting the U.S. critical infrastructure for the purpose of creating chaos that will subsequently produce detrimental effects on citizens, commerce, and government operations. These actors have the ability to compromise, steal, change, or completely destroy information through their detrimental activities on the internet. 17 In January 2008, US Central Intelligence Agency senior analyst Tom Donahue told a gathering of three hundred international security managers from electric, water, oil & gas, and other critical industry, that data was available from multiple regions outside the United States, which documents cyber intrusions into utilities. In at least one case (outside the U.S.), the disruption caused a power outage affecting multiple cities. Mr. Donahue did not specify who executed these attacks or why, but did state that all the intrusions were conducted via the Internet. 18 During the past twenty years, advances in computer technologies have permeated and advanced all aspects of our lives. Although the digital infrastructure is being increasingly merged with the power grid to make it more efficient and reliable, it also makes it more vulnerable to cyber attack. In October 2006, a foreign hacker invaded the Harrisburg, PA., water filtration system and planted malware. 19 In June 2008, the Hatch nuclear power plant in Georgia shut down for two days after an engineer loaded a software update for a business network that also rebooted the plant's power control system. In April 2009, The Wall Street Journal reported that cyber spies had infiltrated the U.S. electric grid and left behind software that could be used to disrupt the system. The hackers came from China, Russia and other nations and were on a “fishing expedition” to map out the system. 20 According to the secretary of Homeland Security, Janet Napolitano at an event on 28 October 2011, cyber–attacks have come close to compromising the country’s critical infrastructure on multiple occasions. 21 Furthermore, during FY11, the United States Computer Emergency Readiness Team took action on more than one hundred thousand incident reports by releasing more than five thousand actionable cyber security alerts and information products. 22 The interdependence of modern infrastructures and digital based systems makes any cyber attacks on the U.S. electric grid potentially significant. The December 2008 report by the Commission on Cyber Security for the forty fourth Presidency states the challenge plainly: “America’s failure to protect cyberspace is one of the most urgent national security problems facing the new administration”. 23 The susceptibility of the grid to being compromised has resulted in a significant amount of resources being allocated to ensuring the systems security. Although a substantial amount of resources are dedicated to protecting the nation’s infrastructure, it may not be enough to ensure the continuous flow of electricity to our critical military facilities. SMRs as they are currently envisioned may be able to provide a secure and independent alternative source of electricity in the event that the public grid is compromised. SMRs may also provide additional DoD benefit by supporting the recent government initiatives related to energy consumption and by circumventing the adverse ramifications associated with building coal or natural gas fired power plants on the environment.

**The plan solves grid collapse---SMR’s make bases resilient and deter attacks---they prevent nuclear retaliation.**

**Andres 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. Breetz – 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*, Strategic Forum, National Defense University, Institute for National Strategic Studies, February 2011, http://www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf)

Small reactors and energy Security The DOD interest in small reactors derives largely from problems with base and logistics vulnerability. Over the last few years, the Services have begun to reexamine virtually every aspect of how they generate and use en- ergy with an eye toward cutting costs, decreasing carbon emissions, and reducing energy-related vulnerabilities. These actions have resulted in programs that have signif- icantly reduced DOD energy consumption and green- house gas emissions at domestic bases. Despite strong efforts, however, two critical security issues have thus far proven resistant to existing solutions: bases’ vulnerability to civilian power outages, and the need to transport large quantities of fuel via convoys through hostile territory to forward locations. Each of these is explored below. 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 re- port sponsored by the Department of Homeland Secu- rity suggests that a coordinated cyber attack 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 func- tion 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 black- out 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 ef- forts 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 renew- ables, 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 de- mands 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.

**This is the highest probability scenario for a nuclear use.**

**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 Escalation*, May 13th 2009, http://www.seanlawson.net/?p=477)

Introduction

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 makerÃ¢â‚¬â„¢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]:

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]

Asked by the New York Times to comment on this, U.S. defense officials would not deny that nuclear retaliation remains an option for response to a massive cyberattack:

“Pentagon and military officials confirmed that the United States reserved the option to respond in any way it chooses to punish an adversary responsible for a catastrophic cyberattack. While the options could include the use of nuclear weapons, officials said, such an extreme counterattack was hardly the most likely response.” [8] The rationale for this policy:

“Thus, the United States never declared that it would be bound to respond to a Soviet and Warsaw Pact conventional invasion with only American and NATO conventional forces. The fear of escalating to a nuclear conflict was viewed as a pillar of stability and is credited with helping deter the larger Soviet-led conventional force throughout the cold war. Introducing the possibility of a nuclear response to a catastrophic cyberattack would be expected to serve the same purpose.” [9]

Non-unique, Dangerous, and In-credible?

There are a couple of interesting things to note in response. First is the development of a new acronym, WMD/E (weapons of mass destruction or effect). Again, this acronym indicates a weakening of the requirement of physical impacts. In this new definition, mass effects that are not necessarily physical, nor necessarily destructive, but possibly only disruptive economically or even psychologically (think “shock and awe”) are seen as equivalent to WMD. This new emphasis on effects, disruption, and psychology reflects both contemporary, but also long-held beliefs within the U.S. defense community. It reflects current thinking in U.S. military theory, in which it is said that U.S. forces should be able to “mass fires” and “mass effects” without having to physically “mass forces.” There is a sliding scale in which the physical (often referred to as

the “kinetic”) gradually retreats–i.e. massed forces are most physical; massed fire is less physical (for the U.S. anyway); and massed effects are the least physical, having as the ultimate goal Sun Tzu’s “pinnacle of excellence,” winning without fighting.

But the emphasis on disruption and psychology in WMD/E has also been a key component of much of 20th century military thought in the West. Industrial theories of warfare in the early 20th century posited that industrial societies were increasingly interdependent and reliant upon mass production, transportation, and consumption of material goods. Both industrial societies and the material links that held them together, as well as industrial people and their own internal linkages (i.e. nerves), were seen as increasingly fragile and prone to disruption via attack with the latest industrial weapons: airplanes and tanks. Once interdependent and fragile industrial societies were hopelessly disrupted via attack by the very weapons they themselves created, the nerves of modern, industrial men and women would be shattered, leading to moral and mental defeat and a loss of will to fight. Current thinking about the possible dangers of cyber attack upon the U.S. are based on the same basic premises: technologically dependent and therefore fragile societies populated by masses of people sensitive to any disruption in expected standards of living are easy targets. Ultimately, however, a number of researchers have pointed out the pseudo-psychological, pseudo-sociological, and a-historical (not to mention non-unique) nature of these assumptions. [10] Others have pointed out that these assumptions did not turn out to be true during WWII strategic bombing campaigns, that modern, industrial societies and populations were far more resilient than military theorists had assumed. [11] Finally, even some military theorists have questioned the assumptions behind cyber war, especially when assumptions about our own technology dependence-induced societal fragility (dubious on their own) are applied to other societies, especially non-Western societies (even more dubious). [12]

Finally, where deterrence is concerned, it is important to remember that a deterrent has to be credible to be effective. True, the U.S. retained nuclear weapons as a deterrent during the Cold War. But, from the 1950s through the 1980s, there was increasing doubt among U.S. planners regarding the credibility of U.S. nuclear deterrence via the threat of “massive retaliation.” As early as the 1950s it was becoming clear that the U.S. would be reluctant at best to actually follow through on its threat of massive retaliation. Unfortunately, most money during that period had gone into building up the nuclear arsenal; conventional weapons had been marginalized. Thus, the U.S. had built a force it was likely never to use. So, the 1960s, 1970s, and 1980s saw the development of concepts like “flexible response” and more emphasis on building up conventional forces. This was the big story of the 1980s and the “Reagan build-up” (not “Star Wars”). Realizing that, after a decade of distraction in Vietnam, it was back in a position vis-a-viz the Soviets in Europe in which it would have to rely on nuclear weapons to offset its own weakness in conventional forces, a position that could lead only to blackmail or holocaust, the U.S. moved to create stronger conventional forces. [13] Thus, the question where cyber war is concerned:

If it was in-credible that the U.S. would actually follow through with massive retaliation after a Soviet attack on the U.S. or Western Europe, is it really credible to say that the U.S. would respond with nuclear weapons to a cyber attack, no matter how disruptive or destructive?

Beyond credibility, deterrence makes many other assumptions that are problematic in the cyber war context. It assumes an adversary capable of being deterred. Can most of those who would perpetrate a cyber attack be deterred? Will al-Qa’ida be deterred? How about a band of nationalistic or even just thrill-seeker, bandwagon hackers for hire? Second, it assumes clear lines of **command and control**. Sure, some hacker groups might be funded and assisted to a great degree by states. But ultimately, even cyber war theorists will admit that it is doubtful that states have complete control over their armies of hacker mercenaries. How will deterrence play out in this kind of scenario?

**And attacks collapse military war fighting capability.**

**Loudermilk 11** (Micah, Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University*, Small Nuclear Reactors: Enabling Energy Security for Warfighters*, Small Wars Journal, March 27th 2011, http://smallwarsjournal.com/blog/small-nuclear-reactors-enabling-energy-security-for-warfighters)

Last month, the Institute for National Strategic Studies at National Defense University released a report entitled Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications. Authored by Dr. Richard Andres of the National War College and Hanna Breetz from Harvard University, the paper analyzes the potential for the Department of Defense to incorporate small reactor technology on its domestic military bases and in forward operating locations. According to Andres and Breetz, the reactors have the ability to solve two critical vulnerabilities in the military's mission: the dependence of domestic bases on the civilian electrical grid and the challenge of supplying ample fuel to troops in the field. Though considerable obstacles would accompany such a move -- which the authors openly admit -- the benefits are significant enough to make the idea merit serious consideration. At its heart, a discussion about military uses of small nuclear reactors is really a conversation about securing the nation's war fighting capabilities. Although the point that energy security **is** national security has become almost redundant -- quoted endlessly in government reports, think tank papers, and the like -- it is repeated for good reason. Especially on the domestic front, the need for energy security on military bases is often overlooked. There is no hostile territory in the United States, no need for fuel convoys to constantly supply bases with fuel, and no enemy combatants. However, while bases and energy supplies are not directly vulnerable, the civilian electrical grid on which they depend for 99% of their energy use is -- and that makes domestic installations highly insecure. The U.S. grid, though a technological marvel, is extremely old, brittle, and susceptible to a wide variety of problems that can result in power outages -- the 2003 blackout throughout the Northeast United States is a prime example of this. In the past, these issues were largely limited to accidents including natural disasters or malfunctions, however today, intentional threats such as cyber attacks represent a very real and growing threat to the grid. Advances in U.S. military technology have further increased the risk that a grid blackout poses to the nation's military assets. As pointed out by the Defense Science Board, **critical missions** including national strategic awareness and national command authorities depend on the national transmission grid. Additionally, capabilities vital to troops in the field -- including drones and satellite intelligence/reconnaissance -- are lodged at bases within the United States and their loss due to a blackout would **impair the ability** of troops to operate in forward operating areas. Recognition of these facts led the Defense Science Board to recommend "islanding" U.S. military installations to mitigate the electrical grid's vulnerabilities. Although DOD has undertaken a wide array of energy efficiency programs and sought to construct renewable energy facilities on bases, these endeavors will fall far short of the desired goals and still leave bases unable to function in the event of long-term outages. As the NDU report argues though, small nuclear reactors have the potential to alleviate domestic base grid vulnerabilities. With a capacity of anywhere between 25 and 300 megawatts, small reactors possess sufficient generation capabilities to power any military installation, and most likely some critical services in the areas surrounding bases, should a blackout occur. Moreover, making bases resilient to civilian power outages would reduce the incentive for an opponent to disrupt the grid in the event of a conflict as military capabilities would be unaffected. Military bases are also secure locations, reducing the associated fears that would surely arise from the distribution of reactors across the country. Furthermore, small nuclear reactors, by design, are significantly safer than prior generations of reactors due to passive safety features, simplified designs, sealed reactor cores, and lower operational requirements.

**Conventional wars are inevitable --- ineffectiveness leads to major power aggression and violent competition.**

**Horowitz 9** (Michael C. Horowitz and Dan A. Shalmon, Professor of Political Science @ University of Pennsylvania & Senior Analyst @ Lincoln Group, LLC. *The Future of War and American Military Strategy*, Orbis, Spring 2009)

It is important to recognize at the outset two key points about United States strategy and the potential costs and benefits for the United States in a changing security environment. First, the United States is very likely to remain fully engaged in global affairs. Advocates of restraint or global withdrawal, while popular in some segments of academia, remain on the **margins** of policy debates in Washington D.C. This could always change, of course. However, at present, **it is a given** that the United States will define its interests globally and pursue a strategy that requires capable military forces able to project power around the world. Because ‘‘indirect’’ counter-strategies are the rational choice for actors facing a strong state’s power projection, irregular/asymmetric threats are inevitable given America’s role in the global order.24 Second, the **worst-case scenario** is a loss of U.S. conventional superiority. Losing military control of the sea and the air, ‘‘the global commons,’’25 would render American global strategy **outmoded in an instant**. The idea that the United States must improve its capacity to fight counterinsurgency operations presumes a need to do so beyond defending the homeland and that the United States will have the capacity to intervene in future conflicts around the world. However, while it seems unlikely at present, what if developments in warfare cut down and then eliminated the conventional military superiority of the United States? The loss of conventional military superiority by the United States would probably make the current strategic environment **look like a picnic**.26 For example, currently a Marine unit deploying to Afghanistan or Iraq focuses most on the post-deployment battlefield tasks. However, imagine a world where commanders and soldiers, like their World War II forbears, must fear being sunk on a transport ship or shot out of the sky on the way over, or being targeted by electronic, nanotechnological, or directed energy or precision guided munitions when preparing to search a village for insurgents.27 In such a strategic environment, overseas deployments to win hearts and minds in a low intensity war or wipe out radical jihadi groups would likely—and logically— take a backseat to more ‘‘traditional’’ concerns: convoys, tank battles, air and coastal defenses, and crash programs to build a new generation of naval and air weapons to take back the seas and skies. Meanwhile, in the interim, the United States homeland would be more at risk than at any point since the World War II—arguably more threatened than in its entire history. What John Mearsheimer has called the ‘‘stopping power of water’’ previously functioned to shield the United States, with its oceanic buffers to the east and west, from existential threats. However, in the information age and if the United States no longer controls the waterways of the world, water may not be enough. A world without American conventional military superiority would also **encourage aggression** by regional actors eager to settle scores and take advantage of the fact that the United States could no longer destroy their military forces at a low cost, to say nothing of the global dangers inherent in the **competition among major powers** that could result. The latter scenario is the worst case and it bears mentioning only because it should inform the framework in which any debate about defense strategy occurs. Pg. 307-308

**That competition goes nuclear.**

**Kagan 7** (Frederick Kagan and Michael O’Hanlon 7, Fred’s a resident scholar at AEI, Michael is a senior fellow in foreign policy at Brookings, “The Case for Larger Ground Forces”, April, <http://www.aei.org/files/2007/04/24/20070424_Kagan20070424.pdf>)

We live at a time when wars not only rage in nearly **every region** but threaten to erupt in many places where the current relative calm is tenuous. To view this as a strategic military challenge for the United States is not to espouse a specific theory of America’s role in the world or a certain political philosophy. Such an assessment flows directly from the basic bipartisan view of American foreign policy makers since World War II that overseas threats must be countered before they can directly threaten this country’s shores, that the basic stability of the international system is essential to American peace and prosperity, and that no country besides the United States is in a position to lead the way in countering major challenges to the global order. Let us highlight the threats and their consequences with a few concrete examples, emphasizing those that involve key strategic regions of the world such as the Persian **Gulf** and **East Asia**, or key potential threats to American security, such as the spread of nuclear weapons and the strengthening of the global **Al Qaeda**/jihadist movement. The Iranian government has rejected a series of international demands to halt its efforts at enriching uranium and submit to international inspections. What will happen if the US—or Israeli—government becomes convinced that Tehran is on the verge of fielding a nuclear weapon? **North Korea**, of course, has already done so, and the ripple effects are beginning to spread. **Japan**’s recent election to supreme power of a leader who has promised to rewrite that country’s constitution to support increased armed forces—and, possibly, even nuclear weapons— may well alter the delicate balance of fear in Northeast Asia fundamentally and rapidly. Also, in the background, at least for now, **Sino Taiwanese** tensions continue to flare, as do tensions between **India and Pakistan**, **Pakistan and Afghanistan**, **Venezuela** and the United States, and so on. Meanwhile, the world’s nonintervention in Darfur troubles consciences from Europe to America’s Bible Belt to its bastions of liberalism, yet with no serious international forces on offer, the bloodletting will probably, tragically, continue unabated. And as bad as things are in Iraq today, they could get worse. What would happen if the key Shiite figure, Ali al Sistani, were to die? If another major attack on the scale of the Golden Mosque bombing hit either side (or, perhaps, both sides at the same time)? Such deterioration might convince many Americans that the war there truly was lost—but the costs of reaching such a conclusion would be enormous. Afghanistan is somewhat more stable for the moment, although a major Taliban offensive appears to be in the offing. Sound US grand strategy must proceed from the recognition that, over the next few years and decades, the world is going to be a very unsettled and quite dangerous place, with Al Qaeda and its associated groups as a subset of a much larger set of worries. The only serious response to this international environment is to develop armed forces capable of protecting America’s vital interests throughout this dangerous time. Doing so requires a military capable of a wide range of missions—including not only deterrence of great power conflict in dealing with potential hotspots in Korea, the Taiwan Strait, and the Persian Gulf but also associated with a variety of Special Forces activities and stabilization operations. For today’s US military, which already excels at high technology and is increasingly focused on re-learning the lost art of counterinsurgency, this is first and foremost a question of finding the resources to field a large-enough standing Army and Marine Corps to handle personnel intensive missions such as the ones now under way in Iraq and Afghanistan. Let us hope there will be no such large-scale missions for a while. But preparing for the possibility, while doing whatever we can at this late hour to relieve the pressure on our soldiers and Marines in ongoing operations, is prudent. At worst, the only potential downside to a major program to strengthen the military is the possibility of spending a bit too much money. Recent history shows no link between having a larger military and its overuse; indeed, Ronald Reagan’s time in office was characterized by higher defense budgets and yet much less use of the military, an outcome for which we can hope in the coming years, but hardly guarantee. While the authors disagree between ourselves about proper increases in the size and cost of the military (with O’Hanlon preferring to hold defense to roughly 4 percent of GDP and seeing ground forces increase by a total of perhaps 100,000, and Kagan willing to devote at least 5 percent of GDP to defense as in the Reagan years and increase the Army by at least 250,000), we agree on the need to start expanding ground force capabilities by at least 25,000 a year immediately. Such a measure is not only prudent, it is also badly overdue.

**Academic theory confirms a strong US military prevents extinction.**

**Barnett 11** (Thomas P.M., Former Senior Strategic Researcher and Professor in the Warfare Analysis & Research Department, Center for Naval Warfare Studies, U.S. Naval War College American military geostrategist and Chief Analyst at Wikistrat., worked as the Assistant for Strategic Futures in the Office of Force Transformation in the Department of Defense, “The New Rules: Leadership Fatigue Puts U.S., and Globalization, at Crossroads,” March 7 <http://www.worldpoliticsreview.com/articles/8099/the-new-rules-leadership-fatigue-puts-u-s-and-globalization-at-crossroads>)

Events in Libya are a further reminder for Americans that we stand at a crossroads in our continuing evolution as the world's sole full-service superpower. Unfortunately, we are increasingly seeking change without cost, and shirking from risk because we are tired of the responsibility. We don't know who we are anymore, and our president is a big part of that problem. Instead of leading us, he explains to us. Barack Obama would have us believe that he is practicing strategic patience. But many experts and ordinary citizens alike have concluded that he is actually beset by strategic incoherence -- in effect, a man overmatched by the job. It is worth first examining the larger picture: We live in a time of arguably the greatest structural change in the global order yet endured, with this historical moment's most amazing feature being its relative and absolute lack of mass violence. That is something to consider when Americans contemplate military intervention in Libya, because if we do take the step to prevent larger-scale killing by engaging in some killing of our own, we will not be adding to some fantastically imagined global death count stemming from the ongoing "megalomania" and "evil" of American "empire." We'll be engaging in the same sort of system-administering activity that has marked our stunningly successful stewardship of global order since World War II. Let me be more blunt: As the guardian of globalization, the U.S. military has been the greatest force for peace the world has ever known. Had America been removed from the global dynamics that governed the 20th century, the mass murder never would have ended. Indeed, it's entirely conceivable there would now be no identifiable human civilization left, once nuclear weapons entered the killing equation. But the world did not keep sliding down that path of perpetual war. Instead, America stepped up and changed everything by ushering in our now-perpetual great-power peace. We introduced the international liberal trade order known as globalization and played loyal Leviathan over its spread. What resulted was the collapse of empires, an explosion of democracy, the persistent spread of human rights, the liberation of women, the doubling of life expectancy, a roughly 10-fold increase in adjusted global GDP and a profound and persistent reduction in battle deaths from state-based conflicts. That is what American "hubris" actually delivered. Please remember that the next time some TV pundit sells you the image of "unbridled" American military power as the cause of global disorder instead of its cure. With self-deprecation bordering on self-loathing, we now imagine a post-American world that is anything but. Just watch who scatters and who steps up as the Facebook revolutions erupt across the Arab world. While we might imagine ourselves the status quo power, we remain the world's most vigorously revisionist force. As for the sheer "evil" that is our military-industrial complex, again, let's examine what the world looked like before that establishment reared its ugly head. The last great period of global structural change was the first half of the 20th century, a period that saw a death toll of about 100 million across two world wars. That comes to an average of 2 million deaths a year in a world of approximately 2 billion souls. Today, with far more comprehensive worldwide reporting, researchers report an average of less than 100,000 battle deaths annually in a world fast approaching 7 billion people. Though admittedly crude, these calculations suggest a 90 percent absolute drop and a 99 percent relative drop in deaths due to war. We are clearly headed for a world order characterized by multipolarity, something the American-birthed system was designed to both encourage and accommodate. But given how things turned out the last time we collectively faced such a fluid structure, we would do well to keep U.S. power, in all of its forms, deeply embedded in the geometry to come. To continue the historical survey, after salvaging Western Europe from its half-century of civil war, the U.S. emerged as the progenitor of a new, far more just form of globalization -- one based on actual free trade rather than colonialism. America then successfully replicated globalization further in East Asia over the second half of the 20th century, setting the stage for the Pacific Century now unfolding.

### Adv 2

**Advantage 2---Warming**

**Warming is real, anthropogenic, and reversible if we act now.**

**Nuccitelli 11** (Dana, An environmental scientist at a private environmental consulting firm in the Sacramento, California area. He has a Bachelor's Degree in astrophysics from the University of California at Berkeley, and a Master's Degree in physics from the University of California at Davis. He has been researching climate science, economics, and solutions as a hobby since 2006, and has contributed to Skeptical Science since September, 2010., Updated 2011, Originally Posted 9/24/2010, *The Big Picture*, http://www.skepticalscience.com/big-picture.html)

The Earth is Warming We know the planet is warming from surface temperature stations and satellites measuring the temperature of the Earth's surface and lower atmosphere. We also have various tools which have measured the warming of the Earth's oceans. Satellites have measured an energy imbalance at the top of the Earth's atmosphere. Glaciers, sea ice, and ice sheets are all receding. Sea levels are rising. Spring is arriving sooner each year. There's simply no doubt - the planet is warming (Figure 1). Global Warming Continues And yes, the warming is continuing. The 2000s were hotter than the 1990s, which were hotter than the 1980s, which were hotter than the 1970s. 2010 tied for the hottest year on record. The 12-month running average global temperature broke the record three times in 2010, according to NASA Goddard Institute for Space Studies (GISS) data. Sea levels are still rising, ice is still receding, spring is still coming earlier, there's still a planetary energy imbalance, etc. etc. Contrary to what some would like us to believe, the planet has not magically stopped warming. Those who argue otherwise are confusing short-term noise with long-term global warming (Figure 2). Foster and Rahmstorf (2011) showed that when we filter out the short-term effects of the sun, volcanoes, and El Niño cycles, the underlying man-made global warming trend becomes even more clear (Figure 3). For as much as atmospheric temperatures are rising, the amount of energy being absorbed by the planet is even more striking when one looks into the deep oceans and the change in the global heat content (Figure 4). Humans are Increasing Atmospheric Greenhouse Gases The amount of greenhouse gases in the atmosphere - particularly carbon dioxide (CO2) - has been rising steadily over the past 150 years. There are a number of lines of evidence which clearly demonstrate that this increase is due to human activities, primarily burning fossil fuels. The most direct of evidence involves simple accounting. Humans are currently emitting approximately 30 billion tons of CO2 per year, and the amount in the atmosphere is increasing by about 15 billion tons per year. Our emissions have to go somewhere - half goes into the atmosphere, while the other half is absorbed by the oceans (which is causing another major problem - ocean acidification). We also know the atmospheric increase is from burning fossil fuels because of the isotopic signature of the carbon in the atmosphere. Carbon comes in three different isotopes, and plants have a preference for the lighter isotopes. So if the fraction of lighter carbon isotopes in the atmosphere is increasing, we know the increase is due to burning plants and fossil fuels, and that is what scientists observe. The fact that humans are responsible for the increase in atmospheric CO2 is settled science. The evidence is clear-cut. Human Greenhouse Gases are Causing Global Warming There is overwhelming evidence that humans are the dominant cause of the recent global warming, mainly due to our greenhouse gas emissions. Based on fundamental physics and math, we can quantify the amount of warming human activity is causing, and verify that we're responsible for essentially all of the global warming over the past 3 decades. The aforementioned Foster and Rahmstorf (2011) found a 0.16°C per decade warming trend since 1979 after filtering out the short-term noise. In fact we expect human greenhouse gas emissions to cause more warming than we've thus far seen, due to the thermal inertia of the oceans (the time it takes to heat them). Human aerosol emissions are also offsetting a significant amount of the warming by causing global dimming. Huber and Knutti (2011) found that human greenhouse gas emissions have caused 66% more global warming than has been observed since the 1950s, because the cooling effect of human aerosol emissions have offset about 44% of that warming. They found that overall, human effects are responsible for approximately 100% of the observed global warming over the past 60 years (Figure 5). There are also numerous 'fingerprints' which we would expect to see from an increased greenhouse effect (i.e. more warming at night, at higher latitudes, upper atmosphere cooling) that we have indeed observed (Figure 6). Climate models have projected the ensuing global warming to a high level of accuracy, verifying that we have a good understanding of the fundamental physics behind climate change. Sometimes people ask "what would it take to falsify the man-made global warming theory?". Well, basically it would require that our fundamental understanding of physics be wrong, because that's what the theory is based on. This fundamental physics has been scrutinized through scientific experiments for decades to centuries. The Warming will Continue We also know that if we continue to emit large amounts of greenhouse gases, the planet will continue to warm. We know that the climate sensitivity to a doubling of atmospheric CO2 from the pre-industrial level of 280 parts per million by volume (ppmv) to 560 ppmv (we're currently at 390 ppmv) will cause 2–4.5°C of warming. And we're headed for 560 ppmv in the mid-to-late 21st century if we continue business-as-usual emissions. The precise sensitivity of the climate to increasing CO2 is still fairly uncertain: 2–4.5°C is a fairly wide range of likely values. However, even if we're lucky and the climate sensitivity is just 2°C for doubled atmospheric CO2, if we continue on our current emissions path, we will commit ourselves to that amount of warming (2°C above pre-industrial levels) within the next 75 years. The Net Result will be Bad There will be some positive results of this continued warming. For example, an open Northwest Passage, enhanced growth for some plants and improved agriculture at high latitudes (though this will require use of more fertilizers), etc. However, the negatives will almost certainly outweigh the positives, by a long shot. We're talking decreased biodiversity, water shortages, increasing heat waves (both in frequency and intensity), decreased crop yields due to these impacts, damage to infrastructure, displacement of millions of people, etc. Arguments to the contrary are superficial One thing I've found in reading skeptic criticisms of climate science is that they're consistently superficial. For example, the criticisms of James Hansen's 1988 global warming projections never go beyond "he was wrong," when in reality it's important to evaluate what caused the discrepancy between his projections and actual climate changes, and what we can learn from this. And those who argue that "it's the Sun" fail to comprehend that we understand the major mechanisms by which the Sun influences the global climate, and that they cannot explain the current global warming trend. And those who argue "it's just a natural cycle" can never seem to identify exactly which natural cycle can explain the current warming, nor can they explain how our understanding of the fundamental climate physics is wrong. There are legitimate unresolved questions Much ado is made out of the expression "the science is settled." The science is settled in terms of knowing that the planet is warming rapidly, and that humans are the dominant cause. There are certainly unresolved issues. As noted above, there's a big difference between a 2°C and a 4.5°C warming for a doubling of atmospheric CO2, and it's an important question to resolve, because we need to know how fast the planet will warm in order to know how fast we need to reduce our greenhouse gas emissions. There are significant uncertainties in some feedbacks which play into this question. For example, will clouds act as a net positive feedback (by trapping more heat, causing more warming) or negative feedback (by reflecting more sunlight, causing a cooling effect) as the planet continues to warm? And exactly how much global warming is being offset by human aerosol emissions? These are the sorts of questions we should be debating, and the issues that most climate scientists are investigating. Unfortunately there is a there is a very vocal contingent of people determined to continue arguing the resolved questions for which the science has already been settled. And when climate scientists are forced to respond to the constant propagation of misinformation on these settled issues, it just detracts from our investigation of the legitimate, unresolved, important questions. Smart Risk Management Means Taking Action People are usually very conservative when it comes to risk management. Some of us buy fire insurance for our homes when the risk of a house fire is less than 1%, for example. When it comes to important objects like cars and homes, we would rather be safe than sorry. But there is arguably no more important object than the global climate. We rely on the climate for our basic requirements, like having enough accessible food and water. Prudent risk management in this case is clear. The scientific evidence discussed above shows indisputably that there is a risk that we are headed towards very harmful climate change. There are uncertainties as to how harmful the consequences will be, but uncertainty is not a valid reason for inaction. There's very high uncertainty whether I'll ever be in a car accident, but it would be foolish of me not to prepare for that possibility by purchasing auto insurance. Moreover, uncertainty cuts both ways, and it's just as likely that the consequences will be worse than we expect as it is that the consequences won't be very bad. We Can Solve the Problem The good news is that we have the tools we need to mitigate the risk posed by climate change. A number of plans have been put forth to achieve the necessary greenhouse gas emissions cuts (i.e. here and here and here). We already have all the technology we need. Opponents often argue that mitigating global warming will hurt the economy, but the opposite is true. Those who argue that reducing emissions will be too expensive ignore the costs of climate change - economic studies have consistently shown that mitigation is several times less costly than trying to adapt to climate change (Figure 7). This is why there is a consensus among economists with expertise in climate that we should put a price on carbon emissions (Figure 8). should US reduce emissions The Big Picture The big picture is that we know the planet is warming, humans are causing it, there is a substantial risk to continuing on our current path, but we don't know exactly how large the risk is. However, uncertainty regarding the magnitude of the risk is not an excuse to ignore it. We also know that if we continue on a business-as-usual path, the risk of catastrophic consequences is very high. In fact, the larger the uncertainty, the greater the potential for the exceptionally high risk scenario to become reality. We need to continue to decrease the uncertainty, but it's also critical to acknowledge what we know and what questions have been resolved, and that taking no action is not an option. The good news is that we know how to solve the problem, and that doing so will minimize the impact not only on the climate, but also on the economy. The bottom line is that from every perspective - scientific, risk management, economic, etc. - there is no reason not to immeditately take serious action to mitigate climate change, and failing to do so would be exceptionally foolish.

**SMRs are the only solution that adresses the magnitude of warming.**

**Palley 11 (**Reese Palley, The London School of Economics, 2011, The Answer: Why Only Inherently Safe, Mini Nuclear Power Plans Can Save Our World, p. 186-90)

The central investigation of this book has been directed at the scale of the nuclear industry. The book has argued that all anthropogenic challenges that put in question **continued human existence** on Earth are a **matter of scale**. It was nature’s unanticipated success with her human experiment, the evolutionary choice of brains over brawn, setting in motion the underlying scale problems that opened our Pandora’s box of calamities. The history of man on Earth can best be viewed as a race between population and resources in which, for some millennia, population expansion leads and the Earth’s resources have been straining to catch up. When population bloomed from 100 million brainy humans to a billion, the problems of scale emerged as the price we had to pay for success as a species. The conversion of forests to agriculture, responding to the need to feed a burgeoning population, initiated the emerging problem of scale. The elimination of oxygen-emitting forests was mitigated to a large measure in the beginning of our population growth by the slow rate of change of the deforestation, which allowed an absorbable increase of CO2 in the atmosphere. Natural processes, such as the ability of the oceans to take up CO2, tamped down global warming. But as the scale of the release of warming gases exploded a few hundred years ago, our remaining forests and our seas, our first line of defense against CO2 imbalance, could not cope and the level of CO2 has risen alarmingly each year since 1800. When human population climbed from a billion to six billion and these six billion reveled in the enormous energy content of coal, the scenario for **disaster on a global scale** came into play. The impact of the loss of forest paled in comparison to the havoc that the use of fossil fuels represented. In a world that was hungry for energy and, not incidentally, living on a Malthusian edge of food supply, coal burst upon us as manna from heaven. Coal was everywhere, easy to mine, and in enormous, almost unending supply It generated the cheap heat needed to run the engines of early industrialization. An unintended Faustian bargain was struck. The immediate cost of coal in the cities, dirt and pollution, were not out of sync with what urban man had lived with for centuries. It was beyond the science and the understanding of the time that burning vast millennial coal deposits would do little more than discommode the proximate few and benefit many. Again it was not the burning, it was **the scale** of the burning that dumped billions of tons of CO2 into the atmosphere. We are now presented with a horrendous invoice that must be paid if we are to **survive** in anywhere near the comfort to which we have become accustomed. It has been the intent of this book to argue that the **scale of the warming catastrophe** must be viewed primarily in terms of the continuing flow of CO2 into the atmosphere. Every possible source of CO2, no matter how small, must be identified and interdicted, since every fourth molecule of the gas will remain with us as a climate moderator for thousands of years. What we find is that all of the sources of energy including so-called green energy are CO2-culpable and that each, in spite of claims to the contrary, adds its tiny mite or enormous mass to the climate changes looming in man’s future. The book argues that the scale of the consumption of fossil fuels is clearly unsustainable and, more to the point, that the feeble attempts to restrict CO2 production are little more than a glossing over of the problem. Capping but not ending production of greenhouse gases only magnifies the unthinkable future costs of bringing the level of CO2 and other greenhouse gases back into balance. Logic dictates that merely limiting greenhouse gases pushes possible solutions farther and farther into the future and does little to mitigate the difficulties that will arise in the near future. Logic dictates that our reasonably comfortable survival depends on the immediate and total cessation of increases to parts per million of CO2 in the air. Logic dictates that if we are to continue to enjoy the level of comfort, wealth, and ease afforded us since the beginning of the twentieth century we must not only halt the increase but commence the actual decrease of warming gases at work in the atmosphere. That conclusion brings the book to the problems and the solutions inherent in nuclear power, the **only energy source** that can guarantee us a reasonable future that might be resistant to CO2 warming. Here the argument returns once again to the problem of scale of nuclear reactors, especially as the size of these reactors is related to the brief time left to us to get a grip on calamitous climate changes. The beginnings of nuclear energy lay in the demands of war. The battle between good and evil characterized by the Second World War gave hurried birth to a discovery that had the inherent power to both destroy and salvage. The power to destroy required plutonium on an enormous scale, which was projected forward into the postwar development of civilian reactors. The demand for scarce plutonium for the bombs of the cold war defined the type of reactors that were being developed. These were the breeder reactors, which spewed out plutonium measured in tons that had previously been available only in ounces, and would continue to do so when the wartime need was far behind us. What was once precious, rare, and desirable has become dangerous nuclear waste, and the imperfectly perceived scale of the waste problem has seriously inhibited the logical growth and development of nuclear power. By some unthinkable universal coincidence, nuclear power became available to man for war at the same time that it could prove to be the solution to man’s greatest peacetime challenge. But the gigawatt nuclear power plants that emerged from the war had within them the seeds of their own severe limitation. The scale of the risks, real and imagined, grew exponentially as the scale of energy output grew only linearly. These risks, some merely perceived, some dangerously real and some financial, have conspired to restrict the enormous expansion of nuclear power that is needed to quickly replace our present consumption of energy from fossil fuels. The present rate of replacement of fossil with nuclear sources is at a pace that will have little impact on ultimately dealing with the CO2 imbalance. This slow rate of change is compounded of public fears, bureaucratic regulatory mechanisms resistant to novel solutions, and a private capital market that is unable to conjure with the imagined and real risks of the huge gigawatt reactors that dominate the industry. It is a Gordian knot that cannot be unraveled but which can only be cut by a political sword that, alas, still lacks the edge to do the job. By another rare act of cosmic fortuity, there is a parallel existing nuclear technology that, barring political interference, is capable of addressing the scale problems inherent in gigawatt reactors. From the beginning of the nuclear era, researchers such as Weinberg and Wigner and Teller developed small, inherently safe nuclear reactors that did not breed plutonium. This was reason enough for the military, balancing urgent demands on research and development budgets, to consign the concept of “smaller and safer is better” to dusty shelves in our national science attic. This book has argued that small reactors, that produce a tenth of the energy of the giants also generate inordinately less of the risk that inhibits growth of the industry. Construction of small reactors is a fraction of the cost of construction of gigawatt reactors. Thus the number of years that scarce capital is tied up and at risk is substantially reduced. The book argues that a 100 MWe reactor88 is a much bigger hardware bargain than a gigawatt reactor, which, from start to output, can cost $15 billion. It is not only the hardware costs that contribute to the devilish details of risk. The problem is the inability of the market to accurately or even approximately estimate the real cost of the capital that would be tied up for over a decade in a project that, through technological advancements, could be obsolete before it ever joins the grid.

**All alternatives are insufficiency in scope. Safety concerns are hype.**

**Nordhaus 12** (Michael Shellenberger, Jessica Lovering, Founder of the Breakthrough Institute, graduate of Earlham College and holds a masters degree in cultural anthropology from the University of California, Santa Cruz, "New Nukes: Why We Need Radical Innovation to Make New Nuclear Energy Cheap", September 11, http://thebreakthrough.org/index.php/programs/energy-and-climate/new-nukes/)

Arguably, the biggest impact of Fukushima on the nuclear debate, ironically, has been to force a growing number of pro-nuclear environmentalists out of the closet, including us. The reaction to the accident by anti-nuclear campaigners and many Western publics put a fine point on the gross misperception of risk that informs so much anti-nuclear fear. Nuclear remains the only proven technology capable of reliably generating zero-carbon energy at a scale that can have any impact on global warming. Climate change -- and, for that matter, the enormous present-day health risks associated with burning coal, oil, and gas -- simply dwarf any legitimate risk associated with the operation of nuclear power plants. About 100,000 people die every year due to exposure to air pollutants from the burning of coal. By contrast, about 4,000 people have died from nuclear energy -- ever -- almost entirely due to Chernobyl. But rather than simply lecturing our fellow environmentalists about their misplaced priorities, and how profoundly inadequate present-day renewables are as substitutes for fossil energy, we would do better to take seriously the real obstacles standing in the way of a serious nuclear renaissance. Many of these obstacles have nothing to do with the fear-mongering of the anti-nuclear movement or, for that matter, the regulatory hurdles imposed by the U.S. Nuclear Regulatory Commission and similar agencies around the world. As long as nuclear technology is characterized by enormous upfront capital costs, it is likely to remain just a hedge against overdependence on lower-cost coal and gas, not the wholesale replacement it needs to be to make a serious dent in climate change. Developing countries need large plants capable of bringing large amounts of new power to their fast-growing economies. But they also need power to be cheap. So long as coal remains the cheapest source of electricity in the developing world, it is likely to remain king. The most worrying threat to the future of nuclear isn't the political fallout from Fukushima -- it's economic reality. Even as new nuclear plants are built in the developing world, old plants are being retired in the developed world. For example, Germany's plan to phase-out nuclear simply relies on allowing existing plants to be shut down when they reach the ends of their lifetime. Given the size and cost of new conventional plants today, those plants are unlikely to be replaced with new ones. As such, the combined political and economic constraints associated with current nuclear energy technologies mean that nuclear energy's share of global energy generation is unlikely to grow in the coming decades, as global energy demand is likely to increase faster than new plants can be deployed. To move the needle on nuclear energy to the point that it might actually be capable of displacing fossil fuels, we'll need new nuclear technologies that are cheaper and smaller. Today, there are a range of nascent, smaller nuclear power plant designs, some of them modifications of the current light-water reactor technologies used on submarines, and others, like thorium fuel and fast breeder reactors, which are based on entirely different nuclear fission technologies. Smaller, modular reactors can be built much faster and cheaper than traditional large-scale nuclear power plants. Next-generation nuclear reactors are designed to be incapable of melting down, produce drastically less radioactive waste, make it very difficult or impossible to produce weapons grade material, use less water, and require less maintenance. Most of these designs still face substantial technical hurdles before they will be ready for commercial demonstration. That means a great deal of research and innovation will be necessary to make these next generation plants viable and capable of displacing coal and gas. The United States could be a leader on developing these technologies, but unfortunately U.S. nuclear policy remains mostly stuck in the past. Rather than creating new solutions, efforts to restart the U.S. nuclear industry have mostly focused on encouraging utilities to build the next generation of large, light-water reactors with loan guarantees and various other subsidies and regulatory fixes. With a few exceptions, this is largely true elsewhere around the world as well. Nuclear has enjoyed bipartisan support in Congress for more than 60 years, but the enthusiasm is running out. The Obama administration deserves credit for authorizing funding for two small modular reactors, which will be built at the Savannah River site in South Carolina. But a much more sweeping reform of U.S. nuclear energy policy is required. At present, the Nuclear Regulatory Commission has little institutional knowledge of anything other than light-water reactors and virtually no capability to review or regulate alternative designs. This affects nuclear innovation in other countries as well, since the NRC remains, despite its many critics, the global gold standard for thorough regulation of nuclear energy. Most other countries follow the NRC's lead when it comes to establishing new technical and operational standards for the design, construction, and operation of nuclear plants. What's needed now is a new national commitment to the development, testing, demonstration, and early stage commercialization of a broad range of new nuclear technologies -- from much smaller light-water reactors to next generation ones -- in search of a few designs that can be mass produced and deployed at a significantly lower cost than current designs. This will require both greater public support for nuclear innovation and an entirely different regulatory framework to review and approve new commercial designs. In the meantime, developing countries will continue to build traditional, large nuclear power plants. But time is of the essence. With the lion's share of future carbon emissions coming from those emerging economic powerhouses, the need to develop smaller and cheaper designs that can scale faster is all the more important. A true nuclear renaissance can't happen overnight. And it won't happen so long as large and expensive light-water reactors remain our only option. But in the end, **there is no credible path to mitigating climate change without a massive global expansion of nuclear energy**. If you care about climate change, nothing is more important than developing the nuclear technologies we will need to get that job done.

**The impact of warming is complete extinction.**

**Brandenberg 99** (John & Monica Paxson, Visiting Prof. Researcher @ Florida Space Institute, Physicist Ph.D., Science Writer, Dead Mars Dying Earth, Pg 232-233)

The ozone hole expands, driven by a monstrous synergy with global warming that puts more catalytic ice crystals into the stratosphere, but this affects the far north and south and not the major nations’ heartlands. The seas rise, the tropics roast but the media networks no longer cover it. The Amazon rainforest becomes the Amazon desert. Oxygen levels fall, but profits rise for those who can provide it in bottles. An equatorial high-pressure zone forms, forcing drought in central Africa and Brazil, the Nile dries up and the monsoons fail. Then inevitably, at some unlucky point in time, a major unexpected event occurs—a major volcanic eruption, a sudden and dramatic shift in ocean circulation or a large asteroid impact (those who think freakish accidents do not occur have paid little attention to life or Mars), or a nuclear war that starts between Pakistan and India and escalates to involve China and Russia . . . Suddenly the gradual climb in global temperatures goes on a mad excursion as the oceans warm and release large amounts of dissolved carbon dioxide from their lower depths into the atmosphere. Oxygen levels go down precipitously as oxygen replaces lost oceanic carbon dioxide. Asthma cases double and then double again. Now a third of the world fears breathing. As the oceans dump carbon dioxide, the greenhouse effect increases, which further warms the oceans, causing them to dump even more carbon. Because of the heat, plants die and burn in enormous fires, which release more carbon dioxide, and the oceans evaporate, adding more water vapor to the greenhouse. Soon, we are in what is termed a runaway greenhouse effect, as happened to Venus eons ago. The last two surviving scientists inevitably argue, one telling the other, “See! I told you the missing sink was in the ocean!” Earth, as we know it, dies. After this Venusian excursion in temperatures, the oxygen disappears into the soil, the oceans evaporate and are lost and the dead Earth loses its ozone layer completely. Earth is too far from the Sun for it to be the second Venus for long. Its atmosphere is slowly lost—as is its water—because of ultraviolet bombardment breaking up all the molecules apart from carbon dioxide. As the atmosphere becomes thin, the Earth becomes colder. For a short while temperatures are nearly normal, but the ultraviolet sears any life that tries to make a comeback. The carbon dioxide thins out to form a thin veneer with a few wispy clouds and dust devils. Earth becomes the second Mars—red, desolate, with perhaps a few hardy microbes surviving.

**Every increase must be resisted**.

**Pittock 10** (Barrie, Led the Climate Impact Group in CSIRO until his retirement in 1999. He contributed to or was the lead author of all four major reports of the Intergovernmental Panel on Climate Change. He was awarded a Public Service Medal in 1999 and is CSIRO Honorary Fellow, *Climate Change: The Science, Impacts, and Solutions*, 2010, pg. 326)

It isabsolutelycrucial that options for reducing greenhouse gas emissions be pursued with a real sense of urgency. **Every extra tonne** of carbon dioxide placed into the atmosphere increases the very real risk of dangerous climate change**,** and nobody will escape the direct or indirect consequences.We are in danger of **inadvertently** tripping the 'on' switch to disaster, with an inevitably long delay before it can be turned off again. What is done now that enhances climate change cannot be easily undone, so we should **err on the side of caution***.* Butit is not all doom and gloom:we can save theday. As we have seen earlier in this book, the technology already exists to rapidly reduce emissions via large investments in energy efficiency (which saves money) and renewable base-load power (which will rapidly come down in price as it is scaled up). Supplemented later this century by large-scale carbon capture and sequestration and (if necessary) by safe nuclear power, the peak in greenhouse gas concentrations can be minimized and then brought down.We need to reduce carbon emissions**,** and we **need to do it fast.** Although we are facing an emergency**,** with an appropriate allocation of ingenuity and resources**,** together we can do it.We owe that, at least, to our children**.**

**The plan is a fulcrum for exports that massively reduces emissions.**

**Rosner 11** (Robert – Past Director of the Argonne National Laboratory, The William E. Wrather Distinguished Service Professor @ the Departments of Astronomy and Astrophysics and Physics, Enrico Fermi Institute, and the College, Senior Fellow @ the Computation Institute (CI), Stephen Goldberg – Special assistant to the director at Argonne National Laboratory, *Small Modular Reactors – Key to Future Nuclear Power Generation in the U.S.*, Energy Policy Institute at Chicago The Harris School of Public Policy Studies, Technical Paper, November 2011)

As stated earlier, SMRs have the potential to achieve significant greenhouse gas emission reductions. They could provide alternative baseload power generation to facilitate the retirement of older, smaller, and less efficient coal generation plants that would, otherwise, not be good candidates for retrofitting carbon capture and storage technology. They could be deployed in regions of the U.S. and the world that have less potential for other forms of carbon-free electricity, such as solar or wind energy. There may be technical or market constraints, such as projected electricity demand growth and transmission capacity, which would support SMR deployment but not GW-scale LWRs. From the on-shore manufacturing perspective, a key point is that the manufacturing base needed for SMRs can be developed domestically. Thus, while the large commercial LWR industry is seeking to transplant portions of its supply chain from current foreign sources to the U.S., the SMR industry offers the potential to establish a large domestic manufacturing base building upon already existing U.S. manufacturing infrastructure and capability, including the Naval shipbuilding and underutilized domestic nuclear component and equipment plants. The study team learned that a number of sustainable domestic jobs could be created – that is, the full panoply of design, manufacturing, supplier, and construction activities – if the U.S. can establish itself as a credible and substantial designer and manufacturer of SMRs. While many SMR technologies are being studied around the world, a strong U.S. commercialization program can enable U.S. industry to be first to market SMRs, thereby serving as a **fulcrum for export growth** as well as a lever in influencing international decisions on deploying both nuclear reactor and nuclear fuel cycle technology. A viable U.S.-centric SMR industry would enable the U.S. to recapture technological leadership in commercial nuclear technology, which has been lost to suppliers in France, Japan, Korea, Russia, and, now rapidly emerging, China.

### Solvency

**Contention Three – Solvency**

**Military action is necessary---it shapes technology development and overcomes market failures---that's key to commercialization.**

**Andres 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. Breetz – 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*, Strategic Forum, National Defense University, Institute for National Strategic Studies, February 2011, http://www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf)

DoD as first Mover Thus far, this paper has reviewed two of DOD’s most pressing energy vulnerabilities—grid insecurity and fuel convoys—and explored how they could be addressed by small reactors. We acknowledge that there are many un- certainties and risks associated with these reactors. On the other hand, failing to pursue these technologies raises its own set of risks for DOD, which we review in this section: first, small reactors may fail to be commercialized in the United States; second, the designs that get locked in by the private market may not be optimal for DOD’s needs; and third, expertise on small reactors may become concentrated in foreign countries. By taking an early “first mover” role in the small reactor market, DOD could mitigate these risks and secure the long-term availability and appropriateness of these technologies for U.S. military applications. The “Valley of Death.” Given the promise that small reactors hold for military installations and mo- bility, DOD has a compelling interest in ensuring that they make the leap from paper to production. How- ever, if DOD does not provide an initial demonstration and market, there is a chance that the U.S. small reactor industry may never get off the ground. The leap from the laboratory to the marketplace is so difficult to bridge that it is widely referred to as the “Valley of Death.” Many promising technologies are never commercialized due to a **variety of market failures**— including technical and financial uncertainties, information asymmetries, capital market imperfections, transaction costs, and environmental and security externalities—that impede financing and early adoption and can lock innovative technologies **out of the marketplace**.28 In such cases, the Government can help a worthy technology to bridge the Valley of Death by accepting the first mover costs and demonstrating the technology’s scientific and economic viability.29 Historically, nuclear power has been “the **most clear-cut example** . . . of an important general-purpose technology that in the absence of military and defense-related procurement would not have been developed at all.”30 Government involvement is likely to be **crucial** for innovative, next-generation nuclear technology as well. Despite the widespread revival of interest in nu- clear energy, Daniel Ingersoll has argued that radically innovative designs face an uphill battle, as “the high capital cost of nuclear plants and the painful lessons learned during the first nuclear era have created a prevailing fear of first-of-a-kind designs.”31 In addition, **M**assachusetts **I**nstitute of **T**echnology reports on the Future of Nuclear Power called for the Government to provide modest “first mover” assistance to the private sector due to several barriers that have hindered the nu- clear renaissance, such as securing high up-front costs of site-banking, gaining NRC certification for new technologies, and demonstrating technical viability.32 It is possible, of course, that small reactors will achieve commercialization without DOD assistance. As discussed above, they have garnered increasing attention in the energy community. Several analysts have even ar- gued that small reactors could play a key role in the sec- ond nuclear era, given that they may be the only reactors within the means of many U.S. utilities and developing countries.33 However, given the tremendous regulatory hurdles and technical and financial uncertainties, it appears far from certain that the U.S. small reactor industry will take off. If DOD wants to ensure that small reactors are available in the future, then it should **pursue a leadership** role now. Technological Lock-in. A second risk is that if small reactors do reach the market without DOD assistance, the designs that succeed may not be optimal for DOD’s applications. Due to a variety of positive feedback and increasing returns to adoption (including dem- onstration effects, technological interdependence, net- work and learning effects, and economies of scale), the designs that are initially developed can become “locked in.”34 Competing designs—even if they are superior in some respects or better for certain market segments— can face barriers to entry that lock them out of the mar- ket. If DOD wants to ensure that its preferred designs are **not locked out**, then it should take a first mover role on small reactors. It is far too early to gauge whether the private market and DOD have aligned interests in reactor de- signs. On one hand, Matthew Bunn and Martin Ma- lin argue that what the world needs is cheaper, safer, more secure, and more proliferation-resistant nuclear reactors; presumably, many of the same broad qualities would be favored by DOD.35 There are many varied market niches that could be filled by small reactors, because there are many different applications and set- tings in which they can be used, and it is quite pos- sible that some of those niches will be compatible with DOD’s interests.36 On the other hand, DOD may have specific needs (transportability, for instance) that would not be a high priority for any other market segment. Moreover, while DOD has unique technical and **organizational capabilities** that could enable it to pursue more radically innovative reactor lines, DOE has indicated that it will focus its initial small reactor deployment efforts on LWR designs.37 If DOD wants to ensure that its preferred reactors are developed and available in the future, it should take a leadership role now. Taking a first mover role does not necessarily mean that DOD would be “**picking a winner**” among small reactors, as the market will probably pursue multiple types of small reactors. Nevertheless, DOD leadership would likely have a profound effect on the industry’s timeline and trajectory.

**Absent military involvement SMRs will not come to market.**

**Cohen 12** (Armond, Executive Director – Clean Air Task Force, *DoD: A Model for Energy Innovation?*, http://energy.nationaljournal.com/2012/05/powering-our-military-whats-th.php#2211477)

Recently, the Clean Air Task Force and our colleagues at The Consortium for Science, Policy and Outcomes at Arizona State University, assessed the opportunities and challenges at the U.S. Department of Defense for accelerating a national and even global transition to advanced and clean energy technologies.

Building on background papers, a workshop, new research, and a previous project that articulated foundational principles for federal energy innovation policies, this report identified the sources of DoD’s success in fostering new technology that can be applied to both civilian energy innovation efforts and future defense-related energy efforts.

Unlike most other agencies, including the Energy Department, the Pentagon is the ultimate customer for the new technology it helps create, spending some $200 billion each year on R&D and procurement. The implications of DoD’s role as customer have not been widely appreciated, as:

· DoD, uniquely in government, supports multi-year, billion-dollar “end to end” innovation efforts that produce technology that is continuously tested, deployed and refined on bases and in the field, providing **real world feedback** that leads to **increases in performance** and **reductions in cost**. By contrast, most of the federal government’s civilian energy innovation efforts involve research loosely connected at best with the few commercialization efforts that it supports.

· DoD and its contractors know how to **bring together multiple innovations** to achieve **system-level advances** leading to **big performance gains** (examples range from nuclear submarines to unmanned aircraft to large-scale information systems). This systems approach is precisely what is needed to advance clean energy technologies.

· Relatively stable, multi-year funding allows the Pentagon to pursue “long cycle” innovation that is necessary for large, capital- intensive technologies and supports a highly capable contractor base that can respond to changing national security demands.

· The Pentagon’s scope and budget has allowed it to **experiment** with new and **creative innovation tools** such as the well-known Defense Advanced Projects Research Agency, which has produced extraordinary technological breakthroughs; and the Environmental Security Technology Certification Program, which develops and demonstrates cost-effective improvements in environmental and energy technologies for military installations and equipment.

· Because of DoD’s size and demands for performance and reliability, it is unique among government and private sector organizations as a **demonstration test-bed**. Smart-grid technologies and advanced energy management systems for buildings are already poised to benefit from this aspect of the Pentagon’s innovation system.

· DoD has collaborated effectively with other federal agencies, including the Department of Energy and its predecessors (for example, to advance nuclear energy technologies). Continuing competition and cooperation between DoD and DOE will spur energy innovation.

DoD’s innovation capabilities can enhance U.S. national security, improve U.S. international competitiveness, and spur global energy restructuring and greenhouse gas emissions reductions.

At the same time, while providing enormous opportunities to develop and test energy efficiency technologies and small scale distributed energy appropriate to forward bases, the Pentagon is unlikely to become an all-purpose hub for advancing all categories of clean-energy technologies, because its energy innovation activities will be sustainable only where they can support the nation’s defense capabilities.

Therefore, many other large-scale technologies that are of great importance to improving the environment, such as carbon-free central station generation or zero carbon transportation, may not as easily fit with DoD’s mission. Possible exceptions might include small modular nuclear reactors that can be used for producing independent, non-grid power at military bases, or, conceivably, zero-carbon liquid fuels other than anything resembling current generation biofuels.

In any case, the challenge for military-led energy innovation is to further define and delineate avenues for improved clean-energy performance that are linked to the national strategic mission. History shows that when such linkages are strong, DoD’s innovation capabilities are **second to none**.

But perhaps the more important lesson from this work is that a serious American program of civilian energy innovation could profitably look to Pentagon history for clues about how to succeed. Stable and significant funding; “end to end” thinking on long innovation cycles; procurement of advanced energy technology at commercial scale as well as research and testing; and institutional experimentation and diversity using multiple institutional channels – these have been important reasons that the United States has the most lethal and effective military arsenal in world history. If we’re serious about maintaining American superiority in the energy technology domain, some of this “defense innovation DNA” needs to be replicated or adapted to meet the challenge.

**SMRs are cost-effective, safe and can come online in 3 years**

**Szondy 12** (David, freelance writer based in Monroe, Washington. An award-winning playwright, he has contributed to Charged and iQ magazine and is the author of the website Tales of Future Past, February 16, "Feature: Small modular nuclear reactors - the future of energy?", www.gizmag.com/small-modular-nuclear-reactors/20860/)

Small Modular Reactors¶ One way of getting around many of these problems is through the development of small modular reactors (SMR). These are reactors capable of generating about 300 megawatts of power or less, which is enough to run 45,000 US homes. Though small, SMRs are proper reactors. They are quite different from the radio-thermal generators (RTG) used in spacecraft and remote lighthouses in Siberia. Nuclear reactors such as SMRs use controlled nuclear fission to generate power while RTGs use natural radioactive decay to power a relatively simple thermoelectric generator that can only produce, at most, about two kilowatts.¶ In terms of power, RTGs are the equivalent of batteries while small nuclear reactors are only "small" when compared to conventional reactors. They are hardly the sort that you would keep in the garage. In reality, SMR power plants would cover the area of a small shopping mall. Still, such an installation is not very large as power plants go and a reactor that only produces 300 megawatts may not seem worth the investment, but the US Department of Energy is offering US$452 million in matching grants to develop SMRs and private investors like the Bill Gates Foundation and the company of Babcock and Wilcox are putting up money for their own modular reactor projects.¶ The 60-year old breakthrough¶ One reason for government and private industry to take an interest in SMRs is that they've been successfully employed for much longer than most people realize. In fact, hundreds have been steaming around the world inside the hulls of nuclear submarines and other warships for sixty years. They've also been used in merchant ships, icebreakers and as research and medical isotope reactors at universities. There was even one installed in the Antarctic at McMurdo Station from 1962 to 1972. Now they're being considered for domestic use.¶ The case for SMRs¶ **SMRs have a number of advantages over conventional reactors**. For one thing, **SMRs are cheaper** to construct and run. This makes them very attractive to poorer, energy-starved countries; small, growing communities that don't require a full-scale plant; and remote locations such as mines or desalination plants. Part of the reason for this is simply that the reactors are smaller. Another is that, not needing to be custom designed in each case, the reactors can be standardized and some types built in factories that are able to employ economies of scale. The factory-built aspect is also important because a factory is more efficient than on-site construction by as much as **eight to one in terms of building time**. Factory construction also allows SMRs to be built, delivered to the site, and then returned to the factory for dismantling at the end of their service lives - eliminating a major problem with old conventional reactors, i.e. how to dispose of them.¶ SMRs also enjoy a good deal of design flexibility. Conventional reactors are usually cooled by water - a great deal of water - which means that the reactors need to be situated near rivers or coastlines**. SMRs, on the other hand, can be cooled by air, gas, low-melting point metals or salt**. This means that SMRs can be placed in remote, inland areas where it isn't possible to site conventional reactors.¶ Safety¶ This cooling system is often passive. In other words, it relies more on the natural circulation of the cooling medium within the reactor's containment flask than on pumps**. This passive cooling is one of the ways that SMRs can improve safety**. Because modular reactors are smaller than conventional ones, they contain less fuel. This means that there's less of a mass to be affected if an accident occurs. If one does happen, there's less radioactive material that can be released into the environment and makes it easier to design emergency systems. Since they are smaller and use less fuel, they are easier to cool effectively, which greatly reduces the likelihood of a catastrophic accident or meltdown in the first place.¶ This also means that accidents proceed much slower in modular reactors than in conventional ones. Where the latter need accident responses in a matter of hours or minutes, SMRs can be responded to in hours or days, **which reduces the chances of an accident resulting in major damage** to the reactor elements.¶ The SMR designs that reject water cooling in favor of gas, metal or salt have their own safety advantages. Unlike water-cooled reactors, these media operate at a lower pressure. One of the hazards of water cooling is that a cracked pipe or a damaged seal can blow radioactive gases out like anti-freeze out of an overheated car radiator. With low-pressure media, there's less force to push gases out and there's less stress placed on the containment vessel. It also eliminates one of the frightening episodes of the Fukushima accident where the water in the vessel broke down into hydrogen and oxygen and then exploded.¶ Another advantage of modular design is that some SMRs are small enough to be installed below ground. That is cheaper, faster to construct and less invasive than building a reinforced concrete containment dome. There is also the point that putting a reactor in the ground makes it **less vulnerable to earthquakes**. Underground installations make modular reactors easier to secure and install in a much smaller footprint. This makes **SMRs particularly attractive to military customers who need to build power plants for bases quickly**. Underground installation also enhances security with fewer sophisticated systems needed, which also helps bring down costs.¶ **SMRs can help with** proliferation, **nuclear waste and fuel supply issues** because, while some modular reactors are based on conventional pressurized water reactors and burn enhanced uranium, others use less conventional fuels. Some, for example, can generate power from what is now regarded as "waste", burning **depleted uranium** and plutonium left over from conventional reactors. Depleted uranium is basically U-238 from which the fissible U-235 has been consumed. It's also much more abundant in nature than U-235, which has the potential of providing the world with energy for thousands of years. Other reactor designs don't even use uranium. Instead, they use thorium. This fuel is also incredibly abundant, is easy to process for use as fuel and has the added bonus of being utterly useless for making weapons, so it can provide power even to areas where security concerns have been raised.¶ But there's still the sticking point that modular reactors are, by definition, small. That may be fine for a submarine or the South Pole, but what about places that need more? Is the alternative conventional nuclear plants? It turns out that the answer is no. Modular reactors don't need to be used singly. They can be set up in batteries of five or six or even more, providing as much power as an area needs. And if one unit needs to be taken off line for repairs or even replacement, it needn't interfere with the operation of the others.

**SMRs solve all of nuclears downsides.**

**Ringle 10** John, Professor Emeritus of Nuclear Engineering at Oregon State University, "Reintroduction of reactors in US a major win", November 13, robertmayer.wordpress.com/2010/11/21/reintroduction-of-reactors-in-us-a-major-win/

Small nuclear reactors will probably **be the mechanism that ushers in nuclear** power’s renaissance in the U.S.¶ Nuclear plants currently supply about 20 percent of the nation’s electricity and more than 70 percent of our carbon-free energy. But large nuclear plants cost $8 billion to $10 billion and utilities are having second thoughts about how to finance these plants.¶ A small modular reactor (SMR) has several advantages over the conventional 1,000-megawatt plant:¶ 1. It ranges in size from 25 to 140 megawatts, hence only costs about a tenth as much as a large plant.¶ 2. It uses a cookie-cutter standardized design to reduce construction costs and can be built in a factory and shipped to the site by truck, railroad or barge.¶ 3. The major parts can be built in U.S. factories, unlike some parts for the larger reactors that must be fabricated overseas.¶ **4. Because of the factory-line production, the SMR could be built in three years with one-third of the workforce of a large plant**.¶ 5. More than one SMR could be clustered together to form a larger power plant complex. This provides versatility in operation, particularly in connection with large wind farms. With the variability of wind, one or more SMRs could be run or shut down to provide a constant base load supply of electricity.¶ 6. A cluster of SMRs should be very reliable. One unit could be taken out of service for maintenance or repair without affecting the operation of the other units. And since they are all of a common design, replacement parts could satisfy all units. France has already proved the reliability of standardized plants.¶ **At least half a dozen companies are developing SMRs**, including NuScale in Oregon. NuScale is American-owned and its 45-megawatt design has some unique features. **It is inherently safe**. It could be located partially or totally below ground, and with its natural convection cooling system, it does not rely on an elaborate system of pumps and valves to provide safety. **There is no scenario in which a** loss-of-coolant **accident could occur**.

**Funding for SMRs now**

HSNW 9/26—Homeland Security News Wire [September 26, 2012, “DOE promotes small-nuclear reactors (SMRs)” http://www.homelandsecuritynewswire.com/dr20120926-doe-promotes-smallnuclear-reactors-smrs]

South Carolina’s Savannah River Site (SRS) located in Aiken, along with the U.S. Department of Energy (DOE), have announced three partnerships to develop three small modular nuclear reactors (SMRs) at the SRS facility; SMRs produce less energy than a regular reactor, but they produce enough energy to power small cities and remote areas

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The DOE released a statement saying the agreement “will help leverage Savannah River’s land assets, energy facilities and nuclear expertise to support potential private sector development, testing and licensing of prototype SMR technologies.”

Helen Belecan, DOE’s deputy assistant manager for infrastructure and environmental stewardship at the SRS facility, told Government Technology the goal of the reactors are “to apply the nuclear knowledge and expertise that we have from over 60 years of supporting the nation in its defense-type operation in nuclear material production and help these companies develop the technology and manufacturing capability in the United States so that the United States can take on a leadership role in the manufacturing of these small modular reactors.”

DOE will focus on the advancing SMRs in the United States. $450 million “will be made available to support first-of its kind engineering, design decertification and licensing for up to two SMR designs over five years, subject to congressional appropriations,” DOE says.

Proposals for funding were received in May and are being reviewed to see which proposal will meet the standards of the Nuclear Regulatory Commission (NRC). The DOE plans to announce the recipients later this year.

A SMR is about one-third the size of a regular nuclear reactor and is built at a fraction of the cost. A traditional single-unit nuclear reactor costs roughly $8 billion dollars to build and that number jumps to $14 billion for twin reactors. SMRs produce less energy than a regular reactor, but they produce enough energy to power small cities and remote areas.

Thomas Sander, an associate laboratory director for the Clean Energy Imitative and the Savannah River National Laboratory, told Government Technology the first SMR will cost almost $1 billion, but the price will drop down the line.

“If you are talking about the 100th, my expectation is that cost is going to be reduced significantly as a result of advance factory manufacturing and just a learning process and the licensing process.”

 “If you are going after the old coal replacement market, you are looking at 150 to 200 megawatts on average,” Sander said, “but if you are looking at the Alaskan market for small cities or island market or export market for developing countries, you are talking 45 to 100 megawatts.”

The DOE is beginning to sign off on SMR’s for nuclear energy technology, and the government has began to approve projects around the country. DOE spokeswoman Niketa Kumar told Government Technology these new projects will allow the U.S. to compete with other countries in nuclear energy.

**Nat gas isn’t a solvency take out—price rises, diversification, and international demand makes nuclear competitive—prefer SMR specific evidence.**

Lamonica 12—Martin Lamonica is a senior writer covering green tech and cutting-edge technologies [August 9, 2012, “A Glut of Natural Gas Leaves Nuclear Power Stalled,” http://www.technologyreview.com/news/428737/a-glut-of-natural-gas-leaves-nuclear-power/]

Outside the United States, it's a different story. Unconventional sources of natural gas also threaten the expansion of nuclear, although the potential impact is less clear-cut. Around the world, there are 70 plants now under construction, but shale gas also looms as a key factor in planning for the future. Prices for natural gas are already higher in Asia and Europe, and shale gas resources are not as fully developed as they are the United States.

Some countries are also blocking the development of new natural gas resources. France, for instance, which has a strong commitment to nuclear, has banned fracking in shale gas exploration because of concerns over the environmental impact.

Fast-growing China, meanwhile, needs all the energy sources available and is building nuclear power plants as fast as possible.

Even in United States, of course, super cheap natural gas will not last forever. With supply exceeding demand, some drillers are said to be losing money on natural gas, which could push prices back up. Prices will also be pushed upward by utilities, as they come to rely on more natural gas for power generation, says James.

Ali Azad, the chief business development officer at energy company Babcock & Wilcox, thinks the answer is making nuclear power smaller, cheaper, and faster. His is one of a handful of companies developing small modular reactors that can be built in three years, rather than 10 or more, for a fraction of the cost of gigawatt-size reactors. Although this technology is not yet commercially proven, the company has a customer in the Tennessee Valley Authority, which expects to have its first unit online in 2021 (see "A Preassembled Nuclear Reactor").

"When we arrive, we will have a level cost of energy on the grid, which competes favorably with a brand-new combined-cycle natural gas plants when gas prices are between $6 to $8," said Azad. He sees strong demand in power-hungry China and places such as Saudia Arabia, where power is needed for desalination.

Even if natural gas remains cheaper, utilities don't want to find themselves with an overreliance on gas, which has been volatile on price in the past, so nuclear power will still contribute to the energy mix. "[Utilities] still continue [with nuclear] but with a lower level of enthusiasm—it's a hedging strategy," says Hans-Holger Rogner from the Planning and Economics Studies section of the International Atomic Energy Agency. "They don't want to pull all their eggs in one basket because of the new kid on the block called shale gas."

#### Only SMRs solve the grid – renewables fail

Barton 11 Charles, founder of the Nuclear Green Revolution blog, MA in philosophy, “Future storm damage to the grid may carry unacceptable costs”, April 30, <http://nucleargreen.blogspot.com/2011_04_01_archive.html>

Amory Lovins has long argued that the traditional grid is vulnerable to this sort of damage. Lovins proposed a paradigm shift from centralized to distributed generation and from fossil fuels and nuclear power to renewable based micro-generation. Critics have pointed to flaws in Lovins model. Renewable generation systems are **unreliable** and their output varies from locality to locality, as well as from day to day, and hour to hour. In order to bring greater stability and predictability to the grid, electrical engineers have proposed expanding the electrical transmission system with thousands of new miles of transmission cables to be added to bring electricity from high wind and high sunshine areas, to consumers. This would lead, if anything, to **greater grid vulnerability** to storm damage in a high renewable penetration situation. Thus Lovins renewables/distributed generation model breaks down in the face of renewables limitations. Renewables penetration, will increase the distance between electrical generation facilities and customer homes and businesses, increasing the grid vulnerable to large scale damage, rather than enhancing reliability. Unfortunately Lovins failed to note that the distributed generation model actually **worked much better** with **sm**all nuclea**r**power plant**s** than with renewable generated electricity. Small nuclear plants could be located much closer to customer's homes, decreasing the probability of storm damage to transmission lines. At the very worst, small NPPs would stop the slide toward increased grid expansion. Small reactors have been proposed as electrical sources for isolated communities that are too remote for grid hookups. If the cost of small reactors can be lowered sufficiently it might be possible for many and perhaps even most communities to unhook from the grid while maintaining a reliable electrical supply. It is likely that electrical power will play an even more central role in a post-carbon energy era. Increased electrical dependency requires increased electrical reliability, and grid vulnerabilities limit electrical reliability. Storm damage can disrupt electrical service for days and evenweeks. In a future, electricity dependent economy, grid damage can actually impede storm recovery efforts, making large scale grid damage semi-self perpetuating. Such grid unreliability becomes a threat to public health and safety. Thus grid reliability will be a more pressing future issue, than it has been. It is clear that renewable energy sources will worsen grid reliability, Some renewable advocates have suggested that the so called "smart grid" will prevent grid outages. Yet the grid will never be smart enough to repair its own damaged power lines. In addition the "smart grid" will be venerable to hackers, and would be a handy target to statures. A smart grid would be an easy target for a Stuxnet type virus attack. Not only does the "smart grid" not solve the problem posed by grid vulnerability to storm damage, but efficiency, another energy approach thought to be a panacea for electrical supply problems would be equally useless. Thus, decentralized electrical generation through the use of **sm**all nuclea**r**power plant**s** **offers real potential** for increasing electrical reliability, but successful use of renewable electrical generation approaches **may worsen** rather than improved grid reliability.

## \*\*\* 2AC

### 2ac—Warming CP

**SMR’s are the only solution to a dozen otherwise inevitable water conflicts.**

**Palley 11** (Reese, The London School of Economics, 2011, The Answer: Why Only Inherently Safe, Mini Nuclear Power Plans Can Save Our World, p. 168-71)

The third world has long been rent in recent droughts, by the search for water. In subsistence economies, on marginal land, water is not a convenience but a matter of life and death. As a result small **wars have been fought**, rivers diverted, and wells poisoned in what could be a warning of what is to come as industrialized nations begin to face failing water supplies. Quite aside from the demand for potable water is the dependence of enormous swaths of industry and agriculture on oceans of water used for processing, enabling, and cleaning a thousand processes and products. It is interesting to note that fresh water used in both industry and agriculture is reduced to a nonrenewable resource as agriculture adds salt and industry adds a chemical brew unsuitable for consumption. More than **one billion people** in the world already lack access to clean water, and things are getting worse. Over the next two decades, the average supply of water per person will drop by a third, **condemning millions** of people to waterborne **diseases** and an avoidable premature death.81 So the stage is set for water access wars between the **first and the third worlds**, between **neighbors** downstream of supply, between **big industry** and big agriculture, between **nations**, between **population centers**, and ultimately between you and the people who live next door for an already inadequate world water supply that is not being renewed. As populations inevitably increase, **conflicts will intensify**.82 It is only by virtue of the historical accident of the availability of nuclear energy that humankind now has the ability to remove the salt and other pollutants to supply all our water needs. The problem is that desalination is an intensely local process. Some localities have available sufficient water from renewable sources to take care of their own needs, but not enough to share with their neighbors, and it is here that the scale of nuclear energy production must be defined locally. Large scale 1,000 MWe plants can be used to desalinate water as well as for generating electricity However we cannot build them fast enough to address the problem, and, if built they would face the extremely expensive problem of distributing the water they produce. Better, much better, would be to use small desalinization plants sited locally. Beyond desalination for human use is the need to green some of the increasing desertification of vast areas such as the Sahara. Placing twenty 100 MWe plants a hundred miles apart along the Saharan coast would green the coastal area from the Atlantic Ocean to the Red Sea, a task accomplished more cheaply and quickly than through the use of gigawatt plants.83 This could proceed on multiple tracks wherever deserts are available to be reclaimed. Leonard Orenstein, a researcher in the field of desert reclamation, speculates: If most of the Sahara and Australian outback were planted with fast-growing trees like eucalyptus, the forests could draw down about 8 billion tons of carbon a year—nearly as much as people emit from burning fossil fuels today. As the forests matured, they could continue taking up this much carbon for decades.84 The use of small, easily transported, easily sited, and walk away safe nuclear reactors dedicated to desalination is **the only answer** to the disproportionate distribution of water resources that have distorted human habitation patterns for millennia. Where there existed natural water, such as from rivers, great cities arose and civilizations flourished. Other localities lay barren through the ages. We now have the power, by means of SMRs profiled to local conditions, not only to attend to existing water shortages but also to smooth out **disproportionate water distribution** and create green habitation where historically it has never existed. The **endless wars** that have been fought, first over solid bullion gold and then over oily black gold, can now engulf us in the desperate reach for liquid blue gold. We need **never fight these wars** again as we now have the nuclear power to fulfill the biblical ability to “strike any local rock and have water gush forth.”

**Capability asymmetry and desperation results in nuclear escalation.**

**Zahoor 12** (Musharaf, Researcher at Department of Nuclear Politics – National Defense University, *Water Crisis can Trigger Nuclear War in South Asia*, http://www.siasat.pk)

Water is an ambient source, which unlike human beings does not respect boundaries. Water has been a permanent source of conflict between the tribes since biblical times and now between the states. The conflicts are much more likely among those states, which are mainly dependent on shared water sources. The likelihood of turning these conflicts into wars is increased when these countries or states are mainly arid or receive low precipitations. In this situation, the upper riparian states (situated on upper parts of a river basin) often try to maximize water utility by neglecting the needs of the lower riparian states (situated on low lying areas of a river basin). However, international law on distribution of trans-boundary river water and mutually agreed treaties by the states have helped to some extent in overcoming these conflicts. In the recent times, the climate change has also affected the water availability. The absence of water management and conservation mechanisms in some regions particularly in the third world countries have exacerbated the water crisis. These states have become prone to **wars in future**. South Asia is among one of those regions where water needs are growing disproportionately to its availability. The high increase in population besides large-scale cultivation has turned South Asia into a water scarce region. The two **nuclear neighbors** Pakistan and India share the waters of Indus Basin. All the major rivers stem from the Himalyan region and pass through Kashmir down to the planes of Punjab and Sindh empty into Arabic ocean. It is pertinent that the strategic importance of Kashmir, a source of all major rivers, for Pakistan and symbolic importance of Kashmir for India are maximum list positions. Both the countries have fought two major wars in 1948, 1965 and a limited war in Kargil specifically on the Kashmir dispute. Among other issues, the newly born states fell into water sharing dispute right after their partition. Initially under an agreed formula, Pakistan paid for the river waters to India, which is an upper riparian state. After a decade long negotiations, both the states signed Indus Water Treaty in 1960. Under the treaty, India was given an exclusive right of three eastern rivers Sutlej, Bias and Ravi while Pakistan was given the right of three Western Rivers, Indus, Chenab and Jhelum. The tributaries of these rivers are also considered their part under the treaty. It was assumed that the treaty had permanently resolved the water issue, which proved a nightmare in the latter course. India by exploiting the provisions of IWT started wanton construction of dams on Pakistani rivers thus scaling down the water availability to Pakistan (a lower riparian state). The treaty only allows run of the river hydropower projects and does not permit to construct such water reservoirs on Pakistani rivers, which may affect the water flow to the low lying areas. According to the statistics of Hydel power Development Corporation of Indian Occupied Kashmir, India has a plan to construct 310 small, medium and large dams in the territory. India has already started work on 62 dams in the first phase. The cumulative dead and live storage of these dams will be so great that India can easily **manipulate** the water of Pakistani rivers. India has set up a department called the Chenab Valley Power Projects to construct power plants on the Chenab River in occupied Kashmir. India is also constructing three major hydro-power projects on Indus River which include Nimoo Bazgo power project, Dumkhar project and Chutak project. On the other hand, it has started Kishan \*\*\*\*\* hydropower project by diverting the waters of Neelum River, a tributary of the Jhelum, in sheer violation of the IWT. The gratuitous construction of dams by India has created serious water shortages in Pakistan. The construction of Kishan \*\*\*\*\* dam will turn the Neelum valley, which is located in Azad Kashmir into a barren land. The water shortage will not only affect the cultivation but it has serious social, political and economic ramifications for Pakistan. The farmer associations have already started protests in Southern Punjab and Sindh against the non-availability of water. These protests are so far limited and under control. The reports of international organizations suggest that the water availability in Pakistan will reduce further in the coming years. If the situation remains unchanged, the violent mobs of villagers across the country will be a major law and order challenge for the government. The water shortage has also created mistrust among the federative units, which is evident from the fact that the President and the Prime Minister had to intervene for convincing Sindh and Punjab provinces on water sharing formula. The Indus River System Authority (IRSA) is responsible for distribution of water among the provinces but in the current situation it has also lost its credibility. The provinces often accuse each other of water theft. In the given circumstances, Pakistan desperately wants to talk on water issue with India. The meetings between Indus Water Commissioners of Pakistan and India have so far yielded no tangible results. The recent meeting in Lahore has also ended without concrete results. India is continuously using delaying tactics to under pressure Pakistan. The Indus Water Commissioners are supposed to resolve the issues bilaterally through talks. The success of their meetings can be measured from the fact that Pakistan has to knock at international court of arbitration for the settlement of Kishan \*\*\*\*\* hydropower project. The recently held foreign minister level talks between both the countries ended inconclusively in Islamabad, which only resulted in heightening the mistrust and suspicions. The water stress in Pakistan is increasing day by day. The construction of dams will not only cause damage to the agriculture sector but India can manipulate the river water to create inundations in Pakistan. The rivers in Pakistan are also vital for defense during wartime. The control over the water will provide an edge to India during war with Pakistan. The failure of diplomacy, manipulation of IWT provisions by India and growing water scarcity in Pakistan and its social, political and economic repercussions for the country can lead both the countries toward a war. The existent asymmetry between the conventional forces of both the countries will compel the weaker side to **use nuclear weapons** to prevent the opponent from taking any advantage of the situation. Pakistan's nuclear programme is aimed at to create minimum credible deterrence. India has a declared nuclear doctrine which intends to retaliate massively in case of first strike by its' enemy. In 2003, India expanded the operational parameters for its nuclear doctrine. Under the new parameters, it will not only use nuclear weapons against a nuclear strike but will also use nuclear weapons against a nuclear strike on Indian forces anywhere. Pakistan has a draft nuclear doctrine, which consists on the statements of high ups. Describing the nuclear thresh-hold in January 2002, General Khalid Kidwai, the head of Pakistan's Strategic Plans Division, in an interview to Landau Network, said that Pakistan will use nuclear weapons in case India occupies large parts of its territory, economic strangling by India, political disruption and if India destroys Pakistan's forces. The analysis of the ambitious nuclear doctrines of both the countries clearly points out that any military confrontation in the region can result in a **nuclear catastrophe**. The rivers flowing from Kashmir are Pakistan's lifeline, which are essential for the livelihood of 170 million people of the country and the cohesion of federative units. The failure of dialogue will leave no option but to achieve the ends through military means. The only way to discard the lurking fear of a nuclear cataclysm is to settle all the outstanding disputes amicably through dialogue. The international community has a special role in this regard. It should impress upon India to initiate meaningful talks to resolve the lingering Kashmir dispute with Pakistan and implement the water treaty in its letter and spirit. The Indian leadership should drive out its policy towards Pakistan from terrorism mantra to a solution-oriented dialogue process. Both the countries should adopt a joint mechanism to maximize the utility of river waters by implementing the 1960 treaty, Besides negotiations with India, Pakistan should start massive water conservation and management projects. The modern techniques in agriculture like i.e. drip irrigation, should be adopted. On the other hand, there is a dire need to gradually upgrade the obsolete irrigation system in Pakistan. The politicization of mega hydropower projects/dams is also a problem being faced by Pakistan, which can only be resolved through political will.

**2ac—Production K**

**Academic debate over energy policy in the face of environmental destruction is critical to shape the direction of change and create a public consciousness shift---the K’s esoteric abstractions allow for extinction---action now is key**

**Crist 4 (**Eileen, Professor at Virginia Tech in the Department of Science and Technology, “Against the social construction of nature and wilderness”, Environmental Ethics 26;1, p 13-6, <http://www.sts.vt.edu/faculty/crist/againstsocialconstruction.pdf>)

Yet, constructivist analyses of "nature" favor remaining in the comfort zone of **zestless agnosticism** and **noncommittal meta-discourse**. As David Kidner suggests, this intellectual stance may function as a mechanism against facing the devastation of the biosphere—an undertaking long underway but gathering momentum with the imminent bottlenecking of a triumphant global consumerism and unprecedented population levels. Human-driven extinction—in the ballpark of Wilson's estimated 27,000 species per year—is so unthinkable a fact that choosing to ignore it may well be the psychologically risk-free option. **Nevertheless, this is the opportune historical moment for intellectuals in the humanities and social sciences to join forces with** conservation **scientists** in order **to** help **create the consciousness shift and policy changes to stop this irreversible destruction. Given this outlook, how students** in the human sciences **are trained to regard scientific knowledge, and what kind of messages percolate to the public from the academy about the nature of scientific findings, matter immensely**. The "agnostic stance" of constructivism toward "scientific claims" about the environment—a stance supposedly mandatory for discerning how scientific knowledge is "socially assembled"[32]—is, to borrow a legendary one-liner, **striving to interpret the world at an hour that is pressingly calling us to change it.**

**Sustainability is impossible and causes extinction in the short term---market incentives are key**

**Barnhizer 6** -- Professor of Law, Cleveland State University. (David, Waking from Sustainability's "Impossible Dream": The Decisionmaking Realities of Business and Government, 18 Geo. Int'l Envtl. L. Rev. 595, Lexis)

Medieval alchemists sought unsuccessfully to discover the process that would enable them to turn base metal into gold--assigning the name "Philosopher's Stone" to what they sought. The quest was doomed to failure. Just as a "sow's ear" cannot become a "silk purse," a base metal cannot become gold. Sustainability is impossible for the same reasons. It asks us to be something we are not, both individually and as a political and economic community. **It is impossible to convert humans into the** wise, **selfless, and** nearly **omniscient creatures** required to build and operate a system that incorporates sustainability. Even if it were ultimately possible (and it is not), **it would take** many **generations** to achieve **and we are running out of time.**¶There is an enormous gap among what we claim we want to do, what we actually want to do, and our ability to achieve our professed goals. **I admit to an absolute distrust of cheap and easy proclamations of lofty ideals and commitments to** voluntary or unenforceable **codes of practice**. The only thing that counts is the actor's actual behavior. For most people, that **behavior is shaped by self-interest** determined by the opportunity to benefit or to avoid harm. In the economic arena this means that if a substantial return can be had without a high risk of significant negative consequences, the decision will be made to seek the benefit. It is the reinvention of Hardin's Tragedy of the Commons. n1¶ This essay explores the nature of human decisionmaking and motivation within critical systems. These systems include business and governmental decisionmaking with a focus on environmental and social areas of emerging crisis where the consequence of acting unwisely or failing to act wisely produces large-scale harms for both human and natural systems. The analysis begins by suggesting that nothing humans create is "sustainable." Change is inevitable and [\*597] irresistible whether styled as systemic entropy, Joseph Schumpeter's idea of a regenerative "creative destruction," or Nikolai Kondratieff's "waves" of economic and social transformation. n2¶ Business entities and governmental decisionmakers play critical roles in both causing environmental and social harms and avoiding those consequences. Some have thought that the path to avoiding harm and achieving positive benefits is to develop codes of practice that by their language promise that decisionmakers will behave in ways consistent with the principles that have come to be referred to as "**sustainability**." That belief **is a delusion--an "impossible dream**." Daniel Boorstin once asked: "Have we been doomed to make our dreams into illusions?" n3 He adds: "An illusion . . . is an image we have mistaken for reality. . . . [W]e cannot see it is not fact." n4 Albert Camus warns of the inevitability of failing to achieve unrealistic goals and the need to become more aware of the limited extent of our power to effect fundamental change. He urges that we concentrate on devising **realistic strategies** and behaviors that allow us to be effective in our actions. n5¶ As companies are expected to implement global codes of conduct such as the U.N. Global Compact and the Organisation for Economic Co-operation and Development's (OECD) Guidelines for Multinational Enterprises, n6 and governments [\*598] and multilateral institutions supposedly become more concerned about limiting the environmental and social impacts of business decisionmaking, it may be useful to consider actual behavior related to corporate and governmental responses to codes of practice, treaties, and even national laws. Unfortunately, business, government, and multilateral institutions have poor track records vis-a-vis conformity to such codes of practice and treaties.¶ **Despite good intentions, empty** dreams and **platitudes may be counterproductive**. This essay argues that the ideal of sustainability as introduced in the 1987 report of the Brundtland Commission and institutionalized in the form of Agenda 21 at the 1992 Rio Earth Summit is false and counterproductive. The ideal of sustainability assumes that we are almost god-like, capable of perceiving, integrating, monitoring, organizing, and controlling our world. These assumptions create an "impossible" character to the "dream" of sustainability in business and governmental decisionmaking.¶ Sustainability of the Agenda 21 kind is a utopian vision **that is the enemy of the possible and the good.** The problem is that while on paper we can always sketch elegant solutions that appear to have the ability to achieve a desired utopia, such solutions work "if only" everyone will come together and behave in the way laid out in the "blueprint." n7 Humans should have learned from such grand misperceptions as the French Enlightenment's failure to accurately comprehend the quality and limits of human nature or Marxism's flawed view of altruistic human motivation that **the "if only" is an impossibly utopian reordering of human nature we will never achieve**. n8¶ [\*599] A critical defect in the idea of sustainable development is that it continues the flawed assumptions about human nature and motivation that provided the foundational premises of Marxist collectivism and centralized planning authorities. n9 Such perspectives inject rigidity and bureaucracy into a system that requires monitoring, flexibility, adaptation, and accountability. But, in criticizing the failed Marxist-Leninist form of organization, my argument should not be seen as a defense of supposed free market capitalism. Like Marxism, a true free market capitalism does not really exist.¶ The factors of greed and self interest, limited human capacity, inordinate systemic complexity, and the power of large-scale driving forces beyond our ability to control lead to the unsustainability of human systems. **Human self-interest is an insurmountable barrier that can be affected** to a degree **only by effective laws, the promise of significant financial** or career **returns, or fear of consequences. The only way to change the behavior of business and governmental decisionmakers is through the** use of the **"carrot" and the "stick**." n10 Yet even this approach can only be achieved incrementally with limited positive effects.

**Valuing nature as standing reserve solves biosphericide—only humans have the ability to make moral decisions to preserve their environment**

**Younkins 4--**Professor of Accountancy and Business Administration at Wheeling Jesuit University in West Virginia. (Edward, The Flawed Doctrine of Nature's Intrinsic Value, <http://www.quebecoislibre.org/04/041015-17.htm>)

Many environmentalists contend that nature has an intrinsic value, in and of itself, apart from its contributions to human well-being. They maintain that all created things are equal and should be respected as ends in themselves having rights to their own actualization without human interference. Ecological egalitarians defend biodiversity for its own sake and assign the rest of nature ethical status at least equal to that of human beings. Some even say that the collective needs of nonhuman species and inanimate objects must take precedence over man’s needs and desires. Animals, plants, rocks, land, water, and so forth, are all said to possess intrinsic value by their mere existence without regard to their relationship to individual human beings. ¶ **Environmentalists erroneously assign human values and concern to an amoral material sphere**. When environmentalists talk about the nonhuman natural world, they commonly attribute human values to it, which, of course, are completely irrelevant to the nonhuman realm. For example, “nature” is incapable of being concerned with the possible extinction of any particular ephemeral species. Over 99 percent of all species of life that have ever existed on earth have been estimated to be extinct **with the great majority** **of these perishing because of nonhuman factors. Nature cannot care about “biodiversity.”** **Humans happen to value biodiversity** because it reflects the state of the natural world in which they currently live. **Without humans, the beauty** and spectacle **of nature would not exist – such ideas can only exist in the mind of a rational valuer.** ¶ These environmentalists fail to realize that value means having value to some valuer. To be a value some aspect of nature must be a value to some human being. People have the capacity to assign and to create value with respect to nonhuman existents. Nature, in the form of natural resources, does not exist independently of man. Men, choosing to act on their ideas, transform nature for human purposes. All resources are man-made. It is the application of human valuation to natural substances that makes them resources. Resources thus can be viewed as a function of human knowledge and action. By using their rationality and ingenuity, men affect nature, thereby enabling them to achieve progress. ¶ Man’s survival and flourishing depend upon the study of nature that includes all things, even man himself. **Human beings are the highest level of nature** in the known universe. Men are a distinct natural phenomenon as are fish, birds, rocks, etc. Their proper place in the hierarchical order of nature needs to be recognized. Unlike plants and animals, human beings have a conceptual faculty, free will, and a moral nature. Because morality involves the ability to choose, it follows that moral worth is related to human choice and action and that the agents of moral worth can also be said to have moral value. By rationally using his conceptual faculty, man can create values as judged by the standard of enhancing human life. The highest priority must be assigned to actions that enhance the lives of individual human beings. **It is therefore morally fitting to make use of nature**. ¶ Man’s environment includes all of his surroundings. When he creatively arranges his external material conditions, he is improving his environment to make it more useful to himself. Neither fixed nor finite, resources are, in essence, a product of the human mind through the application of science and technology. Our resources have been expanding over time as a result of our ever-increasing knowledge. ¶ Unlike plants and animals, human beings do much more than simply respond to environmental stimuli. Humans are free from nature’s determinism and thus are capable of choosing. Whereas plants and animals survive by adapting to nature, men sustain their lives by employing reason to adapt nature to them. People make valuations and judgments. Of all the created order, only the human person is capable of developing other resources, thereby enriching creation. The earth is a dynamic and developing system that we are not obliged to preserve forever as we have found it**. Human inventiveness, a natural dimension of the world, has enabled us to do more with less. ¶** Those who proclaim the intrinsic value of nature view man as a destroyer of the intrinsically good. Because it is man’s rationality in the form of science and technology that permits him to transform nature, he is despised for his ability to reason that is portrayed as a corrupting influence. The power of reason offends radical environmentalists because it leads to abstract knowledge, science, technology, wealth, and capitalism. **This antipathy for human achievements and aspirations involves the negation of human values and betrays an underlying nihilism of the environmental movement.**

**Perm do the plan and non mutually exclusive parts of the alterantive. --- the perm radicalizes reformism**

**Doran and Barry 6** – worked at all levels in the environment and sustainable development policy arena - at the United Nations, at the Northern Ireland Assembly and Dáil Éireann, and in the Irish NGO sector. PhD--AND-- Reader in Politics, Queen's University School of Politics, International Studies, and Philosophy. PhD Glasgow (Peter and John, Refining Green Political Economy: From Ecological Modernisation to Economic Security and Sufficiency, Analyse & Kritik 28/2006, p. 250–275, http://www.analyse-und-kritik.net/2006-2/AK\_Barry\_Doran\_2006.pdf)

EM = Ecological Modernization

**Viewed in isolation** EM can be painted as a reformist and limited strategy for achieving a more sustainable economy and society, and indeed questions could be legitimately asked as to whether the development of a recognisably ‘green’ political economy for sustainable development can be based on it. In this paper, it is contended that **there are strategic advantages in seeking to build upon and radicalise EM.** There are indications in the UK that the debate on sustainable consumption may lead to new deliberative fora for a re-negotiation of the meaning and ends of consumption. Could it be that ‘suﬃciency’ will emerge as the logical complement (on the consumer side) of the early production-side debate on EM on the limits of ‘eﬃciency’ without an ecological context? ¶ While there are various reasons one can give for this, in this conclusion we focus on two—one normative/principled the other strategic.¶ From a strategic point of view, it is clear that, as Dryzek and his colleagues have shown, if green and sustainability goals, aims and objectives are to be integrated within state policy, **these need to attach themselves to one of the core state imperatives**—accumulation/economic growth or legitimacy (Dryzek et al. 2003; Barry 2003b). It is clear that **the discourse of EM allows** (some) **green objectives to be** integrated/**translated into a policy language** and framework which complements and does not undermine the state’s core imperative of pursuing orthodox economic growth. Therefore if (in the absence of a Green Party forming a government or being part of a ruling coalition, or even more unlikely of one of the main traditional parties initiating policies consistent with a radical understanding of sustainable development), the best that can be hoped for under current political conditions is the ‘greening of growth and capitalism’ i. e. a narrow, ‘business as usual’ version of EM. Or as Jonathan Porritt has put it, “We need more emphasis about the inherent unsustainability of our dominant economic model, **even as we seek to improve the delivery of that model in the short** to medium **term**” (Porritt 2004, 5). 23 ¶ On a more principled note, the adoption of EM as a starting point for the development of a model/theory of green political economy does carry with it the not inconsiderable beneﬁt of removing the ‘anti-growth’ and ‘limits to growth’ legacy which has (in our view) **held back the theoretical development of a positive, attractive, modern conceptualisation of green political economy and radical conceptualisations of sustainable development.** Here the technological innovation, the role of regulation driving innovation and eﬃciency, the promise that the transition to a more sustainable economy and society does not necessarily mean completely abandoning currently lifestyles and aspirations—**strategically important in generating democratic support for sustainable development, and** as indicated above, importance if the vision of a green sustainable economy is one which promotes diversity and tolerance in lifestyles **and does not demand everyone conform to a putative ‘green’ lifestyle.** Equally, this approach does not completely reject the positive role/s of a regulated market within sustainable development. However, it does demand a clear shift towards making the promotion of economic security (and quality of life) central to economic (and other) policy. **Only when this happens can we say we have begun the transition to implementing the principles of sustainable development rather than fruitlessly seeking for some ‘greenprint’ of an abstract and utopian vision of the ‘sustainable society’.**

**Problem-solution impact is backwards---acting with a flawed epistemology allows us to change that epistemology.**

**Harris 7** (Graham, Adjunct Prf. @ Centre for Environment University of Tasmania, Seeking Sustainability in an age of complexity p. 9-10)

1 am not going to address the global 'litany' at length here. The arguments have been well made by others, especially and most elegantly by E. O. Wilson. What 1 wish to address here is the question: 'Can we grasp the complexity of it all and, if so, what do we do about it?' Given the fundamental nature of the problem the destruction of the biosphere and its ecosystem ser- vices together with the huge changes going on in human societies and cultures driven by globalisation and technological change the precautionary principle would suggest that even if the epistemology is flawed, the data are partial and the evidence is shaky, we should pay attention to the little we know and do whatever is possible to mitigate the situation even if we fundamentally disagree about the means and the ends. The only ethical course of action is, as John Ral- ston Saul writes," based on 'a sense of the other and of inclusive responsibility'. We know enough to act. Ethics is about uncertainty, doubt, system thinking and balancing difficult choices. It is about confronting the evidence**.** Over the past two or three decades, as there has been an increasing appre- ciation of the importance of good environmental management, and as western societies have become more open and the ICT revolution has made informa- tion much more widely available there has been a growing debate between the worlds of science, industry, government and the community around environ- mental ethics and environmental issues and their management. During this period new knowledge has been gained, ideas have changed (sometimes quite fundamentally) and there have been huge changes in government and social institutions and policies. We are all on a recursive journey together: we are lit- erally 'making it up as we go along'. This is not easy and there are no optimal solutions. This is an adaptive process requiring feedback from all parts of the system. Yes, there will be surprises. This is why it is so important that when we act we constantly reflect on what we know and what we are doing about it and where it is all going. As we reach the physical limits of the global biosphere the values we place on things are changing and must change further. A new environmental ethic is required, one that is less instrumental and more embracing. Traditionally there has tended to be a schism between those who take an anthropocentric view (that the world is there for us to use) and those who take the non-anthropocentric view (those who value nature in its own right). Orthodox anthropocentrisni dictates that non-human value is instrumental to human needs and interests. In contrast, non-anthropocentrics take an objectivist view and value nature intrinsically; some may consider the source of value in non-human nature to be independent of human consciousness.45 What is required is a more complex and systems view of ethics which finds a middle ground between the instrumentalist and objectivist views. Norton '46 for example, proposes an alternative and more complex theory of value - a universal Earth ethic - which values processes and dynamics as well as entities and takes an adaptive management view of changing system properties. For sustainable development to occur, choices about values will remain within the human sphere but we should no longer regard human preferences as the only criterion of moral significance. 'Humans and the planet have entwined destinies"' and this will be increasingly true in many and complex ways as we move forward. There are calls for an Earth ethic beyond the land ethic of Aldo Leopold.45 The science of ecology is being drawn into the web .49 Ecologists are becoming more socially and culturally aware and engaged" and the 'very doing' of ecology is becoming more ethical.tm' Some scientists are beginning to see themselves more as agents in relationships with society and less as observers.

**Consumption and consumerism are inevitable and build ethical democratic solidarity**

**Cohen 2** (Patricia, Writer for the New York Times, citing James B. Twitchell, Professor of English at the University of Florida, “In Defense Of Our Wicked, Wicked Way”, The New York Times, July 7, <http://www.clas.ufl.edu/users/jtwitche/nytimesarticle.pdf>)

"I CAN stand here and look at this for hours," said James B. Twitchell as he parked himself in front of the bottled water section in City Market, just past the jars of $30-per-pound teas and behind the eight-foot display of imported olive oils. Mr. Twitchell, a professor of English at the University of Florida in Gainesville, specializes in the Romantic poets, but his real obsession is shopping. Given the choice of reading literary theorists like Foucault or gazing at shelves stacked with artfully shaped bottles of water piled up like Jay Gatsby's beautifully tailored shirts, he would quickly choose the latter. "There is more that I can sustain myself with at the water aisle than in all of modern criticism," he said. In a series of books, the latest of which is "Living It Up: Our Love Affair With Luxury" (Columbia University Press), Mr. Twitchell has detailed the consumption habits of Americans with all the scholarly delight of a field anthropologist who has discovered the secret courting rituals of a remote tribe. He is exquisitely attuned to the subtle gradations of status conferred by the labels on what people wear, eat, drink, drive and freeze ice cubes in. And he is not alone. Whether prompted by the 90's spendathon or the endless fascination not only with shopping, but with reading about shopping, a new title by an academic or journalist on the subject appears practically every week. Burlington, where Mr. Twitchell grew up and where he now spends summers, was singled out by David Brooks in his wickedly funny "Bobos in Paradise" as a model Latte Town, a city that has perfectly reconciled the mercenary instincts of the bourgeoisie with the artistic spirit of the bohemians to create an upscale consumer culture. What distinguishes Mr. Twitchell's study of excessive consumerism, though, is that he applauds it. To him, Evian and Pellegrino, Vermont Pure and Dasani are evidence of what could be called his trickledown theory of luxury: that the defining characteristic of today's society is the average person's embrace of unnecessary consumption, superficial indulgence, wretched excess and endless status-seeking. Oh, earthly paradise! Once defined by exclusiveness, luxury is now available -- whether in the form of limited-edition coffee at Starbucks or Michael Graves tea kettles at Target -- to all. And that, Mr. Twitchell maintains, is a good thing. Sure, he argues in his book, buying essentially useless luxury items "is one-dimensional, shallow, ahistorical, without memory and expendable. **But it is also strangely democratic and unifying. If what you want is peace on earth, a unifying system that transcends religious, cultural and caste differences**, well, whoops!, **here it is**. The Global Village is not the City on the Hill, not quite the Emerald City, and certainly not quite what millennial utopians had in mind, but it is closer to equitable distribution of rank than what other systems have provided." That is, to say the least, a minority report. For centuries, philosophers, artists and clerics railed against luxury. Ecclesiastical courts forbade most people from eating chocolate, drinking coffee or wearing colors like Prussian blue and royal purple -- "luxuria" that signaled living above one's God-ordered place. Thorstein Veblen offered the first modern critique of "conspicuous consumption" in his 1899 treatise "The Theory of the Leisure Class." Post-World War II social critics and economists extended Veblen's critique to the expanding middle class. John Kenneth Galbraith warned in "The Affluent Society" of the binge afflicting the postwar generation. Unwitting consumers, he said, were essentially suckered by admen and salesmen into spending money on things they didn't need. In his 1970 study "The Cultural Contradictions of Capitalism" Daniel Bell argued that "the culture was no longer concerned with how to work and achieve, but with how to spend and enjoy." This trend, he warned, could end up undermining the very work ethic that made capitalism function. That, obviously, did not happen. If anything people worked more so they could spend more. In "The Overspent American," Juliet B. Schor noted that people no longer compared themselves with others in the same income bracket, but with the richer and more famous they saw on television, propelling them to spend more than they could afford. To Mr. Twitchell, the naysayers are scolds and spoilsports. Indoor plumbing, sewing machines, dishwashers, college educations, microwaves, coronary bypasses, birth control and air travel all began as luxury items for the wealthy. Nor are buyers mindlessly duped by canny advertisers into buying items they don't really want, he said. Quite the opposite. They enjoy the sensual feel of an Hermes silk tie, the briny delicacy of Petrossian caviar or simply the sensation of indulging themselves. These things may not bring happiness, but neither does their absence from the lives of people too poor to afford them. It may seem an odd moment to champion luxury. The spectacular boom of the 90's now looks as if it was partly built on spectacular sleight of hand, with Enron, Global Crossing, Adelphia and WorldCom all recently admitting that billions in reported profits were nonexistent. The moment seems ripe for a chastened culture to repent its indulgences. Reassessing the get-and-spend ethic -- not defending consumerism -- might well be the defining current of the next few years. The problem with Mr. Twitchell's view, said Robert H. Frank, author of "Luxury Fever," is that our sense of what we need to live comfortably keeps spiraling upward. It is not that luxury spending isn't good for particular individuals, but that it is bad for society overall. "It's like when everybody stands up for a better view, you don't see better than before," Mr. Frank said from his home in Ithaca. There's a lot of waste in luxury spending. Instead of building safer roads or providing better health care, we are spending that money on bigger diamonds and faster cars. Mr. Twitchell is unpersuaded, however. Walking down Church Street, Burlington's busy pedestrian mall, he pointed out the transformation that the consumer culture has wrought in his hometown. Lean and tanned, with cropped gray hair and rounded tortoise-shell glasses, Mr. Twitchell looks a bit like Dennis the Menace's father after Dennis has grown up, moved across the country and given his old man a few years to recover. "Church Street once serviced needs, now it services desires," Mr. Twitchell said. The optician's shop is gone, and so is Sears and JCPenney. He pointed out the Ann Taylor store, where the Masonic temple used to be. A chic French children's store sits in the old bank. "The key to modern luxe is that most of us can have a bit of it on the plate," Mr. Twitchell said. "I can't own a Lexus, but I can rent one. I can't go to Bermuda for a winter, but I can have a time share for a weekend. I don't own a yacht but I'm taking a Princess cruise." The process of democratization is mirrored in Mr. Twitchell's family history. His great-grandfatherAndrew A. Buell made his fortune building wooden boxes from Adirondack lumber. Driving up Lodge Road to "the hill," where Mr. Buell built a red stone Romanesque mansion with a copper-topped tower, Mr. Twitchell passed the Burlington Country Club, which his grandfather Marshall Coleman Twitchell helped found. The family's sprawling former home is now a women's dormitory, and the surrounding 66-acre estate serves as the University of Vermont's Redstone campus. A couple of blocks from the hilltop, both in location and status, is the relatively modest white wooden house that Mr. Twitchell, thes son of Marshall Coleman Twitchell Jr., an ophthalmologist, and his sisters grew up in. At that time, said Mr. Twitchell, now 59, one's social place was determined by birth, or "what I call the lucky sperm culture." Today, birth-ordained status has been supplanted by store-bought status. Mr. Twitchell has no regrets about this lost world. "Though I was a beneficiary of it, I'm glad it's over," he said. "There is something refreshing about the material world that downtown Burlington opened up." Compared to the traditional ways of marking status -- race, parentage, accent, private schools -- one's purchases are a preferable way of telling who's up and who's down, he said. On that point, Mr. Twitchell is not alone. Gary Cross, a historian at Penn State University, said that **consumer culture in one sense is "democracy's highest achievement, giving meaning and dignity to people when workplace participation, ethnic solidarity and even representative democracy have failed."** Still, as Mr. Cross argued in 2000 in "An All-Consuming Century: Why Commercialism Won in Modern America," "most of us, no matter our politics, are repulsed by the absolute identity of society with the market and individual choice with shopping." True enough, Mr. Twitchell readily conceded. But he maintains the critics are missing the essential characteristic of luxury spending. "Luxury has very little to do with money or things," he said. "Luxury is a story we tell about things," and it's ultimately the story we are after. That is, our purchases are imbued with elaborate narratives about the life we want to live. It is advertisers and manufacturers who give objects meaning by constructing the stories about them, Mr. Twitchell said, and that meaning is as much a source of desire as the object itself. Think of the elaborate fantasies spun by marketers like Ralph Lauren and Martha Stewart. It goes for whatever you're buying, whether it's Jimmy Choo, Birkenstock or Payless shoes. When Mr. Twitchell, a dedicated factory outlet shopper, flashes his member's card at Sam's Club, "the allure is not just that I'm saving money," he said, "but that I'm smarter and savvier, that I'm duping the duper." Or consider an experiment he performed on his colleagues. He told some English professors that he was going to spend $6,000 to buy an 1850 copy of Wordsworth's "Prelude." Brilliant idea, everyone said. A few days later, Mr. Twitchell told the same colleagues that he had changed his mind and was going to use the $6,000 to buy a used BMW. "I could have said that I was investing in a collection of Beanie Babies comics or a diamond pinkie ring for the shocked response that I got," he wrote. Critics of consumption will say they are making a moral argument, Mr. Twitchell said, but "often what is condemned as luxury is really **just a matter of taste**." To Mr. Twitchell, as long as human beings crave sensation, they will desire material goods and luxurious ones at that, Wall Street scandals notwithstanding. "If this year it's Enron and WorldCom, then another year it was Long-Term Capital Management," he said. **Recessions may come and go, but consumption is eternal. The ad slogan is right: Diamonds are forever.**

**The alt fails---forces us to abandon the familiar for leaps of faith that are illogical---only working within the system prevents tyranny and destructive individualism**

**Humphrey 1** (Dr. Mathew Humphrey, Reader in Political Philosophy and Deputy Director of the Center for the Study of Social and Global Justice at the University of Nottingham, Political Theory and the Environment, 2001, p. 98-100)

This is. of course, a caricature, and a fairly crude one at that. And yet. like any caricature, it does contain a grain of truth. One might even profess a certain perverse sympathy with its redescription of, and prescriptions for. our present predicament. Bui at the same time, one is bound to have grave doubts as to whether the entire human species, or a substantial portion thereof, can create and learn an entirely new moral language within the ever-diminishing time available to them. **Some few might effect a Nictzschian transvaluation of values. But as Nietzsche rightly recognized, many - perhaps most - lack the resources or the will to transvalue**. We might then be in the paradoxical position described long ago by the Roman historian Livy. 'In our times', Livy lamented, 'we can neither endure our faults nor the means of correcting them\* (quoted in Connolly [1988: I]). One can acknowledge that our faults are evident and legion - as I certainly do - while doubling that the means of their correction can only come through arriving at and applying a radically new ethic with a concern for nature and future generations of humans and other species at its centre. To pose my main question crudely and bluntly: What are the prospects for devising or arriving at a radically new ethic - an environmentally sensitive, earth-centred, post-humanist 'planetary' ethic? To answer it in equally blunt terms: **Not very likely**. If the fate of the earth and of future generations requires that most of us must abandon the familiar and become Buddhists or Deep Ecologists or Ecofeminists or indigenous earth-worshippers, **then the earth and its future inhabitants are in very grave peril indeed.** The condemnation of 'individualism' (or 'Western individualism') that is the stock-in-trade of much radical environmental discourse does of course have a point. But it also seems to me to be both self-defeating and dangerous. It is certainly true that, as Clifford Gecrtz observes, 'The Western conception of the person as a bounded, unique, more or less integrated motivational and cognitive universe, a dynamic center of awareness, emotion, judgment and action organized into a distinctive whole |is| ... a rather peculiar idea within the context of the world's cultures" [Geeriz. 1979: 229). Yet the peculiarity of this idea is hardly sufficient reason for discarding it. On the contrary, we have good reason to retain the idea of 'the individual' and sec it for what it is - a unique and morally noteworthy evolutionary achievement deserving of recognition and respect and, of course, rational criticism. Individualism, like any idea, can of course be perverted and put to destructive uses, as Tocqueville and many modern ecologically minded writers rightly remind us. But **we must not forget the destruction wrought** earlier during the last century **by anti-individualist ideologies** which gave pride of place to race, Volk, nation and other such supra-individual and collective entities - and which professed to identify with, if not worship, 'the **soil' and 'nature'** [Pais, J987). We had best beware of being too ready to reject 'humanism' or 'individualism' in the name of some supra-individual or post-humanist ethic. **We should** also **beware of modeling our** actions, **institutions and practices on** the animal kingdom or **taking 'nature' as the standard** or measure **of** value or **right**, or of merging ourselves into or 'identifying' with nature.3 **It is one thing to respect** or to 'get along with' **nature** [Bern; 1987], **and quite** another - and **more insidious** - thing **to** somehow **identify with nature**. The naive and too-often unargued assertions of romantic nature-worshippers notwithstanding, nature's standard would appear to be that might makes right. **When 'nature takes its course', the weak perish and the strong survive**. Nature is indifferent to tyranny. Justice and fairness are unknown among non-human animals (although some among the higher primates are arguably a possible if perhaps doubtful exception); they arc human inventions and achievements (albeit too often honoured in the breach). Lest we forget: there was at the turn of the last century a political perspective that purported to take its norms from 'nature'. **It was called Social Darwinism. It viewed human life as a struggle for existence in which the 'fittest' survived and the 'unfit\* did not** [Hawkins, 1997]. As one of its American champions proclaimed. Nature's remedies against vice are terrible. She removes the victims without pity. A drunkard in the gutter is just where he ought to be, according to the fitness and tendency of things. Nature has set up on him the process of decline and dissolution by which she removes things which have survived their usefulness [Sumner. 1883: 114]. We had therefore best beware of a too-ready recourse to 'nature' as an alternative to, or antidote for, our 'humanism\* or 'anthropoccntrism\*.Having said that, however, it is clear that we cannot continue to live as we have, without regard to the rights and interests of generations yet unborn. The fate of future people hangs upon our ability and willingness to expand and enlarge our ethical universe so as to include them as members of our moral community. But how might we gel there from here?One cannot simply create moral codes or concepts, much less an entirely 'new ethic\*, ex nlhilo. Modem conceptual historians who study the processes and mechanisms of 'conceptual change\* arc pretty much agreed on this point. If a conceptual innovation has any hope of succeeding, its proponents must satisfy two desiderata: intelligibility and legitimacy. In order to beintelligible to others, a would-be innovator **must draw upon the ideas and idioms that are already available to her fellow citizens**. She must practice what Walzer aptly calls 'connected social criticism\* [1987; I988\. These must, moreover, be **invoked in ways that will legitimize new ways of speaking**, thinking, **and acting**. As Qucntin Skinner notes.however revolutionary the [innovating] ideologist ... he will nevertheless be committed, once he has accepted the need to legitimate his behaviour, to attempting to show that some of the existing range of favourable evaluative-descriptive terms can somehow be applied as apt descriptions of his own apparently untoward actions. Every revolutionary is to this extent obliged to march backward into battle [Skinner. 1988: U2\.And this, of course, is precisely what Deep Ecologists and other radical environmentalists have so signally **failed to do**. As innovating ideologists they have been **singularly inept and unsuccessful**. They have engaged in a kind of **disconnected social criticism** that is **largely unintelligible to most** of their fellow citizens. And this is why Anna Bramwcll [I994\ and other critics may well be correct, if perhaps a bit premature, in announcing 'the fading of the greens' and the demise of green politics, or at any rate its more radical variants.If the greens - amongst whom I count myself - are to succeed politically, some way must be found to connect with, to use, and perchance to **alter the dominant discourses,** and particularly that of liberal individualism, **from within.** What is needed, then, is (in an older philosophical idiom) an immanent critique. Only through such a critique can conceptual innovation come about and succeed in reshaping the way we think and therefore act. Absent that, the greens arc foredoomed to fail. And the failure of the green movement will not be due to its unimportance, but to the unintelligibility and thus the perceived illegitimacy of its discourse. At or near the top of any green agenda or political programme is the need to pay conscious and articulate attention to the rights and interests of posterity and to the grounds and extent of our obligation to recognise, respect and protect them. What follows is not a systematic inquiry into what Brian Barry calls the 'mind-bending topic' of intergenerational justice [1989: 9], but a list of queries and concerns that would surely be central to such an inquiry.

### 2ac—Politics DA

**Government supports for SMRs now --- that's HSNW --- more evidence.**

**Wang 12** (Ucilia, Contributor @ Forbes, *Feds To Finance Small Nuclear Reactor Designs*, January 20th, http://www.forbes.com/sites/uciliawang/2012/01/20/feds-to-finance-small-nuclear-reactor-designs/)

The U.S. Department of Energy on Friday announced a plan to support the design of so-called “small modular nuclear reactors” and popularize their use for power generation.

The plan is **to fund** two reactor designs that will become available for licensing and production by 2022. The department is first asking for advice from the power industry on crafting the details of this project, and it hasn’t said how much it would dole out. But whoever wins the contracts to design the reactors will have to pony up money as well.

Small reactors are generally about one-third the size of existing nuclear reactors, and a power plant with small reactors promises to be cheaper to build and easier to obtain permits more quickly than a full-size nuclear power plant, proponents say. Utilities should have more flexibility in modifying the size of a power plant with small reactors – if they need more power, then they can add more reactors over time.

Nuclear reactors have historically been designed to be 1-gigawatt or more each because such scale helps to drive down the manufacturing and installation costs. Small reactors can be economical, too, advocates say, because they can be shipped more easily and cheaply around the world.

Energy Secretary Steve Chu has said he’s a big fan of small nuclear reactor technology.

**That is sufficient to trigger the link.**

**Manufacturing World 12** (U.S Invests in Small Nuclear Power Plants, March 2012, http://www.sustainablemanufacturingworld.com/2012/03/27/u-s-invests-in-small-nuclear-power-plants/)

COLUMBUS, Ohio – Today, as President Obama went to Ohio State University to discuss the all-out, all-of-the-above strategy for American energy, the White House announced new funding to advance the development of American-made small modular reactors (SMRs), an important element of the President’s energy strategy. A total of $450 million will be made available to support first-of-its-kind engineering, design certification and licensing for up to two SMR designs over five years, subject to congressional appropriations.

Manufacturing these reactors domestically will offer the United States important export opportunities and will advance our competitive edge in the global clean energy race. Small modular reactors, which are approximately one-third the size of current nuclear plants, have compact, scalable designs that are expected to offer a host of safety, construction and economic benefits.

“The Obama Administration and the Energy Department are committed to an all-of-the-above energy strategy that develops every source of American energy, including nuclear power, and strengthens our competitive edge in the global clean energy race,” said Energy Secretary Steven Chu. “Through the funding for small modular nuclear reactors announced today, the Energy Department and private industry are working to position America as the leader in advanced nuclear energy technology and manufacturing.”

Through cost-share agreements with private industry, the Department will solicit proposals for promising SMR projects that have the potential to be licensed by the Nuclear Regulatory Commission and achieve commercial operation by 2022. These cost-share agreements will span a five-year period and, subject to congressional appropriations, will provide a total investment of approximately $900 million, with at least 50 percent provided by private industry.

SMRs can be made in factories and transported to sites where they would be ready to “plug and play” upon arrival, reducing both capital costs and construction times. The smaller size also makes SMRs ideal for small electric grids and for locations that cannot support large reactors, offering utilities the flexibility to scale production as demand changes.

Today’s announcement builds on the Obama Administration’s efforts to help jumpstart America’s nuclear energy industry that include:

In 2010, the Department signed a conditional commitment for $8 billion in loan guarantees to support the Vogtle project, where the Southern Company and Georgia Power are building two new nuclear reactors, helping to create new jobs and export opportunities for American workers and businesses.

The Energy Department has also supported the Vogtle project and the development of the next generation of nuclear reactors by providing more than $200 million through a cost-share agreement to support the licensing reviews for Westinghouse’s AP1000 reactor design certification. The Vogtle license is the first for new nuclear power plant construction in more than three decades.

**No deal.**

**NEIBAUER 11 – 7 – 12 Biz Journals Staff - covers economic development, chambers of commerce, transportation and politics** [Michael Neibauer, Attention turns to sequestration in lame duck, <http://www.bizjournals.com/washington/blog/fedbiz_daily/2012/11/attention-turns-to-sequestration-in.html?page=all>]

As nothing has changed at the federal level — Obama will remain in the White House, the House is controlled by Republicans and the Senate by Democrats — **is there any reason to expect a compromise?**

“The deadline’s not moving, so something needs to be done during this lame duck,” Dan Stohr, communications director for the Aerospace Industries Association, said of the post-election congressional session.

House Speaker John Boehner, R-Ohio, rejected tax increases in his re-election victory speech, but he suggested a compromise was in order. There was, however, no olive branch from Senate Minority Leader Mitch McConnell, R-Ky., whose congratulations was tempered by a demand that Obama “move to the political center,” where Republicans will “meet him half way.”

“That begins by proposing a way for both parties to work together in avoiding the ‘fiscal cliff’ without harming a weak and fragile economy, and when that is behind us work with us to reform the tax code and our broken entitlement system,” McConnell said.

Bill Frenzel, a guest scholar of economic studies at the Brookings Institution, said there’s been virtually no sign of either side backing down in the half day since polls closed.

“In fact we heard a speech by Speaker Boehner indicating that the Republicans had a mandate not to increase the tax rate,” said Frenzel, a former Republican U.S. congressman. “And we of course heard the president say he wants to go forward with some of his important programs. It looks like a pretty wide separation of interests.”

**No capital for the fiscal cliff.**

**SHATNEY & HARRIS 11 – 7 – 12 Schroders Business** [Joanna Shatney and David Harris, Election's Over: What it Means for Your Investments, <http://www.foxbusiness.com/investing/2012/11/07/election-over-what-it-means-for-your-investments/>]

With President Obama in office for another four years, here are two takes from on what investors should be prepared for.

The Equities view:

Joanna Shatney, Head of US Large Cap Equities: Does Obama have the same political capital as when he entered his first term?

Obama’s victory in the election came as a landslide of major swing states fell to the incumbent President. However, this was the not the victory we saw in 2008. Obama does not have same political capital as when he entered his first term.

The biggest difference is that the Republicans have retained control of the House of Representatives. When Obama won in 2008 it was Democrat controlled (the Republicans won it back in 2010). This will be the focus of controversy in the next few weeks as everyone waits to see what will happen in terms of dealing with the fiscal cliff.

**Cliff is a self-denying prophecy.**

**WEST 11 – 8 – 12 U.S. practice head and director at Eurasia Group, a global political risk advisory firm** [Sean West, Obama and Boehner’s Bridge Across the Fiscal Cliff, <http://www.bloomberg.com/news/2012-11-08/obama-and-boehner-s-bridge-across-the-fiscal-cliff.html>]

The last time President Barack Obama and House Speaker John Boehner squared off over fiscal problems, they triggered tremendous market volatility, cost the U.S. its AAA credit rating and nearly pushed the government into default.

Voters were so impressed with the results that they have re-elected the two leaders so they can have another go -- this time to help the country avoid a headlong dive over the dreaded fiscal cliff.

Fear not: The players are the same, but the game has fundamentally changed.

The battle in 2011 over the debt ceiling wasn’t actually about the debt ceiling: It was about fixing the deficit. But neither side wanted to accept a compromise that might antagonize party loyalists on the eve of campaign season or to make concessions that the election outcome might render unnecessary.

They spent so much time debating an unreachable big deal that they had to rush simply to agree to raise the debt limit without defaulting. Markets shudder when the country with the lowest credit risk in the world has to think about paying its bills.

The fiscal cliff -- the automatic tax increases and spending cuts set to take effect in January if Obama and Boehner don’t reach a budget deal -- is much different.

Stalling Strategy

There is a large battle to be had over broader deficit reduction, but that is not the immediate issue facing Washington on Jan. 1. No one thinks the deficit will be solved in the lame- duck period: Avoiding the fiscal cliff means simply finding a way to delay the problem this year without surrendering negotiating leverage for the larger fight next year.

In 2011, expectations were raised that Democrats and Republicans would solve fiscal problems in conjunction with a debt-limit increase in order to avoid a credit downgrade and keep the bond vigilantes at bay. This year, credit raters and Treasury markets have signaled that the U.S. will not be punished for “punting” decisions into 2013.

Thus, avoiding the fiscal cliff requires only “building a bridge” to the new year. Both sides have clear incentives to avoid a disaster for which both parties would be blamed. Neither side has a better alternative. T**hat’s why the fiscal cliff is a self-denying prophecy: It’s so bad, it not only can’t happen, it can’t credibly be threatened.**

If either side takes a hard-line position while threatening to push the U.S. over the edge, external pressure from business leaders and voters rains down upon it. That’s why neither side campaigned on willingness to go over the cliff absent a deal on its terms.

Obama was just re-elected on a pledge to raise taxes on the wealthiest Americans, and voters have given him a mandate to pursue his policies. Some of the fear aroused by dire media warnings of fiscal-cliff disaster centers on the misconception that, because the so-called Bush tax cuts expire at year-end, the president has an incentive to ride over the cliff, let all these tax cuts expire, and then simply put the tax cuts for the middle class back in place next year.

Of course, in the interim, there would be a dramatic fiscal and market shock from both the onset of austerity and the fear that it will not be reversed.

If there is no fiscal cliff deal, Obama would then preside over economic and financial carnage as he tries to frame his second term. Instead of crafting an ambitious second-term vision for his January inaugural address, he would instead spend his time and energy trying to push off blame for the economic calamity under way.

Possible Meltdown

The voters who just granted him a second term would see hundreds of dollars of cuts to their first paychecks in 2013. Companies that backed him will fire workers as government contracts are cut and the broader corporate community will scream about how the recovery has been knocked off course. Far from freeing him to play hero later, this meltdown would strangle his second term before it began.

Boehner’s position is similar. The election’s weakening of the Tea Party strengthens the speaker’s control of his caucus, but he is weaker today relative to the newly re-elected president than he was last year. Boehner knows he risks a public backlash if he appears to lead a party blamed for legislative obstruction into plunging the U.S. economy over the edge.

That sort of blame would dramatically reduce his leverage in the larger 2013 fiscal debate where the real, substantive issues remain on the table. This came through very clearly in his first post-election press conference: In total contrast to the shoot-from-the hip speaker of 2011, Boehner’s speech was a plea for a deal, delivered from two teleprompters. He knows he has little room for error.

**Both men want to avoid disaster** before the year’s end and earn some credit for a landmark deal in 2013. The only way to do that is to avoid the immediate cliff by building a bridge.

This will require a president who will never again face the judgment of voters to move off his pledge to veto across-the- board tax cuts at year’s end. It will require Republicans to provide Obama political cover to do so by agreeing to some smaller down payment now -- such as reducing the amount of tax deductions the wealthy can take in 2013. It will then require around-the-clock negotiations to decide how to word such a deal and to twist enough arms to make sure it can pass Congress before the turn of the year.

Will Washington do all this before the New Year’s Eve ball drops in Times Square? **Given the pain that failure would inflict on everyone involved, both sides have little choice.**

**First – appropriations cover.**

**Sullivan 10** (Mary Anne Sullivan – Partner in Hogan Lovells' energy practice in Washington, D.C., Daniel F. Stenger – Partner in Hogan Lovells' energy practice in Washington, D.C., Amy C. Roma – Senior associate in Hogan Lovells' energy practice in Washington, D.C., *Are Small Reactors the Next Big Thing in Nuclear?*, November 2010, Electric Light & Power, Nov/Dec2010, Vol. 88 Issue 6, p46)

Congress

SMRs have enjoyed **bipartisan support** in Congress. The House Committee on Science and Technology and the Senate Energy and Natural Resources Committee have approved similar legislation designed to promote the development and deployment of SMRs along the lines the DOE has proposed. Promoting SMR development in legislation has its price.

The Congressional Budget Office recently estimated that the Senate bill would cost $407 million over the next five years to support cost-sharing programs with private companies for the development of two standard SMR designs. Costs for the out-years were not included in the estimate, but the bill would require the DOE to obtain NRC design certifications for the reactors by 2018 and to secure combined construction and operating licenses by Jan. 1, 2021.

If Congress can pass an energy bill, it seems likely the bill **will support SMRs**. Even in the absence of new authorizing legislation, however, **appropriations bills** that must be passed to **keep the government running** almost certainly will contain strong support for the DOE's research and development program for SMRs.

SMRs respond to a critical suite of power needs: reliable, low-carbon, baseload generation at a manageable capital cost for even small utilities. But as with many other power solutions, much still needs to happen to realize the promise.

**Second – key political leaders.**

**Butler 10** (\*Lieutenant Col Glen – Marine Officer and Director of Operations and Training at the Marine Corps Base in Hawaii, \*\*Col Robert D Rice – Commanding Officer at the Marine Corps Base in Hawaii, *The nuclear option*, http://www.armedforcesjournal.com/2010/11/4847032/)

Finally, partnerships and Enhanced Use Leases (EULs) to support SMR deployments should be explored. As the overall expertise in SMR technology grows, additional capabilities such as expeditionary and vehicular power sources should be explored. Other technologies — including hybrid/electric vehicle power storage and recharging facilities, and water desalination plants — could possibly even co-locate with nuclear plants on installations to co-use the energy. Many external challenges do exist; compliance with the National Environmental Policy Act (NEPA) of 1969 takes time, and community support would be a critical piece of this undertaking — but neither are impediments to success if planning and execution are conducted smartly.

The idea of putting nuclear power plants on military installations is by no means new, yet the time has never been better and the technology never as promising as now. The **president** and **Chu** continue to voice support for new nuclear energy initiatives, and a large, **bipartisan group** of political leaders stands poised to back such a plan. This inviting climate is the open door and momentum the DoD should capitalize on by aggressively pursuing what could truly be the next Apollo program. If we fail to explore this promising frontier, we are likely to lose this modern energy “space race” to the Chinese and other eager competitors. That is something the U.S. cannot afford to do.

**Third – nuclear lobbies.**

**Baker 12** (Matthew, Worked with the Victorian Government in Australia, Held positions as a Parliamentary Assistant with Michael O’Brien, Minister for Energy and Resources in the Victorian Government, and Andrea Coote – Current Victorian Parliamentary Secretary for Families and Community Services, *Do Small Modular Reactors Present a Serious Option for the Military’s Energy Needs?*, June 22nd 2011, http://americansecurityproject.org/blog/2012/do-small-modular-reactors-present-a-serious-option-for-the-militarys-energy-needs/)

The **D**efense **E**nergy **S**ecurity **C**aucus (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.

**Winners win.**

**Hunter 10** [Daily Kos Contributing Editor, *Political death by a thousand cuts*, http://www.dailykos.com/storyonly/2010/11/17/921164/-Political-death-by-a-thousand-cuts]

It may be a petty, minor thing, but this is getting to the point where Obama is looking weak in many, many separate situations, and it's becoming a car wreck for the White House. Having him doing public post-election soul searching; having him give repeated noises in the press about preemptively caving on whatever it is the GOP might be asking for: it's a messaging/political disaster. He took a stout midterm loss and turned it into his own midterm disaster. At some point someone in this White House has to start figuring out that, screw actual policy, they're getting their asses kicked purely on the PR front, and Obama's not going to get reelected if he looks like a quivering pushover. We know from the healthcare fiasco that there's a bunch of folks in this White House who care more about protecting Obama's image than actually getting useful stuff done: well, image-hoarders, now might be the perfect time to pay attention to what the nice news channels are telling you. Instead, this is rapidly becoming another perfect example of being so miserly with your "limited" political capital that you end up losing all of it. Obama is keeping his powder so dry that he's losing battles without firing a shot. Long story short, if McConnell or Boehner can't find time to meet at the president's convenience, Obama should just call off the meeting and be done with it. When you're President of the United States you shouldn't be losing pissant little power plays.

**PC theory is wrong.**

**Dickinson 9** [Matthew, Professor of Political Science at Middlebury College, Previously Taught at Harvard University under the supervision of Presidential Scholar Richard Neustadt, *Presidential Power: A NonPartisan Analysis of Presidential Politics*, May 26th, http://blogs.middlebury.edu/presidentialpower/2009/05/26/sotamayor-obama-and-presidential-power/]

As for Sotomayor, from here the path toward almost certain confirmation goes as follows: the Senate Judiciary Committee is slated to hold hearings sometime this summer (this involves both written depositions and of course open hearings), which should lead to formal Senate approval before Congress adjourns for its summer recess in early August. So Sotomayor will likely take her seat in time for the start of the new Court session on October 5. (I talk briefly about the likely politics of the nomination process below). What is of more interest to me, however, is what her selection reveals about the basis of presidential power. Political scientists, like baseball writers evaluating hitters, have devised numerous means of measuring a president’s influence in Congress. I will devote a separate post to discussing these, but in brief, they often center on the creation of legislative “box scores” designed to measure how many times a president’s preferred piece of legislation, or nominee to the executive branch or the courts, is approved by Congress. That is, how many pieces of legislation that the president supports actually pass Congress? How often do members of Congress vote with the president’s preferences? How often is a president’s policy position supported by roll call outcomes? These measures, however, are a **misleading** gauge of presidential power – they are a better indicator of congressional power. This is because how members of Congress vote on a nominee or legislative item is rarely influenced by anything a president does. Although journalists (and political scientists) often focus on the legislative “endgame” to gauge presidential influence – will the President swing enough votes to get his preferred legislation enacted? – this mistakes an **outcome** with actual **evidence** of presidential influence. Once we **control** for other factors – a member of Congress’ ideological and partisan leanings, the political leanings of her constituency, whether she’s up for reelection or not – we can usually predict how she will vote without needing to know much of anything about what the president wants. (I am ignoring the importance of a president’s veto power for the moment.) Despite the much publicized and celebrated instances of presidential arm-twisting during the legislative endgame, then, most legislative outcomes don’t depend on presidential lobbying. But this is not to say that presidents lack influence. Instead, the primary means by which presidents influence what Congress does is through their ability to determine the alternatives from which Congress must choose. That is, presidential power is largely an exercise in agenda setting – **not arm-twisting**. And we see this in the Sotomayer nomination. Barring a major scandal, she will almost certainly be confirmed to the Supreme Court whether Obama spends the confirmation hearings calling every Senator or instead spends the next few weeks ignoring the Senate debate in order to play Halo III on his Xbox. That is, how senators decide to vote on Sotomayor will have almost **nothing** to do with Obama’s lobbying from here on in (or lack thereof). His real influence has already occurred, in the decision to present Sotomayor as his nominee. If we want to measure Obama’s “power”, then, we need to know what his real preference was and why he chose Sotomayor. My guess – and it is only a guess – is that after conferring with leading Democrats and Republicans, he recognized the overriding practical political advantages accruing from choosing an Hispanic woman, with left-leaning credentials. We cannot know if this would have been his ideal choice based on judicial philosophy alone, but presidents are never free to act on their ideal preferences. Politics is the art of the possible. Whether Sotomayer is his first choice or not, however, her nomination is a reminder that the power of the presidency often resides in the president’s ability to dictate the alternatives from which Congress (or in this case the Senate) must choose. Although Republicans will undoubtedly attack Sotomayor for her judicial “activism” (citing in particular her decisions regarding promotion and affirmative action), her comments regarding the importance of gender and ethnicity in influencing her decisions, and her views regarding whether appellate courts “make” policy, they run the risk of alienating Hispanic voters – an increasingly influential voting bloc (to the extent that one can view Hispanics as a voting bloc!) I find it very hard to believe she will not be easily confirmed. In structuring the alternative before the Senate in this manner, then, Obama reveals an important aspect of presidential power that **cannot be measured** through legislative box scores. Of perhaps greater significance – not one of you predicted Sotomayor’s nomination, and thus no one is the recipient of an “It’s the Fundamentals, Stupid!” T-Shirt. I am deeply, deeply disappointed in all of you. If it were in my power, those diplomas that were handed out in the pouring rain would be rescinded. What kind of an education did you pay for? I’m shocked…SHOCKED!

#### No economic collapse – government support, no great power conflict, low inflation, tech connectivity

**Zakaria 9** (Fareed, former columnist for Newsweek and editor of Newsweek International, he has recently announced a move to Editor-At-Large of Time, host of CNN's Fareed Zakaria GPS, and a frequent commentator and author about issues related to international relations, trade and American foreign policy, “The Secrets of Stability,” December 12, http://www.newsweek.com/2009/12/11/the-secrets-of-stability.html)

This revival did not happen because markets managed to stabilize themselves on their own. Rather, governments, having learned the lessons of the Great Depression, were determined not to repeat the same mistakes once this crisis hit. By massively expanding state support for the economy—through central banks and national treasuries—they buffered the worst of the damage. (Whether they made new mistakes in the process remains to be seen.) The extensive social safety nets that have been established across the industrialized world also cushioned the pain felt by many. Times are still tough, but things are nowhere near as bad as in the 1930s, when governments played a tiny role in national economies. It's true that the massive state interventions of the past year may be fueling some new bubbles: the cheap cash and government guarantees provided to banks, companies, and consumers have fueled some irrational exuberance in stock and bond markets. Yet these rallies also demonstrate the return of confidence, and confidence is a very powerful economic force. When John Maynard Keynes described his own prescriptions for economic growth, he believed government action could provide only a temporary fix until the real motor of the economy started cranking again—the animal spirits of investors, consumers, and companies seeking risk and profit. Beyond all this, though, I believe there's a fundamental reason why we have not faced global collapse in the last year. It is the same reason that we weathered the stock-market crash of 1987, the recession of 1992, the Asian crisis of 1997, the Russian default of 1998, and the tech-bubble collapse of 2000. The current global economic system is inherently more resilient than we think. The world today is characterized by three major forces for stability, each reinforcing the other and each historical in nature. The first is the spread of great-power peace. Since the end of the Cold War, the world's major powers have not competed with each other in geomilitary terms. There have been some political tensions, but measured by historical standards the globe today is stunningly free of friction between the mightiest nations. This lack of conflict is extremely rare in history. You would have to go back at least 175 years, if not 400, to find any prolonged period like the one we are living in. The number of people who have died as a result of wars, civil conflicts, and terrorism over the last 30 years has declined sharply (despite what you might think on the basis of overhyped fears about terrorism). And no wonder—three decades ago, the Soviet Union was still funding militias, governments, and guerrillas in dozens of countries around the world. And the United States was backing the other side in every one of those places. That clash of superpower proxies caused enormous bloodshed and instability: recall that 3 million people died in Indochina alone during the 1970s. Nothing like that is happening today. Peace is like oxygen, Harvard's Joseph Nye has written. When you don't have it, it's all you can think about, but when you do, you don't appreciate your good fortune. Peace allows for the possibility of a stable economic life and trade. The peace that flowed from the end of the Cold War had a much larger effect because it was accompanied by the discrediting of socialism. The world was left with a sole superpower but also a single workable economic model—capitalism—albeit with many variants from Sweden to Hong Kong. This consensus enabled the expansion of the global economy; in fact, it created for the first time a single world economy in which almost all countries across the globe were participants. That means everyone is invested in the same system. Today, while the nations of Eastern Europe might face an economic crisis, no one is suggesting that they abandon free-market capitalism and return to communism. In fact, around the world you see the opposite: even in the midst of this downturn, there have been few successful electoral appeals for a turn to socialism or a rejection of the current framework of political economy. Center-right parties have instead prospered in recent elections throughout the West. The second force for stability is the victory—after a decades-long struggle—over the cancer of inflation. Thirty-five years ago, much of the world was plagued by high inflation, with deep social and political consequences. Severe inflation can be far more disruptive than a recession, because while recessions rob you of better jobs and wages that you might have had in the future, inflation robs you of what you have now by destroying your savings. In many countries in the 1970s, hyperinflation led to the destruction of the middle class, which was the background condition for many of the political dramas of the era—coups in Latin America, the suspension of democracy in India, the overthrow of the shah in Iran. But then in 1979, the tide began to turn when Paul Volcker took over the U.S. Federal Reserve and waged war against inflation. Over two decades, central banks managed to decisively beat down the beast. At this point, only one country in the world suffers from -hyperinflation: Zimbabwe. Low inflation allows people, businesses, and governments to plan for the future, a key precondition for stability. Political and economic stability have each reinforced the other. And the third force that has underpinned the resilience of the global system is technological connectivity. Globalization has always existed in a sense in the modern world, but until recently its contours were mostly limited to trade: countries made goods and sold them abroad. Today the information revolution has created a much more deeply connected global system. Managers in Arkansas can work with suppliers in Beijing on a real-time basis. The production of almost every complex manufactured product now involves input from a dozen countries in a tight global supply chain. And the consequences of connectivity go well beyond economics. Women in rural India have learned through satellite television about the independence of women in more modern countries. Citizens in Iran have used cell phones and the Internet to connect to their well-wishers beyond their borders. Globalization today is fundamentally about knowledge being dispersed across our world. This diffusion of knowledge may actually be the most important reason for the stability of the current system. The majority of the world's nations have learned some basic lessons about political well-being and wealth creation. They have taken advantage of the opportunities provided by peace, low inflation, and technology to plug in to the global system. And they have seen the indisputable results. Despite all the turmoil of the past year, it's important to remember that more people have been lifted out of poverty over the last two decades than in the preceding 10. Clear-thinking citizens around the world are determined not to lose these gains by falling for some ideological chimera, or searching for a worker's utopia. They are even cautious about the appeals of hypernationalism and war. Most have been there, done that. And they know the price.

#### Economic crisis won’t cause war – empirics go neg

Barnett 9 (Thomas, senior managing director of Enterra Solutions LLC, senior strategic researcher for Naval War College, August 25, “The New Rules: Security Remains Stable Amid Financial Crisis,” Aprodex, Asset Protection Index, <http://www.aprodex.com/the-new-rules--security-remains-stable-amid-financial-crisis-398-bl.aspx>)

When the global financial crisis struck roughly a year ago, the blogosphere was ablaze with all sorts of scary predictions of, and commentary regarding, ensuing conflict and wars -- a rerun of the Great Depression leading to world war, as it were. Now, as global economic news brightens and recovery -- surprisingly led by China and emerging markets -- is the talk of the day, it's interesting to look back over the past year and realize how globalization's first truly worldwide recession has had virtually no impact whatsoever on the international security landscape. None of the more than three-dozen ongoing conflicts listed by GlobalSecurity.org can be clearly attributed to the global recession. Indeed, the last new entry (civil conflict between Hamas and Fatah in the Palestine) predates the economic crisis by a year, and three quarters of the chronic struggles began in the last century. Ditto for the 15 low-intensity conflicts listed by Wikipedia (where the latest entry is the Mexican "drug war" begun in 2006). Certainly, the Russia-Georgia conflict last August was specifically timed, but by most accounts the opening ceremony of the Beijing Olympics was the most important external trigger (followed by the U.S. presidential campaign) for that sudden spike in an almost two-decade long struggle between Georgia and its two breakaway regions. Looking over the various databases, then, we see a most familiar picture: the usual mix of civil conflicts, insurgencies, and liberation-themed terrorist movements. Besides the recent Russia-Georgia dust-up, the only two potential state-on-state wars (North v. South Korea, Israel v. Iran) are both tied to one side acquiring a nuclear weapon capacity -- a process wholly unrelated to global economic trends. And with the United States effectively tied down by its two ongoing major interventions (Iraq and Afghanistan-bleeding-into-Pakistan), our involvement elsewhere around the planet has been quite modest, both leading up to and following the onset of the economic crisis: e.g., the usual counter-drug efforts in Latin America, the usual military exercises with allies across Asia, mixing it up with pirates off Somalia's coast). Everywhere else we find serious instability we pretty much let it burn, occasionally pressing the Chinese -- unsuccessfully -- to do something. Our new Africa Command, for example, hasn't led us to anything beyond advising and training local forces. So, to sum up: \* No significant uptick in mass violence or unrest (remember the smattering of urban riots last year in places like Greece, Moldova and Latvia?); \* The usual frequency maintained in civil conflicts (in all the usual places); \* Not a single state-on-state war directly caused (and no great-power-on-great-power crises even triggered); \* No great improvement or disruption in great-power cooperation regarding the emergence of new nuclear powers (despite all that diplomacy); \* A modest scaling back of international policing efforts by the system's acknowledged Leviathan power (inevitable given the strain); and \* No serious efforts by any rising great power to challenge that Leviathan or supplant its role. (The worst things we can cite are Moscow's occasional deployments of strategic assets to the Western hemisphere and its weak efforts to outbid the United States on basing rights in Kyrgyzstan; but the best include China and India stepping up their aid and investments in Afghanistan and Iraq.) Sure, we've finally seen global defense spending surpass the previous world record set in the late 1980s, but even that's likely to wane given the stress on public budgets created by all this unprecedented "stimulus" spending. If anything, the friendly cooperation on such stimulus packaging was the most notable great-power dynamic caused by the crisis. Can we say that the world has suffered a distinct shift to political radicalism as a result of the economic crisis? Indeed, no. The world's major economies remain governed by center-left or center-right political factions that remain decidedly friendly to both markets and trade. In the short run, there were attempts across the board to insulate economies from immediate damage (in effect, as much protectionism as allowed under current trade rules), but there was no great slide into "trade wars." Instead, the World Trade Organization is functioning as it was designed to function, and regional efforts toward free-trade agreements have not slowed.

#### Emerging economies have decoupled from the US – industries, jobs and consumers

**Brush 10** (Michael, award-winning New York financial writer who has covered business and investing for The New York Times, Money magazine and the Economist Group, studied at Columbia Business School in the Knight-Bagehot Fellowship program, “Emerging markets will lead us back,” MSN Money, http://articles.moneycentral.msn.com/Investing/CompanyFocus/emerging-markets-will-lead-us-back.aspx)

Now that investment should pay off. Emerging economies are starting to truly emerge as **economic powerhouses**, with some already casting off the global recession and posting strong growth. Take stocks, for example: Even after a strong rally, the U.S. market is merely about even this year. China's market is up 27%. India's is up 48%. The good news: This will help the U.S. bounce back, perhaps more strongly than most anticipate, as a world of new consumers starts buying our stuff. The risk, at least if you're nationalistically minded: Though the U.S. may not lose its leadership role in the global economy, its superiority will dwindle. Recent news of robust growth in places such as China and India confirms that emerging markets are on an economic path of their own, relying less on support from U.S. customers. This is the theoretical decoupling that many economists had buzzed about, then dismissed as the world followed the U.S. into recession**. It turns out that decoupling is real.** Next, expect consumers in these emerging economies to start buying more stuff made in the U.S., nudging the U.S. back to "normal" growth of 3% to 3.5% per year sooner than many people expect, says James Paulsen, an economist and market strategist with Wells Fargo. And that is how the "investments" made by U.S. consumers will pay off. Our spending helped them build up industries, creating jobs and consumers -- who now can turn around and buy from us. To be sure, emerging-market economies deserve credit, too. Most of their financial institutions steered clear of the credit-market mess that has crippled the more advanced economies of the U.S. and Europe, says Cristina Panait, who follows emerging markets as a portfolio manager of the Payden Emerging Markets Bond Fund (PYEMX). But here's a closer look at how the U.S. consumer helped create this boom. After World War II, the U.S. channeled $13 billion to Europe for rebuilding, recognizing that we needed the region as a trading partner. That's about $115 billion in today's dollars. The payoff came in the 1950s and 1960s, when European demands for our stuff contributed to robust U.S. economic growth. This ingenious strategy was called the Marshall Plan, named after then-Secretary of State George Marshall, who played a key role in developing it. Now the U.S. is starting to benefit from an unofficial Marshall Plan set in motion by U.S. consumers over the past 15 years, Paulsen believes. As U.S. consumers binged, a lot of what they bought came from factories in China, India, Indonesia, Vietnam and other emerging-world countries. During this time, the U.S. ran trade deficits of about $650 billion a year, Paulsen estimates. That means we spent that much more abroad than foreigners bought from us. That money helped emerging-market nations build out their infrastructure. It paid the salaries that fueled the growth of now-thriving middle classes. "We ran trade deficits for the better part of a decade and a half, and that amounts to a constant investment in these economies," Paulsen says. The result was a "new world consumer, with wants, desires and savings." Trade deficits were criticized along the way as a sign the U.S. was living beyond its means. But the payoff may be coming soon. Here are some numbers that give a sense of the changes that U.S. consumers helped bring about in the emerging world: In China, about 400 million people have risen above poverty since the late 1970s. And 150 million of them now have manufacturing jobs -- a group nearly the size of the entire U.S. work force, says Fred Fraenkel, the chairman of investment policy for Beacon Trust. An additional 200 million Chinese should rise above poverty in the next five to 10 years, he estimates. The size of the middle class has likewise been rising dramatically throughout the developing world. "This is moving so fast . . . that it's hard to comprehend," Fraenkel says. One way to grasp the big picture is to consider how sharply the emerging-market share of world gross domestic product has risen. Developing economies accounted for 45% of world GDP last year, up from 37% in 2000, says Panait, of investment firm Payden & Rygel. The value of emerging-market contribution to world GDP rose to $30.9 trillion in 2008 from $15.5 trillion in 2000. Emerging-market customers are now buying much more of our stuff. Developing countries bought 35% of the $1.3 trillion worth of U.S. exports in 2008, according to Franklin Vargo of the National Association of Manufacturers. That's up from 25% in 1990. China was the largest, with $70 billion in purchases, followed by Brazil, Singapore and Taiwan. They buy agricultural products but also significant amounts of manufactured goods. That's a lot of theory, but what does it mean for investors? First, U.S. stocks may rally a lot more, and sooner, than many pundits currently expect. Keeping money on the sidelines may be a mistake. It probably also makes sense to buy stocks of companies in these regions despite their big rallies. Hong Kong's Hang Seng Index ($HSI) is up 61% from its low point of this recession; India's stock market is up 75%. Some potential buys include Chinese education companies, such as China Distance Education (DL, news, msgs), ChinaEdu (CEDU, news, msgs) and New Oriental Education & Technology Group (EDU, news, msgs), and Indian car company Tata Motors (TTM, news, msgs), says Paul Goodwin of Cabot China & Emerging Markets Report, a top-ranked investment newsletter by Hulbert Financial Digest. Brazilian banks such as Banco Bradesco (BBD, news, msgs) and Itaú Unibanco Banco Múltiplo (ITUB, news, msgs) look attractive as plays on expanding use of consumer banking services, says Will Landers, the portfolio manager of the BlackRock Latin America Fund I (MALTX). Uri Landesman, the head of global growth strategies at ING Investment Management, likes Millicom International Cellular (MICC, news, msgs), which offers mobile telephone services in Central America, South America, Africa and Asia. "It's the Vodafone Group (VOD, news, msgs) of emerging markets," he says. U.S. exports leveled off earlier this year after falling sharply during the depths of the recession, and emerging economies slowed down, too. But for the longer term, purchases of U.S. products should continue to rise, for two reasons: Emerging economies are showing robust growth. India's economy was up 5.8% in the first quarter. China's GDP grew 7.9% in the second quarter. Overall, JPMorgan Chase analysts estimate that emerging Asia's GDP grew by an annualized 7% in the second quarter. The International Monetary Fund projects emerging economies will grow by 4.7% next year, with China and India leading the way at 8.5% and 6.5%, respectively. "We're convinced that the **emerging markets are going to lead the way out of the recession**," Panait says.

### 2ac—Russia DA

**Russia will export small, dangerous, ocean-going reactors.**

**Ferguson 10**—President of the Federation of American Scientists. Adjunct Professor in the Security Studies Program at Georgetown University and an Adjunct Lecturer in the National Security Studies Program at the Johns Hopkins University. (Charles, Testimony before the House Committee on Science and Technology for the hearing on Charting the Course for American Nuclear Technology: Evaluating the Department of Energy’s Nuclear Energy Research and Development Roadmap, <http://gop.science.house.gov/Media/hearings/full10/may19/Ferguson.pdf>)

The United States and several other countries have considerable experience in building and operating small and medium power reactors. The U.S. Navy, for example, has used small power reactors since the 1950s to provide propulsion and electrical power for submarines, aircraft carriers, and some other surface warships. China, France, Russia, and the United Kingdom have also developed nuclear powered naval vessels that use small reactors. Notably, Russia has deployed its KLT-40S and similarly designed **small power reactors** on icebreakers and has in recent years proposed building and se**lling barges that would carry these types of reactors for use in sea-side communities throughout the world**. China has already exported small and medium power reactors. In 1991, China began building a reactor in Pakistan and started constructing a second reactor there in 2005. In the wake of the U.S.-India nuclear deal, Beijing has recently reached agreement with Islamabad to build two additional reactors rated at 650 MWe.2¶ One of the unintended consequences of more than 30 years of sanctions on India’s nuclear program is that India had concentrated its domestic nuclear industry on building small and medium power reactors based on Canadian pressurized heavy water technology, or Candu-type reactors. Pressurized heavy water reactors (PHWRs) pose proliferation concerns because they can be readily operated in a mode optimal for producing weapons-grade plutonium and can be refueled during power operations. Online refueling makes it exceedingly difficult to determine when refueling is occurring based solely on outside observations, for example, through satellite monitoring of the plant’s operations. Thus, the chances for potential diversion of fissile material increase. This scenario for misuse underscores the need for more frequent inspections of these facilities. But the limited resources of the International Atomic Energy Agency have resulted in a rate of inspections that are too infrequent to detect a diversion of a weapon’s worth of material. 3¶ The opening of the international nuclear market to India may lead to further spread of PHWR technologies to more states. For example, last year, the Nuclear Power Corporation of India, Ltd. (NPCIL) expressed interest in selling PHWRs to Malaysia. 4 NPCIL is the only global manufacturer of 220 MWe PHWRs. New Delhi favors Southto-South cooperation; consequently developing states in Southeast Asia, sub-Saharan Africa, and South America could become recipients of these technologies in the coming years to next few decades. 5 Many of these countries would opt for small and medium power reactors because their electrical grids do not presently have the capacity to support large power reactors and they would likely not have the financial ability to purchase large reactors. ¶ What are the implications for the United States of Chinese and Indian efforts to sell small and medium power reactors? Because China and India already have the manufacturing and marketing capability for these reactors, the United States faces an economically competitive disadvantage. Because the **U**nited **S**tates has yet to license such reactors for domestic use, it has placed itself **at an additional market disadvantage**. By the time the **U**nited **S**tates has licensed such reactors, China and India as well as other competitors may have **established a strong hold on this emerging market**. ¶ The U.S. Nuclear Regulatory Commission cautioned on December 15, 2008 that the “licensing of new, small modular reactors is not just around the corner. The NRC’s attention and resources now are focused on the large-scale reactors being proposed to serve millions of Americans, rather than smaller devices with both limited power production and possible industrial process applications.” The NRC’s statement further underscored that “examining proposals for radically different technology will likely require an exhaustive review” … before “such time as there is a formal proposal, the NRC will, as directed by Congress, continue to devote the majority of its resources to addressing the current technology base.” 6 Earlier this year, the NRC devoted consideration to presentations on small modular reactors from the Nuclear Energy Institute, the Department of Energy, and the Rural Electric Cooperative Association among other stakeholders. 7 At least seven vendors have proposed that their designs receive attention from the NRC. 8¶ Given the differences in design philosophy among these vendors and the fact that none of these designs have penetrated the commercial market, it is too soon to tell which, if any, will emerge as market champions. Nonetheless, because of the early stage in development, the **U**nited **S**tates has an opportunity **to state clearly the criteria for successful use of SMRs**. But because of the head start of China and India, the **U**nited **S**tates **should not procrastinate** and **should take a leadership role** in **setting the standards** for safe, secure, and proliferation-resistant SMRs that **can compete in the market**. ¶ Several years ago, the United States sponsored assessments to determine these criteria. 9 While the Platonic ideal for small modular reactors will likely not be realized, it is worth specifying what such an SMR would be. N. W. Brown and J. A. Hasberger of the Lawrence Livermore National Laboratory assessed that reactors in developing countries must: ¶ · “achieve reliably safe operation with a minimum of maintenance and supporting infrastructure; ¶ · offer economic competitiveness with alternative energy sources available to the candidate sites; ¶ · demonstrate significant improvements in proliferation resistance relative to existing reactor systems.”10¶ Pointing to the available technologies at that time from Argentina, China, and Russia, they determined that “these countries tend to focus on the development of the reactor **without integrated considerations of the overall fuel cycle, proliferation, or waste issues**.” They emphasized that what is required for successful development of an SMR is “a comprehensive systems approach that considers all aspects of manufacturing, transportation, operation, and ultimate disposal.”

**That causes accidents.**

**Grossman 10** Prof. of Journalism @ SUNY – Karl Grossman, CounterPunch, 27 July 2010, Floating Chernobyls <http://nuclearfreeplanet.org/blogs/counterpunch--karl-grossman-floating-chernobyls.html>

Nuclear experts in Europe—including in Russia—are as critical as Lochbaum is about floating **n**uclear **p**ower **p**lant**s** and their **unique accident potential**. Other issues raised include the floating plants being sources of fuel for nuclear weapons and easy targets for terrorists.¶ “This project is **clearly** a **risky** venture,” said Alexander Nitikin, a former chief engineer on nuclear-powered submarines of the Soviet Union and senior inspector for the Nuclear and Radiation Safety Inspection Department for its Department of Defense. He is now head of the St. Petersburg branch of the Bellona Foundation, an international environmental organization. “Safety shouldn’t be neglected for the profits Rosatom wants to get from selling floating nuclear power plants to the troubled regions. Such Rosatom activities simply violate the idea of non-proliferation.”¶ “Such installations could **heighten the risk of radioactive contamination of the sea** and shore zones…**by many times**,” said Andrei Ponomarenko, coordinator for the Radiation and Nuclear Safety Project of Bellona’s chapter in Murmansk.¶ In a statement describing the plants “floating Chernobyls in waiting,” the main office of Norway-headquartered Bellona said that “Russia has neither the means nor infrastructure to ensure their safe operation, has made no plans for disposing of their spent fuel, and has not taken into consideration the enormous nuclear proliferation risks posed.”

**Those destroy oceans.**

**Grossman 10** Prof. of Journalism @ SUNY – Karl Grossman, CounterPunch, 27 July 2010, Floating Chernobyls <http://nuclearfreeplanet.org/blogs/counterpunch--karl-grossman-floating-chernobyls.html>

However, David Lochbaum, senior safety engineer at the Union of Concerned Scientists, describes an accident at a floating nuclear power plant as “worse” than at a land-based plant. “In a meltdown, a China syndrome accident, the molten mass of what had been the core would burrow into the ground and some of the radioactive material held there. But with a floating nuclear plant, **all the molten mass would drop into the water and there would be a steam explosion** and the release of a tremendous amount of energy and radioactive material. It would be **like a bomb going off,”** said Lochbaum, director of the Nuclear Safety Project at Washington-based UCS.¶ “With a floating nuclear plant you have a mechanism to significantly increase the amount of radioactive material going into the environment,” said Lochbaum, who worked 18 years as an engineer in the nuclear industry and also for the U.S. Nuclear Regulatory Commission. A large plume of radioactive poisons would be formed and “many more people would be put in harm’s way.” Further, there would **be radioactive pollution of the sea**, he noted.

**Extinction.**

**Craig 3** Associate Professor of Law, Indiana University School of Law, 2003, 34 McGeorge L. Rev. 155, Lexis

Biodiversity and ecosystem function arguments for conserving marine ecosystems also exist, just as they do for terrestrial ecosystems, but these arguments have thus far **rarely been raised in political debates**. For example, besides significant tourism values - the most economically valuable ecosystem service coral reefs provide, worldwide - coral reefs protect against storms and dampen other environmental fluctuations, services worth more than ten times the reefs' value for food production. n856 Waste treatment is another significant, non-extractive ecosystem function that intact coral reef ecosystems provide. n857 More generally, "ocean ecosystems play a **major role in** the **global geochemical cycling** of all the elements that represent the basic building blocks of living organisms, carbon, nitrogen, oxygen, phosphorus, and sulfur, as well as other less abundant but necessary elements." n858 In a very real and direct sense, therefore, **human degradation of marine ecosystems impairs the planet's ability to support life.** Maintaining biodiversity is often critical to maintaining the functions of marine ecosystems. Current evidence shows that, in general, an ecosystem's ability to keep functioning in the face of disturbance is strongly dependent on its biodiversity, "indicating that more diverse ecosystems are more stable." n859 Coral reef ecosystems are particularly dependent on their biodiversity. [\*265] Most ecologists agree that the complexity of interactions and degree of interrelatedness among component species is **higher on coral reefs than in any other marine environment**. This implies that the ecosystem functioning that produces the most highly valued components is also complex and that many otherwise insignificant species have strong effects on sustaining the rest of the reef system. n860 Thus, maintaining and restoring the biodiversity of marine ecosystems is critical to maintaining and restoring the ecosystem services that they provide. Non-use biodiversity values for marine ecosystems have been calculated in the wake of marine disasters, like the Exxon Valdez oil spill in Alaska. n861 Similar calculations could derive preservation values for marine wilderness. However, economic value, or economic value equivalents, should not be "the sole or even primary justification for conservation of ocean ecosystems. Ethical arguments also have considerable force and merit." n862 At the forefront of such arguments should be a recognition of how little we know about the sea - and about the actual effect of human activities on marine ecosystems. The United States has traditionally failed to protect marine ecosystems because it was difficult to detect anthropogenic harm to the oceans, but we now know that such harm is occurring - even though we are not completely sure about causation or about how to fix every problem. Ecosystems like the NWHI coral reef ecosystem should inspire lawmakers and policymakers to admit that most of the time we really do not know what we are doing to the sea and hence **should be preserving marine wilderness whenever we can** - especially when the **U**nited **S**tates has within its territory relatively **pristine marine ecosystems that may be unique in the world.** We may not know much about the sea, but we do know this much: **if we kill the ocean we kill ourselves, and** we will take most of **the biosphere** with us. The Black Sea is almost dead, n863 its once-complex and productive ecosystem almost entirely replaced by a monoculture of comb jellies, "starving out fish and dolphins, emptying fishermen's nets, and converting the web of life into brainless, wraith-like blobs of jelly." n864 More importantly, the Black Sea is not necessarily unique. The Black Sea is a microcosm of what is happening to the ocean systems at large. The stresses piled up: overfishing, oil spills, industrial discharges, nutrient pollution, wetlands destruction, the introduction of an alien species. The sea weakened, slowly at first, **then collapsed** with [\*266] **shocking suddenness**. The lessons of this tragedy should not be lost to the rest of us, because much of what happened here is being repeated all over the world. The ecological stresses imposed on the Black Sea were not unique to communism. Nor, sadly, was the failure of governments to respond to the emerging crisis. n865 **Oxygen-starved "dead zones"** appear with increasing frequency off the coasts of major cities and major rivers, forcing marine animals to flee and **killing all that cannot**. n866 Ethics as well as enlightened self-interest thus suggest that the United States should protect fully-functioning marine ecosystems wherever possible - even if a few fishers go out of business as a result.

**Causes nuclear war.**

**Grossman 10** Prof. of Journalism @ SUNY – Karl Grossman, CounterPunch, 27 July 2010, Floating Chernobyls <http://nuclearfreeplanet.org/blogs/counterpunch--karl-grossman-floating-chernobyls.html>

In a chapter on the floating plants as “an **attractive object of nuclear terrorism**,” the book cites an impossibility of providing “protection from torpedo attack or from underwater saboteurs, and on the surface from a rocket-bombing strike.” Further, the “spreading” of the floating plants “all over the world will allow” this to be done “much easier and with more efficiency.” Moreover, each floating nuclear plant will contain “the ready material for ten nuclear bombs in the way of enriched uranium of weapon quality.”

### 2ac—Economy

**Their evidence says the Russian economy would slow not collapse --- that's the link to our impact turns.**

**No wars.**

**O’Neal & Tir 06** – Professor of Political Science @ University of Alabama &Professor of international studies @ University of Georgia [JOHN R. ONEAL and JAROSLAV TIR, “Does the Diversionary Use of Force Threaten the Democratic Peace? Assessing the Effect of Economic Growth on Interstate Conflict, 1921–2001,” International Studies Quarterly, Published Online: 13 Nov 2006, Volume 50, Issue 4, Pages 755-779//Wiley InterScience]

That democracies almost never use military force against one another is one of the most important findings to emerge from the scientific study of international politics, leading many to conclude that democratic institutions offer the best hope for achieving a "perpetual peace."Using **data for the period 1921–2001**, wehaveassessed whether slow economic growth creates a diversionary incentivethat threatens this optimistic prognosis.

We do find evidence that a bad economy increases the likelihood that a democracy, **but not an autocracy**, will initiate a fatal dispute. On average, democracies are less likely to start a serious conflict than are autocracies, but this greater peacefulness is conditional to a degree on the growth rate in GDP per capita. Our analyses of directed dyads confirm that democratic states are particularly unlikely to initiate fatal disputes against other democracies. Moreover, autocracies are prone to attack democracies while democracies are not unusually violent toward autocracies. Surprisingly, economic conditions affect the likelihood that a democracy will start a fatal dispute not only with an autocracy or a mixed regime but even with another democracy. The proximity of legislative elections does not increase the risk of a partisan use of force, whatever the state of the economy. Fortunately, the greater peacefulness of democratic pairs is eliminated only when a democracy's annual growth rate is below −4.4% over 2 years; only 3.9% of the focal democracies in democratic dyads grew this slowly. Moreover, this statistical result rests on only four historical cases, none involving a stable, mature democracy. We found no significant evidence for Smith's (1996) strategic argument that a bad economy makes a democratic state less likely to be targeted by others. The weak empirical support for diversionary theory in many previous studies cannot be explained, therefore, by the simultaneous, off-setting effects Smith considered.

Our analyses of five prominent, powerful democracies raise further doubts about the substantive importance of diversionary uses of force. Military action for political reasons is most feasible for the leaders of powerful democracies.Most previous research has focused on the United States, at least in part, for this reason, but the United States has been significantly more likely to initiate conflict when its economy was strong, not weak. The evidence regarding Britain is inconclusive, while India and France have also exhibited behavior inconsistent with theoretical expectations. Only Israeli leaders seem to have been susceptible to diversionary pressures (Barzilai and Russett 1990; Spracher and DeRouen 2002). Thus, there is little evidence in this important subset of cases that military force is used to divert attention away from a poor economy.

Our analysis of nondirected dyadsconfirms that the incidence of conflict for jointly democratic pairs is affected by economic conditions, but growth slow enough to offset the democratic peace (−7.5% per annum for 2 years) using this unit of analysis occurs in only 3.3% of the democratic pairs. Moreover, unlike our directed analyses, the nondirected test**does not indicate that a slow economy affects the likelihood that**a democracy and**an autocracy**(or a state with a mixed regime)**will become involved in a dispute**. This surprisingresult, akin to the dog that did not bark in one of Sherlock Holmes's cases,must be counted as **important evidence against diversionary theory**. //1nc

**No lose nukes.**

**Mueller 07** - Professor of political science at Ohio State University [John Mueller, REACTIONS AND OVERREACTIONS TO TERRORISM:

THE ATOMIC OBSESSION, Prepared for delivery at the Annual Meeting of the American Political Science Association, Chicago, Illinois, August 31-September 3, 2007. July 24, 2007, pg. polisci.osu.edu/faculty/jmueller/APSA2007.PDF]

Atomic scientists, perhaps laboring under the concern, in Langewiesche's words, that "a declaration of safety can at any time be proved spectacularly wrong" (2007, 49), have thus far been disinclined to catalogue the difficulties terrorists would face. But physicists Wirz and Egger have published a paper that does so. It concludes that the task "could hardly be accomplished by a subnational group" (2005, 501).

One group that tried, in the early 1990s, was the Japanese apocalyptic group,Aum Shinrikyo. Unlike al Qaeda, it was not under siege, and it had money, expertise, a remote and secluded haven in which to set up shop, even a private uranium mine. But it made dozens of mistakes in judgment, planning, and execution(Linzer 2004).Chagrined, it turned to biological weapons which, as it happened,didn't work either, and finally to chemical ones,resulting eventually in a somewhat botched release of sarin gas in a Tokyo subwaythat managed to kill a total of 12 people.

Even if there is some desire for the bombby terrorists,fulfillment of that desire isobviously another matter, and it might be useful to take a stab at estimating just how "not impossible" their task is. After all, all sorts of things are "not impossible." A colliding meteor or comet could destroy the earth, Vladimir Putin or the British could decide one morning to launch a few nuclear weapons at Massachusetts, George Bush could become a transvestite or decide to bomb Hollywood or do both simultaneously, an underwater volcano could erupt to cause a civilization-ending tidal wave, Osama bin Laden could convert to Judaism, declare himself to be the Messiah, and fly in a gaggle of mafioso hit men from Rome to have himself publicly crucified.

Brodie's cautionary comment in the 1970s about the imaginative alarmists in the defense community holds as well for those in today's terrorism community, both of which are inhabited by:

people of a wide range of skills and sometimes of considerable imagination. All sorts of notions and propositions are churned out, and often presented for consideration with the prefatory works: "It is conceivable that..." Such words establish their own truth, for the fact that someone has conceived of whatever proposition follows is enough to establish that it is conceivable. Whether it is worth a second thought, however, is another matter (1978, 83).

In the case of nuclear terrorism, an approach that seems to have some appeal is to begin by assessing the barriers that must be surmounted by a terrorist group in order to carry out the task of producing and then successfully detonating an improvised nuclear device-- one that would be, as Allison notes, "large, cumbersome, unsafe, unreliable, unpredictable, and inefficient" (2004, 97). Table 1 presents some 25 of these, and there are surely many more.If one assumes that the terrorists have in each instance a fighting chance of 50 percent of surmounting each of these obstacles--and formany barriers, probablyalmost all, the odds against them are far, far worse than that--the chances a group could successfully pull off the mission come out to be very considerably **worse than one in 33 million,** a result they might just find a bit uninspiring, evendispiriting. Pg. 9

**Domestic crisis prevents war initiation.**

**Chiozza & Goemans 03** – Professors of of Political Science @ Duke University [GIACOMO CHIOZZA & H. E. GOEMANS, “Peace through Insecurity: TENURE AND INTERNATIONAL CONFLICT,” JOURNAL OF CONFLICT RESOLUTION, Vol. 47 No. 4, August 2003 443-467]

In sum, therefore, the literature proposes several theoretical arguments for why areciprocal relationship should exist between the probability of losing office and internationalconflict (Sprecher and DeRouen 2002). In this study, we rely on the existingliterature and do not offer new theoretical arguments for such a reciprocal relationship.Our goal is to offer the **first empirical test**of thisreciprocalrelationship. Thus, we offeran empirical analysis of the central actors and the central causal mechanism(s)—thatis, leaders and the reciprocal relationship between tenure and conflict—that are at thevery heart of theories of the diversionary use of force. In addition, our data set and statisticalestimator allow an examination of whether and how the potential endogeneitybetween the risk of losing office and conflict initiation may have led to erroneous conclusionsin earlier models of crisis initiation. Our approach also allows an examinationof whether and how their risk of losing office influences leaders in different regimetypes in their decisions to initiate international conflict. Finally,our data set contains**all leaders after the First World War** up to 1992 and more thana **dozen time-varyingexplanatory variables**, which allows us to **go beyond the pioneering work** on the tenureof leaders by Bienen and van de Walle (1991).

We proceed as follows. In the first section, we briefly reviewand discuss the variousarguments and empirical results that link the tenure of leaders with international conflict.In the second section, we present the hypotheses to be tested. In the third section,we describe our statistical procedure and the data. Our unit of analysis is the leaderyear;the structure of our data is therefore monadic and not dyadic. On one hand, ourmonadic data structure obviously imposes a cost, given that some important predictorsof conflict—from geographic contiguity, to the balance of military forces, to bilateraltrade relations (Russett and Oneal 2001)—cannot be measured monadically. On theother hand, this data structure places at the forefront the mechanism of diversionaryconflict, that is,the incentives of leaders to start conflict as a function of their grasp onpower. In the fourth section, we present the results of our analysis.

We find that as the risk of losing office increases, leaders become less likely to initiatea crisis. Second,as the risk of an international crisis increases, leaders becomemore likely to lose office. Third, our results suggest an explanation for the contradictory findings on the existence of a monadic democratic peace.We find that democracies are overall more peaceful than other regimes. Our findings suggest this is because democratic leaders are more likely to lose office and therefore less likely to initiate a crisis. Fourth,we find that increasing levels of economic activity affect the probabilityof crisis initiation through two pathways. Along the indirect path,**an increase in thelevel of economic activity decreases the probability of losing office, which in turnincreases the probability of crisis initiation.** Along the direct path—controlling for its effect on the probability of losing office—an economic expansion decreases the probability of crisis initiation. Pg. 444-445

**This is particularly true with Russia.**

**Szrom & Brugato 08** - Research Analyst in foreign and defense policy @ American Enterprise Institute & Former intern in AEI’s foreign and defense policy studies department. [Charlie Szrom & Thomas Brugato, “Liquid Courage,” The America, Friday, February 22, 2008, pg. http://american.com/archive/2008/february-02-08/liquid-courage]

Despite George Bush’s best efforts to forge a close personal relationship with Russian President Vladimir Putin, the past seven years have seen disturbing trends in Moscow’s foreign policy.Many analysts notethat Putin has benefited enormously from high commodity prices and argue that bountiful oil**wealth has fueled Russian aggressiveness**. However, very little actual data has been gathered to support this common interpretation.

We decided to crunch the numbers and find out if there was, indeed, an empirical correlation between oil prices and Putin-era aggression.We built an “aggression index” based on 86 events in Russian foreign policyfrom January 2000 toSeptember 2007. We then assigned each event a value between one and five, with a higher number indicating a more aggressive event—aggressiveness being defined as actions harming Western interests. Import bans, diplomatic expulsions, and similar activities earned low-level values: a 1 or a 2. More clearly threatening acts, such as arms sales to terror-sponsoring states, military exercises, attempts to support separatist regions, and interruptions of energy supplies to neighbors, earned mid-range values such as 3 or 4. We assigned ratings prior to looking up oil price data. To the best of our knowledge,this is the **most comprehensive dataset available** to analyzethe effect ofoilprices on Russian foreign policy; a few events missed here or there will not alter the bigger picture.

We found that as the price of oil rose, the aggressiveness index increased: that is, the more valuable oil became, the more hostile Russian foreign policy became. The reverse was also true: when oil prices droppedin 2001 and 2002,so did Russia’s aggression. The relationship proved strongest at the annual level: a $1.48 increase in oil prices yearly correlated with an additional “point” increase in Russian aggression. Oil prices rose from $17.37 a barrel in December 2001 to $73.88 a barrel in September 2007; over that same period, the aggression index rose from 17 to 55.

Some believe other theories better explain the rise in Russian aggression. Some say that Putin initially focused on ousting old Yeltsin administrators, increasing central controls over Russia’s various regions, and breaking the back of domestic “oligarchs.” In this view—call it the Yeltsin explanation—Moscow had to consolidate its grip before it could act decisively abroad. Others see Russian aggression as a response to Western infringement on Russia’s “near abroad.” According to this “color revolutions” explanation, the Kremlin interpreted American and European attempts to ensure free and fair elections in Georgia and Ukraine as interferences in Russia’s sphere of influence and therefore responded aggressively, leading to more belligerence after 2003 and again after 2005.

Still others argue that U.S. attention and resources spent on Iraq left more breathing room for Russian power projection. Russia expert Jeffrey Mankoff has written that “diminished U.S. power as a result of the war in Iraq [has] given the Kremlin greater autonomy to pursue policy choices that Russia’s elite has long favored.” Call it the Iraq explanation.

The data dispute all of these theories. Putin came into office acting aggressively but then acted more passively over the next two years. In 2000, he signed a treaty pledging joint non-interference in domestic affairs with North Korea, hosted an indicted Serbian war criminal, charged an American businessman as a spy, and revoked a 1995 agreement with the US that had placed strict limits on Russian military and nuclear cooperation with Iran. There was more than twice the number of aggressive events in 2000 alone than there was in 2001 and 2002 combined.

Indeed, the period between July and September 2001 saw only a single aggressive event. This pause corresponded with a fluctuation in global oil prices: they dropped from a high of $30.35 a barrel in November 2000 to $17.37 a barrel in December 2001. Oil prices did not hit $30 a barrel again until February 2003. Now consider the other explanations for recent Russian foreign policy behavior. One would expect a consistent rise in aggression under the Yeltsin explanation, a bump after 2003 under the Iraq explanation, and a post-2005 spike under the “color revolutions” explanation. But the data contradict all of these, making the rise in oil prices the most plausible explanation.

Of course, oil prices are not the sole determinant of Russian foreign policy: Moscow might have acted less aggressively if a more Western-friendly leader had been in charge. Butan increase in oilpriceshas freed Putin from various international constraints and enhanced his leverage abroad in several ways.

Oil revenuehas let Russia erase its debt to international lending organizations. By 2006, it had entirely paid off its International Monetary Fund obligations, which totaled $16.8 billion in 1999.Russia no longer needs Western cash—and therefore Western friendship—to keep its economy afloat.

New oilfundshave alsomade Russia less dependent on neighboring trading partners, which has allowed Moscow to use **trade cutoffs as a political tool**. In November 2005, Russia banned imports of Polish meat; in January 2006, it cut off purchases of Ukrainian meat and dairy products; and later that year it blockaded Georgia’s economy almost entirely. All three of these countries—through their pro-Western foreign policy orientations—had offended Moscow.

**With**its vast oil**wealth, Russia can**now **purchase the military tools needed to buttress an aggressive foreign policy**. Between 2001 and 2007, its defense spending grew from $7.3 billion to $31 billion, an increase of more than 400 percent. Russian pilots barely flew 20 hours a month in 1999; that number increased to as many as 70 hours a month by 2003. In October 2003, Russia opened its first new base in Central Asia since the end of the Cold War. In 2005-2006, Russia received over a dozen ICBMs, two strategic bombers, 15 fighters, 15 satellites, 48 T-90 tanks, over 250 APCs, and 7,500 vehicles. //1nc

**Economic crisis resolves territorial disputes.**

**Fravel 05** - Professor of Political Science and Security Studies @ Massachusetts Institute of Technology.[M. Taylor Fravel, “Regime Insecurity and International Cooperation: Explaining China's Compromises in Territorial Disputes,” International Security 30.2 (2005) 46-83//project muse]

The notion of regime insecurity as a source of cooperation extends earlier scholarship on the relationship between domestic politics and foreign policy. To explain alignment in the developing world, Steven David argues thatleaders "omnibalance," forming alliances to balance against the most pressing threat thatthey face, foreign or domestic.19For many state leaders, especiallyin authoritarian regimes and new democracies, the most pressing threats to their political survival emanate from internal political challengessuch as rebellions and coups.20To maximize their tenure in office, **leaders form alliances**, [End Page 51] even **with external adversaries, to balance against more immediate internal foes**.21

My argument about regime insecurity applies this insight of omnibalancing to international cooperation more broadly.When leaders face internal threats to their survival, they may use foreign policy in addition to domestic tools such as repression to enhance their political security.Theymaycooperate to achieve different types of support: (1)to gain direct assistance in countering internal threats, such as denying material support to opposition groups; (2)to marshal resources for domestic priorities, not defense; or(3)to bolster international recognition of their regime, leveraging the status quo bias of the international system to delegitimize domestic challengers.22 When leaders face internal threats, theymay also **cooperate to**enhance their external security and**preempt potential attempts by other states to profit from their domestic woes**. These effects of regime insecurity are paradoxical:efforts to consolidate political power at home, often through repression,produce efforts to cooperate abroad. While such behavior is peaceful, its source is not necessarily benign.

Regime insecurity offers one causal logic to explain why and when leaders might **pursue otherwise costly policies of compromise over disputed territory**. In active territorial disputes, leaders choose among three general strategies.23 A delaying strategy involves doing nothing except maintaining a state's claims through public declarations.24 An escalation strategy involves the threat or use of force over disputed territory.A cooperation strategy excludes the threat or use of force and involves an offer to compromise bydividing control of contested land ordropping outstanding claims. In most cases,such compromise precedes the final settlement///

 of a dispute in a bilateral treaty or agreement. [End Page 52]

## \*\*\* 1AR

### 1AR—Consequentialism

#### Looking at consequences is the only way to evaluate policy—nuke war = extinct turns envt

Dan W. Brock, Professor of Philosophy and Biomedical Ethics at Brown University, 1987 (“Truth or Consequences: The Role of Philosophers in Policy-Making," *Ethics*, Volume 97, July, Available Online via JSTOR, p. 787)

When philosophers become more or less direct participants in the policy-making process and so are no longer academics just hoping that an occasional policymaker might read their scholarly journal articles, this scholarly virtue of the unconstrained search for the truth—all assumptions open to question and follow the arguments wherever they lead—comes under a variety of related pressures. What arises is an intellectual variant of the political problem of "dirty hands" that those who hold political power often face. I emphasize that I do not conceive of the problem as one of pure, untainted philosophers being corrupted by the dirty business of politics. My point is rather that the different goals of academic scholarship and public policy call in turn for **different virtues and behavior** in their practitioners. Philosophers who steadfastly maintain their academic ways in the public policy setting are not to be admired as islands of integrity in a sea of messy political compromise and corruption. Instead, I believe that if philosophers maintain the academic virtues there they will not only find themselves often **ineffective** but will as well often **fail in their responsibilities** and **act wrongly**. Why is this so? The central point of conflict is that the first concern of those responsible for public policy **is**, **and ought to be**, the **consequences** of their actions for public policy and the persons that those policies affect. This is not to say that they should not be concerned with the moral evaluation of those consequences—they should; nor that they must be moral consequentialists in the evaluation of the policy, and in turn human, consequences of their actions—whether some form of consequentialism is an adequate moral theory is another matter. But it is to say that persons who directly participate in the formation of public policy would be **irresponsible** if they did not focus their concern on how their actions will **affect policy** and how that policy will in turn **affect people**. The virtues of academic research and scholarship that consist in an unconstrained search for truth, whatever the consequences, reflect not only the different goals of scholarly work but also the fact that the effects of the scholarly endeavor on the public are less direct, and are mediated more by other institutions and events, than are those of the public policy process. It is in part the very impotence in terms of major, direct effects on people's lives of most academic scholarship that makes it morally acceptable not to worry much about the social consequences of that scholarship. When philosophers move into the policy domain, they must **shift their primary commitment** from knowledge and truth to the **policy consequences** of what they do. And if they are not prepared to do this, why did they enter the public domain? What are they doing there?