# Round 1

# 1ac

#### Plan: The Department of Defense should initiate power-purchase agreements of Small Modular Reactors in the United States.

Contention [ ]: Hegemony {2:30}

#### First is the grid-

#### SMR’s “island” military bases from the grid- blackouts inevitable- this independently jacks space systems

Loudermilk ‘11 (Micah J. Loudermilk, Micah J. Loudermilk is a 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”, March 27, 2011, LEQ)

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 warfighting 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.

#### Second is oil-

#### SMR’s solve in-theatre military oil dependency

Andres and Breetz ‘11 (Richard B. Andres is 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 is a doctoral candidate in the Department of Political Science at the Massachusetts Institute of Technology, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications”, February 16, 2011, LEQ)

Operational Vulnerability. Operational energy use represents a second serious vulnerability for the U.S. military. In recent years, the military has become significantly more effective by making greater use of technology in the field. The price of this improvement has been a vast increase in energy use. Over the last 10 years, for instance, the Marine Corps has more than tripled its operational use of energy. Energy and water now make up 70 percent of the logistics burden for troops operating in forward locations in the wars in Afghanistan and Iraq. This burden represents a severe vulnerability and is costing lives. In 2006, troop losses from logistics convoys became so serious that Marine Corps Major General Rich- ard Zilmer sent the Pentagon a “Priority 1” request for renewable energy backup.11 This unprecedented request put fuel convoy issues on the national security agenda, triggering several high-level studies and leading to the establishment of the Power Surety Task Force, which fast-tracked energy innovations such as mobile power stations and super-insulating spray foam. Currently, the Marine Corps is considering a goal of producing all non- vehicle energy used at forward bases organically and substantially increasing the fuel efficiency of vehicles used in forward areas. Nevertheless, attempts to solve the current energy use problem with efficiency measures and renewable sources are unlikely to fully address this vulnerability. Wind, solar, and hydro generation along with tailored cuts of energy use in the field can reduce the number of convoys needed to supply troops, but these measures will quickly reach limits and have their own challenges, such as visibility, open exposure, and intermittency. Deploying vehicles with greater fuel efficiency will further reduce convoy vulnerability but will not solve the problem. A strong consensus has been building within planning circles that small reactors have the potential to significantly reduce liquid fuel use and, consequently, the need for convoys to supply power at forward locations. Just over 30 percent of operational fuel used in Afghanistan today goes to generating electricity. Small reactors could easily generate all electricity needed to run large forward operating bases. This innovation would, for in- stance, allow the Marine Corps to meet its goal of self- sufficient bases. Mobile reactors also have the potential to make the Corps significantly lighter and more mobile by reducing its logistics tail. Another way that small reactors could potentially be used in the field is to power hydrogen electrolysis units to generate hydrogen for vehicles.12 At forward locations, ground vehicles currently use around 22 percent imported fuel. Many ground transport vehicles can be converted to run on hydrogen, considerably reducing the need for fuel convoys. If the wars in Iraq and Afghanistan are indicative of future operations, and fuel convoys remain a target for enemy action, using small reactors at forward locations has the potential to save hundreds or thousands of U.S. lives.

#### Dependency on oil collapses the military

Voth ‘12 (Jeffrey M. Voth is the president of Herren Associates leading a team of consultants advising the federal government on issues of national security, energy and environment, health care and critical information technology infrastructure, George Washing University Homeland Security Policy Institute, “In Defense of Energy – A Call to Action”, <http://securitydebrief.com/2012/04/11/in-defense-of-energy-a-call-to-action/>, April 11, 2012, LEQ)

Last month, the Pentagon released its widely anticipated roadmap to transform operational energy security. As published in a World Politics Review briefing, energy security has become a strategic as well as an operational imperative for U.S. national security. As tensions continue to escalate with Iran in the Strait of Hormuz, it has become clear that the U.S. military urgently requires new approaches and innovative technologies to improve fuel efficiency, increase endurance, enhance operational flexibility and support a forward presence for allied forces while reducing the vulnerability inherent in a long supply-line tether. Assured access to reliable and sustainable supplies of energy is central to the military’s ability to meet operational requirements globally, whether keeping the seas safe of pirates operating off the coast of Africa, providing humanitarian assistance in the wake of natural disasters in the Pacific or supporting counterterrorism missions in the Middle East. From both a strategic and an operational perspective, the call to action is clear. Rapid employment of energy-efficient technologies and smarter systems will be required to transform the military’s energy-security posture while meeting the increasing electric-power demands required for enhanced combat capability. As recently outlined by Chairman of the Joint Chiefs of Staff Gen. Martin Dempsey, “Without improving our energy security, we are not merely standing still as a military or as a nation, we are falling behind.”

#### Independently- fuel cost wrecks the DOD’s budget - spills over

Freed ‘12 (Josh Freed, Vice President for Clean Energy, Third Way, “Improving capability, protecting 'budget”, <http://energy.nationaljournal.com/2012/05/powering-our-military-whats-th.php>, May 21, 2012, LEQ)

As Third Way explains in a digest being released this week by our National Security Program, the Pentagon’s efforts to reduce energy demand and find alternative energy sources could keep rising fuel costs from encroaching on the budgets of other important defense programs. And the payoff could be massive. The Air Force has already been able to implement behavioral and technology changes that will reduce its fuel costs by $500 million over the next five years. The Army has invested in better energy distribution systems at several bases in Afghanistan, which will save roughly $100 million each year. And, using less than 10% of its energy improvement funds, the Department has begun testing advanced biofuels for ships and planes. This relatively small investment could eventually provide the services with a cost-effective alternative to the increasingly expensive and volatile oil markets. These actions are critical to the Pentagon’s ability to focus on its defense priorities. As Secretary Panetta recently pointed out, he’s facing a $3 billion budget shortfall caused by “higher-than-expected fuel costs.” The Department’s energy costs could rise even further if action isn’t taken. DOD expects to spend $16 billion on fuel next year. The Energy Information Administration predicts the price of oil will rise 23% by 2016, without a major disruption in oil supplies, like the natural disasters, wars, and political upheaval the oil producing states have seen during the last dozen years. Meanwhile, the Pentagon’s planned budget, which will remain flat for the foreseeable future, will require significant adjustment to the Department’s pay-any-price mindset, even if sequestration does not go into effect. Unless energy costs are curbed, they could begin to eat into other budget priorities for DOD. In addition, the Pentagon’s own Defense Science Board acknowledges that using energy more efficiently makes our forces more flexible and resilient in military operations, and can provide them with greater endurance during missions. Also, by reducing energy demand in the field, DOD can minimize the number of fuel convoys that must travel through active combat zones, reducing the chances of attack to avoiding casualties and destruction of material. At our domestic bases, DOD is employing energy conservation, on-site clean energy generation, and smart grid technology to prevent disruptions to vital activities in case the civilian grid is damaged by an attack or natural disaster. The bottom line is, developing methods and technologies to reduce our Armed Forces’ use of fossil fuels and increase the availability of alternative energy makes our military stronger. That’s why the Pentagon has decided to invest in these efforts. End of story.

#### Now the impacts-

#### Boom goes security- new hotness

Brooks, Ikenberry, and Wohlforth ’13 (Stephen, Associate Professor of Government at Dartmouth College, John Ikenberry is the Albert G. Milbank Professor of Politics and International Affairs at Princeton University in the Department of Politics and the Woodrow Wilson School of Public and International Affairs, William C. Wohlforth is the Daniel Webster Professor in the Department of Government at Dartmouth College “Don’t Come Home America: The Case Against Retrenchment,” International Security, Vol. 37, No. 3 (Winter 2012/13), pp. 7–51)

A core premise of deep engagement is that it prevents the emergence of a far more dangerous global security environment. For one thing, as noted above, the United States’ overseas presence gives it the leverage to restrain partners from taking provocative action. Perhaps more important, its core alliance commitments also deter states with aspirations to regional hegemony from contemplating expansion and make its partners more secure, reducing their incentive to adopt solutions to their security problems that threaten others and thus stoke security dilemmas. The contention that engaged U.S. power dampens thebalefuleffects of anarchy is consistent with influential variants of realist theory. Indeed, arguably the scariest portrayal of the war-prone world that would emerge absent the “American Pacifier” is provided in the works of John Mearsheimer, who forecasts dangerous multipolar regions replete with security competition, arms races, nuclear proliferation and associated preventive war temptations, regional rivalries, and even runs at regional hegemony and full-scale great power war. 72 How do retrenchment advocates, the bulk of whom are realists, discount this benefit? Their arguments are complicated, but two capture most of the variation: (1) U.S. security guarantees are not necessary to prevent dangerous rivalries and conflict in Eurasia; or (2) prevention of rivalry and conflict in Eurasia is not a U.S. interest. Each response is connected to a different theory or set of theories, which makes sense given that the whole debate hinges on a complex future counterfactual (what would happen to Eurasia’s security setting if the United States truly disengaged?). Although a certain answer is impossible, each of these responses is nonetheless a weaker argument for retrenchment than advocates acknowledge. The first response flows from defensive realism as well as other international relations theories that discount the conflict-generating potential of anarchy under contemporary conditions. 73 Defensive realists maintain that the high expected costs of territorial conquest, defense dominance, and an array of policies and practices that can be used credibly to signal benign intent, mean that Eurasia’s major states could manage regional multipolarity peacefully without the American pacifier. Retrenchment would be a bet on this scholarship, particularly in regions where the kinds of stabilizers that nonrealist theories point to—such as democratic governance or dense institutional linkages—are either absent or weakly present. There are three other major bodies of scholarship, however, that might give decisionmakers pause before making this bet. First is regional expertise. Needless to say, there is no consensus on the net security effects of U.S. withdrawal. Regarding each region, there are optimists and pessimists. Few experts expect a return of intense great power competition in a post-American Europe, but many doubt European governments will pay the political costs of increased EU defense cooperation and the budgetary costs of increasing military outlays. 74 The result might be a Europe that is incapable of securing itself from various threats that could be destabilizing within the region and beyond (e.g., a regional conflict akin to the 1990s Balkan wars), lacks capacity for global security missions in which U.S. leaders might want European participation, and is vulnerable to the influence of outside rising powers. What about the other parts of Eurasia where the United States has a substantial military presence? Regarding the Middle East, the balance begins to swing toward pessimists concerned that states currently backed by Washington— notably Israel, Egypt, and Saudi Arabia—might take actions upon U.S. retrenchment that would intensify security dilemmas. And concerning East Asia, pessimism regarding the region’s prospects without the American pacifier is pronounced. Arguably the principal concern expressed by area experts is that Japan and South Korea are likely to obtain a nuclear capacity and increase their military commitments, which could stoke a destabilizing reaction from China. It is notable that during the Cold War, both South Korea and Taiwan moved to obtain a nuclear weapons capacity and were only constrained from doing so by a still-engaged United States. 75 The second body of scholarship casting doubt on the bet on defensive realism’s sanguine portrayal is all of the research that undermines its conception of state preferences. Defensive realism’s optimism about what would happen if the United States retrenched is very much dependent on its particular—and highly restrictive—assumption about state preferences; once we relax this assumption, then much of its basis for optimism vanishes. Specifically, the prediction of post-American tranquility throughout Eurasia rests on the assumption that security is the only relevant state preference, with security defined narrowly in terms of protection from violent external attacks on the homeland. Under that assumption, the security problem is largely solved as soon as offense and defense are clearly distinguishable, and offense is extremely expensive relative to defense. Burgeoning research across the social and other sciences, however, undermines that core assumption: states have preferences not only for security but also for prestige, status, and other aims, and they engage in trade-offs among the various objectives. 76 In addition, they define security not just in terms of territorial protection but in view of many and varied milieu goals. It follows that even states that are relatively secure may nevertheless engage in highly competitive behavior. Empirical studies show that this is indeed sometimes the case. 77 In sum, a bet on a benign postretrenchment Eurasia is a bet that leaders of major countries will never allow these nonsecurity preferences to influence their strategic choices. To the degree that these bodies of scholarly knowledge have predictive leverage, U.S. retrenchment would result in a significant deterioration in the security environment in at least some of the world’s key regions. We have already mentioned the third, even more alarming body of scholarship. Offensive realism predicts that the withdrawal of the American pacifier will yield either a competitive regionalmultipolarity complete with associated insecurity, arms racing, crisis instability, nuclear proliferation, and the like, or bids for regional hegemony, which may be beyond the capacity of local great powers to contain (and which in any case would generate intensely competitive behavior, possibly including regional great power war). Hence it is unsurprising that retrenchment advocates are prone to focus on the second argument noted above: that avoiding wars and security dilemmas in the world’s core regions is not a U.S. national interest. Few doubt that the United States could survive the return of insecurity and conflict among Eurasian powers, but at what cost? Much of the work in this area has focused on the economic externalities of a renewed threat of insecurity and war, which we discuss below. Focusing on the pure security ramifications, there are two main reasons why decisionmakers may be rationally reluctant to run the retrenchment experiment. First, overall higher levels of conflict make the world a more dangerous place. Were Eurasia to return to higher levels of interstate military competition, one would see overall higher levels of military spending and innovation and a higher likelihood of competitive regionalproxy wars and arming of client states—all of which would be concerning, in part because it would promote a faster diffusion of military power away from the United States. Greater regional insecurity could well feed proliferation cascades, as states such as Egypt, Japan, South Korea, Taiwan, and Saudi Arabia all might choose to create nuclear forces. 78 It is unlikely that proliferation decisions by any of these actors would be the end of the game: they would likely generate pressure locally for more proliferation. Following Kenneth Waltz, many retrenchment advocates are proliferation optimists, assuming that nuclear deterrence solves the security problem. 79 Usually carried out in dyadic terms, the debate over the stability of proliferation changes as the numbers go up. Proliferation optimism rests on assumptions of rationality and narrow security preferences. In social science, however, such assumptions are inevitably probabilistic. Optimists assume that most states are led by rational leaders, most will overcome organizational problems and resist the temptation to preempt before feared neighbors nuclearize, and most pursue only security and are risk averse. Confidence in such probabilistic assumptions declines if the world were to move from nine to twenty, thirty, or forty nuclear states. In addition, many of the other dangers noted by analysts who are concerned about the destabilizing effects of nuclear proliferation—including the risk of accidents and the prospects that some new nuclear powers will not have truly survivable forces—seem prone to go up as the number of nuclear powers grows. 80 Moreover, the risk of “unforeseen crisis dynamics” that couldspin out of control is also higher as the number of nuclear powers increases. Finally, add to these concerns the enhanced danger of nuclear leakage, and a world with overall higher levels of security competition becomes yet more worrisome. The argument that maintaining Eurasian peace is not a U.S. interest faces a second problem. On widely accepted realist assumptions, acknowledging that U.S. engagement preserves peace dramatically narrows the difference between retrenchment and deep engagement. For many supporters of retrenchment, the optimal strategy for a power such as the United States, which has attained regional hegemony and is separated from other great powers by oceans, is offshore balancing: stay over the horizon and “pass the buck” to local powers to do the dangerous work of counterbalancing any local rising power. The United States should commit to onshore balancing only when local balancing is likely to fail and a great power appears to be a credible contender for regional hegemony, as in the cases of Germany, Japan, and the Soviet Union in the midtwentieth century. The problem is that China’s rise puts the possibility of its attaining regional hegemony on the table, at least in the medium to long term. As Mearsheimer notes, “The United States will have to play a key role in countering China, because its Asian neighbors are not strong enough to do it by themselves.” 81 Therefore, unless China’s rise stalls, “the United States is likely to act toward China similar to the way it behaved toward the Soviet Union during the Cold War.” 82 It follows that the United States should take no action that would compromise its capacity to move to onshore balancing in the future. It will need to maintain key alliance relationships in Asia as well as the formidably expensive military capacity to intervene there. The implication is to get out of Iraq and Afghanistan, reduce the presence in Europe, and pivot to Asia— just what the United States is doing. 83 In sum, the argument that U.S. **security** commitments are unnecessary **for peace** is countered by a lot of scholarship, including highly influential realist scholarship. In addition, the argument that Eurasian peace is unnecessary for U.S. security is weakened by the potential for a large number of nasty security consequences as well as the need to retain a latent onshore balancing capacity that dramatically reduces the savings retrenchment might bring. Moreover, switching between offshore and onshore balancing could well be difªcult. Bringing together the thrust of many of the arguments discussed so far underlines the degree to which the case for retrenchment misses the underlyinglogic ofthedeep engagementstrategy. By supplying reassurance, deterrence, and active management, the United States lowers security competition in the world’s key regions, thereby preventing the emergence of a hothouse atmosphere for growing new military capabilities. Alliance ties dissuade partners from ramping up and also provide leverage to prevent military transfers to potential rivals. On top of all this, the United States’ formidable military machine may deter entry by potential rivals. Current great power military expenditures as a percentage of GDP are at historical lows, and thus far other major powers have shied away from seeking to match top-end U.S. military capabilities. In addition, they have so far been careful to avoid attracting the “focused enmity” of the United States. 84 All of the world’s most modern militaries are U.S. allies (America’s alliance system of more than sixty countries now accounts for some 80 percent of global military spending), and the gap between the U.S. military capability and that of potential rivals is by many measures growing rather than shrinking. 85

#### Nations aren’t nice

Kagan ‘12 (Robert, senior fellow in foreign policy at the Brookings Institution, “Why the World Needs America,” February 11th, <http://online.wsj.com/article/SB10001424052970203646004577213262856669448.html>)

With the outbreak of World War I, the age of settled peace and advancing liberalism—of European civilization approaching its pinnacle—collapsed into an age of hyper-nationalism, despotism and economic calamity. The once-promising spread of democracy and liberalism halted and then reversed course, leaving a handful of outnumbered and besieged democracies living nervously in the shadow of fascist and totalitarian neighbors. The collapse of the British and European orders in the 20th century did not produce a new dark age—though if Nazi Germany and imperial Japan had prevailed, it might have—but the horrific conflict that it produced was, in its own way, just as devastating. Would the end of the present American-dominated order have less dire consequences? A surprising number of American intellectuals, politicians and policy makers greet the prospect with equanimity. There is a general sense that the end of the era of American pre-eminence, if and when it comes, need not mean the end of the present international order, with its widespread freedom, unprecedented global prosperity (even amid the current economic crisis) and absence of war among the great powers. American power may diminish, the political scientist G. John Ikenberry argues, but "the underlying foundations of the liberal international order will survive and thrive." The commentator Fareed Zakaria believes that even as the balance shifts against the U.S., rising powers like China "will continue to live within the framework of the current international system." And there are elements across the political spectrum—Republicans who call for retrenchment, Democrats who put their faith in international law and institutions—who don't imagine that a "post-American world" would look very different from the American world. If all of this sounds too good to be true, it is. The present world order was largely shaped by American power and reflects American interests and preferences. If the balance of power shifts in the direction of other nations, the world order will change to suit their interests and preferences. Nor can we assume that all the great powers in a post-American world would agree on the benefits of preserving the present order, or have the capacity to preserve it, even if they wanted to. Take the issue of democracy. For several decades, the balance of power in the world has favored democratic governments. In a genuinely post-American world, the balance would shift toward the great-power autocracies. Both Beijing and Moscow already protect dictators like Syria's Bashar al-Assad. If they gain greater relative influence in the future, we will see fewer democratic transitions and more autocrats hanging on to power. The balance in a new, multipolar world might be more favorable to democracy if some of the rising democracies—Brazil, India, Turkey, South Africa—picked up the slack from a declining U.S. Yet not all of them have the desire or the capacity to do it. What about the economic order of free markets and free trade? People assume that China and other rising powers that have benefited so much from the present system would have a stake in preserving it. They wouldn't kill the goose that lays the golden eggs. Unfortunately, they might not be able to help themselves. The creation and survival of a liberal economic order has depended, historically, on great powers that are both willing and able to support open trade and free markets, often with naval power. If a declining America is unable to maintain its long-standing hegemony on the high seas, would other nations take on the burdens and the expense of sustaining navies to fill in the gaps? Even if they did, would this produce an open global commons—or rising tension? China and India are building bigger navies, but the result so far has been greater competition, not greater security. As Mohan Malik has noted in this newspaper, their "maritime rivalry could spill into the open in a decade or two," when India deploys an aircraft carrier in the Pacific Ocean and China deploys one in the Indian Ocean. The move from American-dominated oceans to collective policing by several great powers could be a recipe for competition and conflict rather than for a liberal economic order. And do the Chinese really value an open economic system? The Chinese economy soon may become the largest in the world, but it will be far from the richest. Its size is a product of the country's enormous population, but in per capita terms, China remains relatively poor. The U.S., Germany and Japan have a per capita GDP of over $40,000. China's is a little over $4,000, putting it at the same level as Angola, Algeria and Belize. Even if optimistic forecasts are correct, China's per capita GDP by 2030 would still only be half that of the U.S., putting it roughly where Slovenia and Greece are today. Although the Chinese have been beneficiaries of an open international economic order, they could end up undermining it simply because, as an autocratic society, their priority is to preserve the state's control of wealth and the power that it brings. They might kill the goose that lays the golden eggs because they can't figure out how to keep both it and themselves alive. Finally, what about the long peace that has held among the great powers for the better part of six decades? Would it survive in a post-American world? Most commentators who welcome this scenario imagine that American predominance would be replaced by some kind of multipolar harmony. But multipolar systems have historically been neither particularly stable nor particularly peaceful. Rough parity among powerful nations is a source of uncertainty that leads to miscalculation. Conflicts erupt as a result of fluctuations in the delicate power equation. War among the great powers was a common, if not constant, occurrence in the long periods of multipolarity from the 16th to the 18th centuries, culminating in the series of enormously destructive Europe-wide wars that followed the French Revolution and ended with Napoleon's defeat in 1815. The 19th century was notable for two stretches of great-power peace of roughly four decades each, punctuated by major conflicts. The Crimean War (1853-1856) was a mini-world war involving well over a million Russian, French, British and Turkish troops, as well as forces from nine other nations; it produced almost a half-million dead combatants and many more wounded. In the Franco-Prussian War (1870-1871), the two nations together fielded close to two million troops, of whom nearly a half-million were killed or wounded. The peace that followed these conflicts was characterized by increasing tension and competition, numerous war scares and massive increases in armaments on both land and sea. Its climax was World War I, the most destructive and deadly conflict that mankind had known up to that point. As the political scientist Robert W. Tucker has observed, "Such stability and moderation as the balance brought rested ultimately on the threat or use of force. War remained the essential means for maintaining the balance of power." There is little reason to believe that a return to multipolarity in the 21st century would bring greater peace and stability than it has in the past. The era of American predominance has shown that there is no better recipe for great-power peace than certainty about who holds the upper hand. President Bill Clinton left office believing that the key task for America was to "create the world we would like to live in when we are no longer the world's only superpower," to prepare for "a time when we would have to share the stage." It is an eminently sensible-sounding proposal. But can it be done? For particularly in matters of security, the rules and institutions of international order rarely survive the decline of the nations that erected them. They are like scaffolding around a building: They don't hold the building up; the building holds them up. Many foreign-policy experts see the present international order as the inevitable result of human progress, a combination of advancing science and technology, an increasingly global economy, strengthening international institutions, evolving "norms" of international behavior and the gradual but inevitable triumph of liberal democracy over other forms of government—forces of change that transcend the actions of men and nations. Americans certainly like to believe that our preferred order survives because it is right and just—not only for us but for everyone. We assume that the triumph of democracy is the triumph of a better idea, and the victory of market capitalism is the victory of a better system, and that both are irreversible. That is why Francis Fukuyama's thesis about "the end of history" was so attractive at the end of the Cold War and retains its appeal even now, after it has been discredited by events. The idea of inevitable evolution means that there is no requirement to impose a decent order. It will merely happen. But international order is not an evolution; it is an imposition. It is the domination of one vision over others—in America's case, the domination of free-market and democratic principles, together with an international system that supports them. The present order will last only as long as those who favor it and benefit from it retain the will and capacity to defend it. There was nothing inevitable about the world that was created after World War II. No divine providence or unfolding Hegelian dialectic required the triumph of democracy and capitalism, and there is no guarantee that their success will outlast the powerful nations that have fought for them. Democratic progress and liberal economics have been and can be reversed and undone. The ancient democracies of Greece and the republics of Rome and Venice all fell to more powerful forces or through their own failings. The evolving liberal economic order of Europe collapsed in the 1920s and 1930s. The better idea doesn't have to win just because it is a better idea. It requires great powers to champion it. If and when American power declines, the institutions and norms that American power has supported will decline, too. Or more likely, if history is a guide, they may collapse altogether as we make a transition to another kind of world order, or to disorder. We may discover then that the U.S. was essential to keeping the present world order together and that the alternative to American power was not peace and harmony but chaos and catastrophe—which is what the world looked like right before the American order came into being.

#### Engagement is inevitable

Dorfman ‘12 (Zach Dorfman, Zach Dorfman is assistant editor of Ethics & International Affairs, the journal of the Carnegie Council, and co-editor of the Montreal Review, an online magazine of books, art, and culture, “What We Talk About When We Talk About Isolationism”, <http://dissentmagazine.org/online.php?id=605>, May 18, 2012, LEQ)

The idea that global military dominance and political hegemony is in the U.S. national interest—and the world’s interest—is generally taken for granted domestically. Opposition to it is limited to the libertarian Right and anti-imperialist Left, both groups on the margins of mainstream political discourse. Today, American supremacy is assumed rather than argued for: in an age of tremendous political division, it is a bipartisan first principle of foreign policy, a presupposition. In this area at least, one wishes for a little less agreement. In Promise and Peril: America at the Dawn of a Global Age, Christopher McKnight Nichols provides an erudite account of a period before such a consensus existed, when ideas about America’s role on the world stage were fundamentally contested. As this year’s presidential election approaches, each side will portray the difference between the candidates’ positions on foreign policy as immense. Revisiting Promise and Peril shows us just how narrow the American worldview has become, and how our public discourse has become narrower still. Nichols focuses on the years between 1890 and 1940, during America’s initial ascent as a global power. He gives special attention to the formative debates surrounding the Spanish-American War, U.S. entry into the First World War, and potential U.S. membership in the League of Nations—debates that were constitutive of larger battles over the nature of American society and its fragile political institutions and freedoms. During this period, foreign and domestic policy were often linked as part of a cohesive political vision for the country. Nichols illustrates this through intellectual profiles of some of the period’s most influential figures, including senators Henry Cabot Lodge and William Borah, socialist leader Eugene Debs, philosopher and psychologist William James, journalist Randolph Bourne, and the peace activist Emily Balch. Each of them interpreted isolationism and internationalism in distinct ways, sometimes deploying the concepts more for rhetorical purposes than as cornerstones of a particular worldview. Today, isolationism is often portrayed as intellectually bankrupt, a redoubt for idealists, nationalists, xenophobes, and fools. Yet the term now used as a political epithet has deep roots in American political culture. Isolationist principles can be traced back to George Washington’s farewell address, during which he urged his countrymen to steer clear of “foreign entanglements” while actively seeking nonbinding commercial ties. (Whether economic commitments do in fact entail political commitments is another matter.) Thomas Jefferson echoed this sentiment when he urged for “commerce with all nations, [and] alliance with none.” Even the Monroe Doctrine, in which the United States declared itself the regional hegemon and demanded noninterference from European states in the Western hemisphere, was often viewed as a means of isolating the United States from Europe and its messy alliance system. In Nichols’s telling, however, modern isolationism was born from the debates surrounding the Spanish-American War and the U.S. annexation of the Philippines. Here isolationism began to take on a much more explicitly anti-imperialist bent. Progressive isolationists such as William James found U.S. policy in the Philippines—which it had “liberated” from Spanish rule just to fight a bloody counterinsurgency against Philippine nationalists—anathema to American democratic traditions and ideas about national self-determination. As Promise and Peril shows, however, “cosmopolitan isolationists” like James never called for “cultural, economic, or complete political separation from the rest of the world.” Rather, they wanted the United States to engage with other nations peacefully and without pretensions of domination. They saw the United States as a potential force for good in the world, but they also placed great value on neutrality and non-entanglement, and wanted America to focus on creating a more just domestic order. James’s anti-imperialism was directly related to his fear of the effects of “bigness.” He argued forcefully against all concentrations of power, especially those between business, political, and military interests. He knew that such vested interests would grow larger and more difficult to control if America became an overseas empire. Others, such as “isolationist imperialist” Henry Cabot Lodge, the powerful senator from Massachusetts, argued that fighting the Spanish-American War and annexing the Philippines were isolationist actions to their core. First, banishing the Spanish from the Caribbean comported with the Monroe Doctrine; second, adding colonies such as the Philippines would lead to greater economic growth without exposing the United States to the vicissitudes of outside trade. Prior to the Spanish-American War, many feared that the American economy’s rapid growth would lead to a surplus of domestic goods and cause an economic disaster. New markets needed to be opened, and the best way to do so was to dominate a given market—that is, a country—politically. Lodge’s defense of this “large policy” was public and, by today’s standards, quite bald. Other proponents of this policy included Teddy Roosevelt (who also believed that war was good for the national character) and a significant portion of the business class. For Lodge and Roosevelt, “isolationism” meant what is commonly referred to today as “unilateralism”: the ability for the United States to do what it wants, when it wants. Other “isolationists” espoused principles that we would today call internationalist. Randolph Bourne, a precocious journalist working for the New Republic, passionately opposed American entry into the First World War, much to the detriment of his writing career. He argued that hypernationalism would cause lasting damage to the American social fabric. He was especially repulsed by wartime campaigns to Americanize immigrants. Bourne instead envisioned a “transnational America”: a place that, because of its distinct cultural and political traditions and ethnic diversity, could become an example to the rest of the world. Its respect for plurality at home could influence other countries by example, but also by allowing it to mediate international disputes without becoming a party to them. Bourne wanted an America fully engaged with the world, but not embroiled in military conflicts or alliances. This was also the case for William Borah, the progressive Republican senator from Idaho. Borah was an agrarian populist and something of a Jeffersonian: he believed axiomatically in local democracy and rejected many forms of federal encroachment. He was opposed to extensive immigration, but not “anti-immigrant.” Borah thought that America was strengthened by its complex ethnic makeup and that an imbalance tilted toward one group or another would have deleterious effects. But it is his famously isolationist foreign policy views for which Borah is best known. As Nichols writes: He was consistent in an anti-imperialist stance against U.S. domination abroad; yet he was ambivalent in cases involving what he saw as involving obvious national interest….He also without fail argued that any open-ended military alliances were to be avoided at all costs, while arguing that to minimize war abroad as well as conflict at home should always be a top priority for American politicians. Borah thus cautiously supported entry into the First World War on national interest grounds, but also led a group of senators known as “the irreconcilables” in their successful effort to prevent U.S. entry into the League of Nations. His paramount concern was the collective security agreement in the organization’s charter: he would not assent to a treaty that stipulated that the United States would be obligated to intervene in wars between distant powers where the country had no serious interest at stake. Borah possessed an alternative vision for a more just and pacific international order. Less than a decade after he helped scuttle American accession to the League, he helped pass the Kellogg-Briand Pact (1928) in a nearly unanimous Senate vote. More than sixty states eventually became party to the pact, which outlawed war between its signatories and required them to settle their disputes through peaceful means. Today, realists sneer at the idealism of Kellogg-Briand, but the Senate was aware of the pact’s limitations and carved out clear exceptions for cases of national defense. Some supporters believed that, if nothing else, the law would help strengthen an emerging international norm against war. (Given what followed, this seems like a sad exercise in wish-fulfillment.) Unlike the League of Nations charter, the treaty faced almost no opposition from the isolationist bloc in the Senate, since it did not require the United States to enter into a collective security agreement or abrogate its sovereignty. This was a kind of internationalism Borah and his irreconcilables could proudly support. The United States today looks very different from the country in which Borah, let alone William James, lived, both domestically (where political and civil freedoms have been extended to women, African Americans, and gays and lesbians) and internationally (with its leading role in many global institutions). But different strains of isolationism persist. Newt Gingrich has argued for a policy of total “energy independence” (in other words, domestic drilling) while fulminating against President Obama for “bowing” to the Saudi king. While recently driving through an agricultural region of rural Colorado, I saw a giant roadside billboard calling for American withdrawal from the UN. Yet in the last decade, the Republican Party, with the partial exception of its Ron Paul/libertarian faction, has veered into such a belligerent unilateralism that its graybeards—one of whom, Senator Richard Lugar of Indiana, just lost a primary to a far-right challenger partly because of his reasonableness on foreign affairs—were barely able to ensure Senate ratification of a key nuclear arms reduction treaty with Russia. Many of these same people desire a unilateral war with Iran. And it isn’t just Republicans. Drone attacks have intensified in Yemen, Pakistan, and elsewhere under the Obama administration. Massive troop deployments continue unabated. We spend over $600 billion dollars a year on our military budget; the next largest is China’s, at “only” around $100 billion. Administrations come and go, but the national security state appears here to stay.

Contention [ ]: Global Water Scarity {~3:30}

#### Waters wars escalate- newest scholarship concludes aff

**Arsenault 8/26** (Chris, guest lecturer the University of Toronto, Queen’s University, York University, Laurentian, Saint Mary's University and the Universidad Anáhuac, BA in history and economics from Dalhousie University and an MA in history from the University of British Columbia, “Risk of water wars rises with scarcity,” 8/26, <http://www.aljazeera.com/indepth/features/2011/06/2011622193147231653.html>)

The author Mark Twain once remarked that "whisky is for drinking; water is for fighting over" and a series of reports from intelligence agencies and research groups indicate the prospect of a water war is becoming increasingly likely. In March, a report from the office of the US Director of National Intelligence said the risk of conflict would grow as water demand is set to outstrip sustainable current supplies by 40 per cent by 2030. "These threats are real and they do raise serious national security concerns," Hillary Clinton, the US secretary of state, said after the report's release. Internationally, 780 million people lack access to safe drinking water, according to the United Nations. By 2030, 47 per cent of the world’s population will be living in areas of high water stress, according to the Organisation for Economic Co-operation and Development's Environmental Outlook to 2030 report. Some analysts worry that wars of the future will be fought over blue gold, as thirsty people, opportunistic politicians and powerful corporations battle for dwindling resources. Dangerous warnings Governments and military planners around the world are aware of the impending problem; with the US senate issuing reports with names like Avoiding Water Wars: Water Scarcity and Central Asia’s growing Importance for Stability in Afghanistan and Pakistan. With rapid population growth, and increased industrial demand, water withdrawls have tripled over the last 50 years, according to UN figures. "Water scarcity is an issue exacerbated by demographic pressures, climate change and pollution," said Ignacio Saiz, director of Centre for Economic and Social Rights, a social justice group. "The world's water supplies should guarantee every member of the population to cover their personal and domestic needs." "Fundamentally, these are issues of poverty and inequality, man-made problems," he told Al Jazeera. Of all the water on earth, 97 per cent is salt water and the remaining three per cent is fresh, with less than one per cent of the planet's drinkable water readily accessible for direct human uses. Scarcity is defined as each person in an area having access to less than 1,000 cubic meters of water a year. The areas where water scarcity is the biggest problem are some of the same places where political conflicts are rife, leading to potentially explosive situations.

#### Water scarcity causes Pakistan collapse

**RT ‘12** (Russia today, citing an intelligence report from The Office of the Director of National Intelligence “Global 'water war' threat by 2030 - US intelligence,” March 22nd, <http://rt.com/news/water-conflict-terrorism-rivers-239/>)

And while the prospect of “water wars” has been touted for decades, it may start to become reality within a decade. The ODNI predicts that by 2040 water demand will outstrip current supply by 40 per cent. Impoverished volatile states will be worst off Water shortages “will hinder the ability of key countries to produce food and generate energy, posing a risk to global food markets and hobbling economic growth.” North Africa, the Middle East and South Asia will be hit the hardest, the report states. And while the coming shortage is a manageable problem for richer countries, it is a deadly “destabilizing factor” in poorer ones. As a rule, economically disadvantaged countries are already prone to political, social and religious turmoil, and failure to provide water for farmers and city dwellers can be the spark for wider “state failure.” Among those most vulnerable to this scenario are Sudan, Pakistan and Iraq, which are all locked in debilitating civil conflicts, and Somalia, which has effectively ceased to function as a state. ODNI envisages countries restricting water for its own citizens to “pressure populations and suppress separatist elements.” The report predicts many ordinary citizens will have to resort to the kind of purification tablets currently used by soldiers and hikers to obtain clean water. Most dangerously, there are whole clusters of unstable countries fighting for the same waterways. The report lists the Nile, which runs through Uganda, Ethiopia, Sudan and Egypt, the Jordan, which runs through Israel and several Arab countries, and the Indus, which is shared by Pakistan and India. These areas are managed by special commissions, and the report states that “historically, water tensions have led to more water-sharing agreements than violent conflicts.” But once there is not enough water to go around, these fragile pacts may collapse, with “more powerful upstream nations impeding or cutting off downstream flow.”

#### Pakistan instability causes nuclear war

**Pitt ‘9** (New York Times and internationally bestselling author of two books: "War on Iraq: What Team Bush Doesn't Want You to Know" and "The Greatest Sedition Is Silence." (5/8/09, William, “Unstable Pakistan Threatens the World,” http://www.arabamericannews.com/news/index.php?mod=article&cat=commentary&article=2183)

But a suicide bomber in Pakistan rammed a car packed with explosives into a jeep filled with troops today, killing five and wounding as many as 21, including several children who were waiting for a ride to school. Residents of the region where the attack took place are fleeing in terror as gunfire rings out around them, and government forces have been unable to quell the violence. Two regional government officials were beheaded by militants in retaliation for the killing of other militants by government forces. As familiar as this sounds, it did not take place where we have come to expect such terrible events. This, unfortunately, is a whole new ballgame. It is part of another conflict that is brewing, one which puts what is happening in Iraq and Afghanistan in deep shade, and which represents a grave and growing threat to us all. Pakistan is now trembling on the edge of violent chaos, and is doing so with nuclear weapons in its hip pocket, right in the middle of one of the most dangerous neighborhoods in the world. The situation in brief: Pakistan for years has been a nation in turmoil, run by a shaky government supported by a corrupted system, dominated by a blatantly criminal security service, and threatened by a large fundamentalist Islamic population with deep ties to the Taliban in Afghanistan. All this is piled atop an ongoing standoff with neighboring India that has been the center of political gravity in the region for more than half a century. The fact that Pakistan, and India, and Russia, and China all possess nuclear weapons and share the same space means any ongoing or escalating violence over there has the real potential to crack open the very gates of Hell itself. Recently, the Taliban made a military push into the northwest Pakistani region around the Swat Valley. According to a recent Reuters report: The (Pakistani) army deployed troops in Swat in October 2007 and used artillery and gunship helicopters to reassert control. But insecurity mounted after a civilian government came to power last year and tried to reach a negotiated settlement. A peace accord fell apart in May 2008. After that, hundreds — including soldiers, militants and civilians — died in battles. Militants unleashed a reign of terror, killing and beheading politicians, singers, soldiers and opponents. They banned female education and destroyed nearly 200 girls' schools. About 1,200 people were killed since late 2007 and 250,000 to 500,000 fled, leaving the militants in virtual control. Pakistan offered on February 16 to introduce Islamic law in the Swat valley and neighboring areas in a bid to take the steam out of the insurgency. The militants announced an indefinite cease-fire after the army said it was halting operations in the region. President Asif Ali Zardari signed a regulation imposing sharia in the area last month. But the Taliban refused to give up their guns and pushed into Buner and another district adjacent to Swat, intent on spreading their rule. The United States, already embroiled in a war against Taliban forces in Afghanistan, must now face the possibility that Pakistan could collapse under the mounting threat of Taliban forces there. Military and diplomatic advisers to President Obama, uncertain how best to proceed, now face one of the great nightmare scenarios of our time. "Recent militant gains in Pakistan," reported The New York Times on Monday, "have so alarmed the White House that the national security adviser, Gen. James L. Jones, described the situation as 'one of the very most serious problems we face.'" "Security was deteriorating rapidly," reported The Washington Post on Monday, "particularly in the mountains along the Afghan border that harbor al-Qaeda and the Taliban, intelligence chiefs reported, and there were signs that those groups were working with indigenous extremists in Pakistan's populous Punjabi heartland. The Pakistani government was mired in political bickering. The army, still fixated on its historical adversary India, remained ill-equipped and unwilling to throw its full weight into the counterinsurgency fight. But despite the threat the intelligence conveyed, Obama has only limited options for dealing with it. Anti-American feeling in Pakistan is high, and a U.S. combat presence is prohibited. The United States is fighting Pakistan-based extremists by proxy, through an army over which it has little control, in alliance with a government in which it has little confidence." It is believed Pakistan is currently in possession of between 60 and 100 nuclear weapons. Because Pakistan's stability is threatened by the wide swath of its population that shares ethnic, cultural and religious connections to the fundamentalist Islamic populace of Afghanistan, fears over what could happen to those nuclear weapons if the Pakistani government collapses are very real. "As the insurgency of the Taliban and Al Qaeda spreads in Pakistan," reported the Times last week, "senior American officials say they are increasingly concerned about new vulnerabilities for Pakistan's nuclear arsenal, including the potential for militants to snatch a weapon in transport or to insert sympathizers into laboratories or fuel-production facilities. In public, the administration has only hinted at those concerns, repeating the formulation that the Bush administration used: that it has faith in the Pakistani Army. But that cooperation, according to officials who would not speak for attribution because of the sensitivity surrounding the exchanges between Washington and Islamabad, has been sharply limited when the subject has turned to the vulnerabilities in the Pakistani nuclear infrastructure." "The prospect of turmoil in Pakistan sends shivers up the spines of those U.S. officials charged with keeping tabs on foreign nuclear weapons," reported Time Magazine last month. "Pakistan is thought to possess about 100 — the U.S. isn't sure of the total, and may not know where all of them are. Still, if Pakistan collapses, the U.S. military is primed to enter the country and secure as many of those weapons as it can, according to U.S. officials. Pakistani officials insist their personnel safeguards are stringent, but a sleeper cell could cause big trouble, U.S. officials say." In other words, a shaky Pakistan spells trouble for everyone, especially if America loses the footrace to secure those weapons in the event of the worst-case scenario. If Pakistani militants ever succeed in toppling the government, several very dangerous events could happen at once. Nuclear-armed India could be galvanized into military action of some kind, as could nuclear-armed China or nuclear-armed Russia. If the Pakistani government does fall, and all those Pakistani nukes are not immediately accounted for and secured, the specter (or reality) of loose nukes falling into the hands of terrorist organizations could place the entire world on a collision course withunimaginabledisaster. We have all been paying a great deal of attention to Iraq and Afghanistan, and rightly so. The developing situation in Pakistan, however, needs to be placed immediately on the front burner. The Obama administration appears to be gravely serious about addressing the situation. So should we all.

#### Water causes Indo-Pak war

Priyadarshi ‘12 (Nitish, lecturer in the department of environment and water management at Ranchi University in India, “War for water is not a far cry”, June 16, <http://www.cleangangaportal.org/node/44>)

Such is the deep nexus between water and global warming that the increased frequency of climate change-driven extreme weather events like hurricanes, droughts and flooding, along with the projected rise of ocean levels, is likely to spur greater interstate and intrastate migration- especially of the poor and the vulnerable- from delta and coastal regions to the hinterland. As the planet warms, water grow scarcer. Global warming will endanger the monsoon, which effects much greater than those of drought alone-particularly in India given that 70 percent of India’s rainfall comes from the monsoon. The declining snow cover and receding glaciers in the Himalayan state of Jammu and Kashmir could trigger renewed hostilities between India and Pakistan, neighbouring states in the South Asian region that are at odds on a host of issues. The two countries share the Indus River, one of the longest rivers in the world. The river rises in southwestern Tibet and flows northwest through the Himalayas. It crosses into the Kashmir region, meandering to the Indian and Pakistani administered areas of the territory. Pakistan and India have long been embroiled in a territorial dispute over Kashmir, but have so far managed to uphold a World Bank-mediated Indus Water Treaty (IWT) that provides mechanisms for resolving disputes over water sharing. Any drastic reduction in the availability of water in the region has the potential of causing a war between the hostile south Asian neighbors. The Indus water system is the lifeline for Pakistan, as 75 to 80 percent of water flows to Pakistan as melt from the Himalayan glaciers. This glacier melt forms the backbone of irrigation network in Pakistan, with 90 percent of agricultural land being fed by the vastly spread irrigation network in Pakistan, one of the largest in the world. Any disruption of water flow would cause a grave impact on agriculture produce in Pakistan. The Indus Waters Treaty is a water-sharing treaty between the Republic of India and Islamic Republic of Pakistan, brokered by the World Bank (then the International Bank for Reconstruction and Development). The treaty was signed in Karachi on September 19, 1960 by Indian Prime Minister Jawaharlal Nehru and President of Pakistan Mohammad Ayub Khan. The treaty was a result of Pakistani fear that since the source rivers of the Indus basin were in India, it could potentially create droughts and famines in Pakistan, especially at times of war. However, India did not revoke the treaty during any of three later Indo-Pakistani Wars. Until now, the Indus Water Treaty has worked well, but the impact of climate change would test the sanctity of this treaty. Under the treaty signed in 1960, the two countries also share five tributaries of the Indus river, namely, Jhelum, Chenab, Ravi, Beas and Sutlej. The agreement grants Pakistan exclusive rights over waters from the Indus and its westward-flowing tributaries, the Jhelum and Chenab, while the Ravi, Beas and Sutlej rivers were allocated for India’s use. Transboundary water sharing between India and Pakistan will become an extremely difficult proposition as surface water would become a scarce commodity with the depletion of water reserves up in the mountains. The sharing of the Ganges waters is a long-standing issue between India and Bangladesh over the appropriate allocation and development of the water resources of the Ganges River that flows from northern India into Bangladesh. The issue has remained a subject of conflict for almost 35 years, with several bilateral agreements and rounds of talks failing to produce results.

#### Goes nuclear – cooperation impossible

Zahoor ‘11 (Musharaf, is researcher at Department of Nuclear Politics, National Defence University, Islamabad, “Water crisis can trigger nuclear war in South Asia,” <http://www.siasat.pk/forum/showthread.php?77008-Water-Crisis-can-Trigger-Nuclear-War-in-South-Asia>)

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 Ganga 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 Ganga 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 Ganga 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 A-symmetry 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.

#### Scarcity breaks down the Indus Waters Treaty – causes war

**CFR ’11** (report based on travel in the region by the Committee’s staff and the work of experts in government, academia, and other international institutions “Avoiding Water Wars: Water Scarcity and Central Asia’s Growing Importance for Stability in Afghanistan and Pakistan,” Feb 22nd, <http://www.foreign.senate.gov/press/chair/release/?id=0b32e452-9c4c-4417-82ee-d201bcefc8ae> [download link at the bottom)

The National Intelligence Council echoed these concerns in their Global Trends 2025: A Trans- formed World, finding that with ‘‘water becoming more scarce in Asia and the Middle East, cooperation to manage changing water resources is likely to become more difficult within and between states.’’ 5 Given the important role water plays in Central and South Asia as a primary driver of human insecurity, it is important to recognize that for the most part, the looming threat of so-called ‘‘water wars’’ has not yet come to fruition. Instead, many regions threatened by water scarcity have avoided violent clashes through discussion, compromise, and agreements. This is because ‘‘[w]ater—being international, indispensable, and emotional—can serve as a corner- stone for confidence building and a potential entry point for peace.’’ 6 However, the United States cannot expect this region to continue to avoid ‘‘water wars’’ in perpetuity. In South Asia, the Indus Waters Treaty has been the primary vehicle for resolving conflicts over the shared waters between India and Pakistan. It is a prescriptive agreement that has recently been criticized for its inflexibility to adjust to changes in water levels. Experts are now questioning whether the IWT can adapt to these changes, especially when new demands for the use of the river flows from irrigation and hydroelectric power are fueling tensions between India and Pakistan. A breakdown in the treaty’s utility in resolving water conflicts could have serious ramifications for regional stability.

#### Best studies go aff – also jacks African stability

**Montenegro ‘9** (Maywa, editor and writer at Seed magazine, “The Truth About Water Wars,” May 14, 2009 http://seedmagazine.com/content/article/the\_truth\_about\_water\_wars/)

It’s often been said that the next resource wars will be fought not over oil but over water. In 2007 an 18-month study of Sudan by the UN Environment Program concluded that the conflict in Darfur had its roots in climate change and water shortages. According to the report, disappearing pasture and evaporating water holes—rainfall is down 30 percent over 40 years in some parts of the Sahel—had sparked dispute between herders and farmers and threatened to trigger a succession of new wars across Africa. Months later, the British nonprofit International Alert released a study identifying 46 countries—home to 2.7 billion people—where water and climate stresses could ignite violent conflict by 2025, prompting UN Secretary-General Ban Ki-moon to say, “The consequences for humanity are grave. Water scarcity threatens economic and social gains and is a potent fuel for wars and conflict.” Those remarks came just as David Zhang of Hong Kong University published a study linking water shortages to violence throughout history. Analyzing half a millennium’s worth of human conflict—more than 8,000 wars—Zhang concluded that climate change and resulting water shortages had been a far greater trigger than previously imagined. “We are on alert, because this gives us the indication that resource shortage is the main cause of war,” Zhang told the London Times. Now, in UNESCO’s third major World Water Development Report, released in March at the World Water Forum in Istanbul, the threat is again plainly stated: “As climate change and adverse water impacts increase in politically charged areas, conflicts will likely intensify, requiring new and rapid adaptive security strategies.”

#### Goes global

**Glick ‘7** (Caroline Glick 7, deputy managing editor of The Jerusalem Post, Senior Fellow for Middle East Affairs of the Center for Security Policy, “Condi's African holiday”, December 11, <http://www.rightsidenews.com/20071211309/editorial/us-opinion-and-editorial/our-world-condis-african-holiday.html>)

The Horn of Africa is a dangerous and strategically vital place. Small wars, which rage continuously, can easily escalate into big wars. Local conflicts have regional and global aspects. All of the conflicts in this tinderbox, which controls shipping lanes from the Indian Ocean into the Red Sea, can potentially give rise to regional, and indeed global conflagrations between competing regional actors and global powers.

#### Water scarcity triggers conflict and destabilizes food supply

**Higgins ’12** (Alexander, citing an intelligence report from The Office of the Director of National Intelligence, Higgins is a Senior NJ ASP.Net Developer “Report: Water Shortages To Spark Global Unrest, US Privatizing Supplies,” March 22nd, <http://blog.alexanderhiggins.com/2012/03/22/privatize-water-report-shortages-spark-global-unrest-102171/>

An intelligence report based on classified information warns water shortages will soon lead to global unrest and threaten the National Security of the United States. The intelligence reports that wars over water won’t happen over night, but within another 10 years the lack of water is expected to become crucial to the point where it can contribute to conditions that cause the collapse of governments or spark wars in areas of political instability. The most immediate concern is depleted groundwater used for farming could destabilize supplies of food and trigger hyperinflation in food prices. It names the Amu Darya river in Central Asia and Afghanistan, which flows from Tibet through India to Bangladesh, as flash points of war because these governments will be “inadequate” to handle “political grievances” over the water coming from shared water supplies. The report also rates the Indus in south Asia and the Jordan in the Middle East as being at “moderate” risk of political instability and rated the “Mekong River watershed in Southeast Asia; the Tigris and Euphrates in Turkey, Syria, Iraq and Iran; and the Nile Basin in northern Africa as “limited.”

#### Food insecurity escalates

Trudell ‘5 (Robert H., Fall, Trudell,  J.D. Candidate 2006, Food Security Emergencies And The Power Of Eminent Domain: A Domestic Legal Tool To Treat A Global Problem, 33 Syracuse J. Int'l L. & Com. 277, Lexis)

2. But, Is It Really an Emergency?  In his study on environmental change and security, J.R. McNeill dismisses the scenario where environmental degradation destabilizes an area so much that "security problems and ... resource scarcity may lead to war." 101 McNeill finds such a proposition to be a weak one, largely because history has shown society is always able to stay ahead of widespread calamity due, in part, to the slow pace of any major environmental change. 102 This may be so. However, as the events in Rwanda illustrated, the environment can breakdown quite rapidly - almost before one's eyes - when food insecurity drives people to overextend their cropland and to use outmoded agricultural practices. 103 Furthermore, as Andre and Platteau documented in their study of Rwandan society, overpopulation and land scarcity can contribute to a breakdown of society itself. 104  Mr. McNeill's assertion closely resembles those of many critics of Malthus. 105 The general argument is: whatever issue we face (e.g., environmental change or overpopulation), it will be introduced at such a pace that we can face the problem long before any calamity sets in. 106  This wait-and-see view relies on many factors, not least of which are a functioning society and innovations in agricultural productivity. But, today, with up to 300,000 child soldiers fighting in conflicts or wars, and perpetrating terrorist acts, the very fabric of society is under increasing world-wide pressure. 107 Genocide, anarchy, dictatorships, and war are endemic throughout Africa; it is a troubled continent whose problems threaten global security and challenge all of humanity. 108 As  [\*292]  Juan Somavia, secretary general of the World Social Summit, said: "We've replaced the threat of the nuclear bomb withthe threat ofa social bomb." 109 Food insecurity is part of the fuse burning to set that bomb off. It is an emergency and we must put that fuse out before it is too late.

#### Central Asia

**Stratfor 11/12** (Stratfor, “Central Asia’s Looming Conflict Over Water, Part 1: The Upriver Countries,” 11/12)

Two of Central Asia's poorest countries, Kyrgyzstan and Tajikistan, are attempting to leverage one of their few geographic advantages -- control over the headwaters of two major regional rivers -- to build new hydropower dams. The proposed dams, which were originally drawn up by the Soviet Union in the 1970s and 1980s, offer the prospect of boosting electricity production both for domestic use and potentially for export to neighboring states. Financing for the dams has not yet been secured, though Russia has periodically offered some assistance to each country. However, if the projects do proceed, the already tense relations are likely to become even more fraught between Kyrgyzstan and Tajikistan and their richer downriver neighbors, Uzbekistan, Kazakhstan and Turkmenistan, which depend on the rivers' waters. While military confrontations are unlikely in the near term, any developments that jeopardize the downriver countries' water supply could prompt a harsh response. Analysis Under the Soviet Union, Central Asia was split into five Soviet republics. All administrative matters in these republics were decided by Moscow, including how the individual republics used and distributed their natural resources. When the Soviet Union dissolved in December 1991, the former republics (now independent states) kept their Soviet-imposed borders, even though they were explicitly designed by Moscow to keep any one state from becoming powerful or independent enough to challenge the Kremlin's central authority. Consequently, these countries are dependent on one another for their natural resources and energy needs, which is a challenge now that each individual country, rather than Moscow, is responsible for managing those resources. Resource Competition in Central Asia Portions of the Central Asian steppe -- especially Uzbekistan -- were endowed with fertile soil and favorable weather patterns, making them well suited for agriculture, though the arid land requires irrigation. To create agricultural zones and provide sufficient water for other uses in Uzbekistan, Turkmenistan and Kazakhstan, the Soviet Union constructed extensive irrigation networks to redirect water from Central Asia's two largest rivers, the Syr Darya originating in Tajikistan and the Amu Darya originating in Kyrgyzstan. Water diversion measures combined with inefficient infrastructure and general overuse have caused the rivers' drainage point, the Aral Sea, to lose about 75 percent of its water volume since the 1960s and become increasingly saline. This has reduced the sea's ability to provide a moderating effect on temperatures and has resulted in the desertification of the surrounding areas. Considering the increasing demand on and the possible reduction of the rivers' glacial sources, the already-strained water situation in the region looks set to grow tenser in the coming years. This is the context under which Kyrgyzstan and Tajikistan hope to build two new hydropower plants that could further reduce the water flow to downriver countries. Bishkek and Dushanbe want the power plants to expand their electrical production capacity, which could lessen their energy dependence on downstream countries, especially natural gas from Uzbekistan. These projects could eventually even allow the countries to export excess energy to China, Afghanistan and Pakistan if the necessary infrastructure is built, which would be extremely valuable for the two historically poor countries. Proposed Hydroelectric Projects Kyrgyzstan's proposed Kambarata-1 hydropower plant would be built on the Naryn River, a tributary of the Syr Darya, while Tajikistan's proposed Rogun hydropower plant would be built on the Vakhsh River, a tributary of the Amu Darya. These are two of the largest hydroelectric projects ever planned in Central Asia, with potential generating capacities of 1,900 megawatts and 3,600 megawatts, respectively. Kambarata-1 and Rogun were designed by the Soviets to improve water management in Central Asia. Two significant sources of the region's river water are snowmelt and glacial thaw, and thus the flow slows in the winter months while becoming more rapid when temperatures heat up in the summer. Kambarata-1 and Rogun are designed to be able to better control the fluctuation of water flow by retaining water in reservoirs and releasing it when it is most needed. But this introduces competing goals for reservoir use: While the downriver areas need more water in the summer to irrigate their crops, the upriver regions require more water in the winter to generate hydroelectricity. Both proposed dam projects have received external funding to carry out feasibility studies, but the estimated high costs of the dams make it impossible for Dushanbe and Bishkek to pay for them on their own. Kambarata-1 will cost an estimated $2-4 billion, while Rogun is projected at $2-3 billion. Considering Kyrgystan's gross domestic product was $5.9 billion in 2011 and Tajikistan's was $6.5 billion, foreign investment will be essential for the projects. Russia has proposed creating a joint-stock company with Kyrgyzstan to build Kambarata-1 and also paid for its feasibility study. But while Kyrgyz President Almaz Atambayev said construction would begin by spring 2013, the funding needed to begin, much less complete, the project has yet to materialize. In the past, Russia has backed out on promises to fund such projects in Central Asia. At the end of 2004, Russian aluminum company RUSAL expressed interest in finishing construction of Tajikistan's Rogun hydropower plant, which the Soviets had begun in 1976 but never completed. RUSAL pulled out of the project, ostensibly over disagreements regarding the design of the dam and how much electricity should be allocated for residential versus industrial use. The actual reason for the withdrawal, however, was that Russia did not want to seriously provoke Uzbekistan by building a hydropower plant of such size. Since then, however, the project has been revived. Projected to become the world's tallest dam if it is built to Tajikistan's specifications, Rogun is currently undergoing its second feasibility study, funded by the World Bank. The Tajik government raised less than $200 million for the project by forcing citizens to buy shares in it. But the rest of the $2 billion needed to build the project will likely have to come from foreign investment. Whether the funding for either dam comes from Russia will likely depend on how far the Kremlin feels it can push Uzbekistan rather than how interested it is in being a stakeholder in these two hydroelectric power plants. While neither project will likely be completed in the near future, Uzbekistan, Turkmenistan and Kazakhstan have all expressed their concerns about how these new hydropower dams could affect them. These countries are worried that if the dams are built, Kyrgyzstan and Tajikistan will hoard water in reservoirs during the summer months (when the downriver agricultural regions need it most) so the upriver countries can release it in the winter to generate hydroelectric power. If the Rogun dam were to be built, it could affect the Vakhsh River's water flow -- but this impact would likely not be felt for years. Some estimates indicate it could take more than a decade to fill Rogun's reservoir, during which time the river would probably only experience an estimated 1-2 percent reduction in its water flow, with less water lost the slower it is filled. Once the reservoir is filled, however, downriver countries could expect a worst-case scenario (where the dam is generating full electricity) of an estimated 18 percent reduction in water flow during the summer months and an estimated 54 percent increase in water flow in the winter, which could cause flooding downriver depending on how Tajikistan decides to control the timing of water release. While dam-related variations in water flow are unlikely to become an issue in the near future, since the completion of these projects is many years off, the three downstream countries have already expressed their hostility to the projects. If the two hydroelectric power plants come closer to fruition, economic and political tensions betweentheupriver and downriver countries would almost certainly escalate. Uzbekistan in particular is capable of cutting off natural gas exports to Kyrgyzstan and Tajikistan. Military confrontations, while unlikely, could not be ruled out since a dramatic decline in water supplies could force the downriver countries to respond as a matter of national security. This could risk inviting retaliation from larger powers like Russia, which has extensive economic and security interests in Central Asia and wants to prevent any of the countries there, particularly Uzbekistan, from emerging as a regional hegemon.

#### Their impact defense will be outdated

Stratfor 11/13 (Stratfor, “Central Asia’s Looming Conflict Over Water, Part 2: The Downriver Countries”, 11/13)

Even before Kyrgyzstan and Tajikistan began their recent push to build hydroelectric dams along Central Asia's two main rivers, downriver countries were coping with water scarcity challenges caused by increased demand and inefficient agricultural practices. Adjusting irrigation techniques in Kazakhstan, Turkmenistan and Uzbekistan could partially mitigate these problems, but political and economic difficulties in these countries -- especially the latter two -- appear likely to stymie any progress. The persistence of water competition in Central Asia has already increased regional tensions and could eventually escalate to armed conflict if the situation goes unaddressed. Analysis Shared but limited water resources are always potential catalysts for regional disputes, especially if those resources are mismanaged. However, the developing conflict involving the Aral Sea basinis unique due to its relatively recent emergence since the fall of the Soviet Union -- an event that left Central Asian countries to resolve such issues on their own without mandates from Moscow for the first time in nearly a century. Origins of the Scarcity Issue During the Soviet era, the Amu Darya and the Syr Darya rivers, which feed into the Aral Sea, were tapped for irrigation. The two rivers are sourced largely from snowmelt and glacial thaw in the mountains of Tajikistan and Kyrgyzstan, keeping flows from the rivers' headwaters relatively consistent over the past 50 years. However, large-scale irrigation schemes geared toward cotton production have prevented water from reaching the Aral Sea, causing its volume to decrease by about 75 percent since the 1960s. The future appears even more uncertain. Reliable environmental information about the region is difficult to acquire, since many monitoring stations fell into disrepair after the collapse of the Soviet Union. Still, there appears to be consensus that temperatures in the region are rising slightly, a change that could cause the glaciers to melt at a faster rate than previously recorded and reduce the annual average river flow by 15 percent or more by 2050. While it is impossible to know with any certainty whether the glaciers will retreat as predicted, demand from downstream countries is projected to increase. Agriculture -- the sector that consumes the most water -- continues to use inefficient irrigation methods; more than 50 percent of allocated water is lost to evaporation or seepage into the ground in improperly lined irrigation canals. Despite ongoing concerns about water scarcity, agriculture remains an important part of the economies of downstream states. Uzbekistan, in particular, depends heavily on continued cotton production. The country is one of the world's top 10 cotton exporters and the crop is one of Uzbekistan's largest sources of revenue from exports. Uzbekistan uses more water from the Aral Sea basin for irrigation than any other country in Central Asia, directing it mainly to the Fergana Valley. However, this area is particularly vulnerable to strife because its borders are arranged in a way that exacerbates the region's numerous ethnic and clan divisions -- another legacy of the Soviet era.

#### Extinction

**Blank 2k** (Stephen J. - Expert on the Soviet Bloc for the Strategic Studies Institute, “American Grand Strategy and the Transcaspian Region”, World Affairs. 9-22)

Thus many structural conditions for conventional war or protracted ethnic conflict where third parties intervene now exist in the Transcaucasus and Central Asia. The outbreak of violence by disaffected Islamic elements, the drug trade, the Chechen wars, and the unresolved ethnopolitical conflicts that dot the region, not to mention the undemocratic and unbalanced distribution of income across corrupt governments, provide plenty of tinder for future fires. Many Third World conflicts generated by local structural factors also have great potential for unintended escalation. Big powers often feel obliged to rescue their proxies and proteges. One or another big power may fail to grasp the stakes for the other side since interests here are not as clear as in Europe. Hence commitments involving the use of nuclear weapons or perhaps even conventional war to prevent defeat of a client are not well established or clear as in Europe. For instance, in 1993 Turkish noises about intervening on behalf of Azerbaijan induced Russian leaders to threaten a nuclear war in that case. Precisely because Turkey is a NATO ally but probably could not prevail in a long war against Russia, or if it could, would conceivably trigger a potential nuclear blow (not a small possibility given the erratic nature of Russia's declared nuclear strategies), the danger of major war is higher here than almost everywhere else in the CIS or the "arc of crisis" from the Balkans to China. As Richard Betts has observed, The greatest danger lies in areas where (1) the potential for serious instability is high; (2) both superpowers perceive vital interests; (3) neither recognizes that the other's perceived interest or commitment is as great as its own; (4) both have the capability to inject conventional forces; and (5) neither has willing proxies capable of settling the situation.(77)

#### Only SMR’s solve

**IAEA ‘7** (“Economics of Nuclear Desalination: New Developments and Site Specific Studies”, July, <http://www-pub.iaea.org/MTCD/publications/PDF/te_1561_web.pdf>)

Seventy percent of the planet is covered with water, but only 2.5% of that is fresh water. Nearly 70% of this fresh water is frozen in the icecaps of Antarctica and Greenland. Most of the rest is in the form of soil moisture or in deep inaccessible aquifers or comes in the form of heavy rains and floods that are difficult to contain and exploit. Consequently, only less than 0.008% (about 70 000 km3) of the world’s water is readily accessible for direct human use, and even that is very unevenly distributed. Recent statistics show that currently 2.3 billion people live in water-stressed areas and among them 1.7 billion live in water-scarce areas, where the water availability per person is less than 1000 m3/year. In fact, the situation is expected to worsen further since, by 2025, the number of people suffering from water stress or scarcity could swell to 3.5 billion, out of which 2.4 billion would live in water-scarce regions. Water scarcity is a global issue. Every year new countries are affected by growing water problems. It is for this reason that the Millennium Declaration by UN General Assembly in 2000 set up a target to halve, by the year 2015, the world population, which is unable to reach, or to afford, safe drinking water. Vision 21: shared vision for Hygiene, Water Supply and Sanitation, has a target to provide water, sanitation and hygiene for all by 2025. Better water conservation, water management, pollution control and water reclamation are all part of the integrated solution to projected water stresses. So too are new sources of fresh water, including the desalination of seawater. Desalination technologies have been well established since the mid-20th century and widely deployed in the Middle East and North Africa. The contracted capacity of desalination plants has increased steadily since 1965 and is now about 36 million m3/day worldwide, as shown in Figure 1. This capacity could cater to world’s population roughly 6 litres a day per capita of fresh potable water. If this capacity were available to 1.5 billion in the world without direct access to drinking water, it would provide approximately 20 litres/day/capita. Large scale commercially available desalination processes can generally be classified into two categories: (a) distillation processes that require mainly heat plus some electricity for ancillary equipment, and (b) membrane processes that require only electricity. In the first category (distillation) there are two major processes: multi-stage flash (MSF) and multi-effect distillation (MED). In both processes, seawater is heated; the steam that evaporates is condensed and collected as freshwater; and the residual brine is discharged. In the second category (membranes) is the reverse osmosis process (RO), in which pure water passes from the high-pressure seawater side of a semi-permeable membrane to the low-pressure freshwater side. The pressure differential must be high enough to overcome the natural tendency for water to move from the low concentration freshwater side of a membrane to the high concentration seawater side in order to balance osmotic pressures. The energy for the desalination plants is generally supplied in the form of either steam or electricity. Conventional fossil fuel-powered plants have normally been utilized as the primary sources but their intensive use raises increasing environmental concerns, specifically in relation to greenhouse gas emissions (Section 1.3.3). The depleting sources and the future price uncertainty of the fossil fuels and their better use for other vital industrial applications are also the factors to be considered. 1.3. THE ROLE OF NUCLEAR POWER IN DESALINATION The world energy requirements are presently met from oil, coal, gas, hydro, nuclear and renewable energies in that order as shown in Table 1. It is now universally recognized that there will be an increase in the world’s requirement for electricity over the next few decades. The present trend towards meeting this demand includes the building of fossil fuel plants, particularly combined cycle gas fired plants. However, the spiralling increase in greenhouse gas (GHG) emissions has resulted in setting the emission targets in international meetings held at Toronto, Rio de Janeiro and Kyoto. The IAEA predicts that the GHG emissions would be 36-50% higher by 2010 compared to 1990 levels. Many analysts, therefore, feel that the only viable alternative to fossil fuels is nuclear energy to reduce the rate of increase of GHG, particularly, carbon dioxide. Yet another incentive for nuclear power is to maintain diversity of supply. A national strategy limited to one particular form of energy (fossil fuels) will be vulnerable to increased fuel costs and pressures from exporting countries. Nuclear power is a proven technology, which has provided more than 16% of world electricity supply in over 30 countries. More than ten thousand reactor-years of operating experience have been accumulated over the past 5 decades. There are many reasons which favour a possible revival of the nuclear power production in the years to come. It is thus expected that this revival would also lead to an increased role of nuclear energy in non-electrical energy services, which, at the moment, are almost entirely dominated by fossil energy sources. Among various utilization of nuclear energy for non-electrical products, using it for the production of freshwater from seawater (nuclear desalination) has been drawing broad interest in the IAEA Member States as a result of acute water shortage issues in many arid and semi-arid zones worldwide. With technical co-ordination or support of the IAEA, several demonstration programs of nuclear desalination are also in progress in several Member States to confirm its technical and economical viability under country-specific conditions The desalination of seawater using nuclear energy is a feasible option to meet the growing demand for potable water. Over 175 reactor-years of operating experience on nuclear desalination have already been accumulated worldwide. 1.3.1. Nuclear desalination In the IAEA terminology, nuclear desalination is defined to be the production of potable water from seawater in a facility in which a nuclear reactor is used as the source of energy for the desalination process. Electrical and/or thermal energy may be used in the desalination process on the same site. The facility may be dedicated solely to the production of potable water, or may be used for the generation of electricity and production of potable water, in which case only a portion of the total energy output of the reactor is used for water production. The design approaches for a nuclear desalination plant are essentially derived from those of the nuclear reactor alone, with some additional aspects to be considered in the design of a desalination plant and its integration with the nuclear system. All nuclear reactor types can provide the energy required by the various desalination processes. In this regard, it has been shown that Small and Medium Reactors (SMRs) offer the largest potential as coupling options to nuclear desalination systems in developing countries. The development of innovative reactor concepts and fuel cycles with enhanced safety features as well as their attractive economics are expected to improve the public acceptance and further the prospects of nuclear desalination. The coupling with nuclear system is not difficult technically but needs some consideration in (a) avoiding cross-contamination by radioactivity, (b) providing backup heat or power sources in case the nuclear system is not in operation (e.g. for refuelling and maintenance), (c) incorporation of certain design features, minimising the impact of the thermal desalination systems’ coupling to the nuclear reactors (Section 1.6). 1.3.2. Why nuclear desalination? The International Atomic Energy Agency is a specialized organization of the UN system that seeks to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. The institutional basis for the IAEA’s involvement in nuclear desalination is in its Statute and Medium Term Strategy. Article II of the IAEA Statute provides that: “ The Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world”. This refers implicitly to nuclear desalination as an option for the use of nuclear technologies. The same applies to the Article III of the Statute, which authorizes the IAEA: “ To encourage and assist research on, and development and practical application of, atomic energy for peaceful uses throughout the world….”; (Article III, A.1); and “To foster the exchange of scientific and technical information on peaceful uses of atomic energy.” (Article III, A.3). In addition, Objective A.3 of the Agency’s Medium Term Strategy requires the Agency: “ To support and facilitate the development of new and emerging applications of nuclear technologies by co-generation and heat applications, including seawater desalination”. Request of assessing feasibility of using nuclear energy for seawater desalination was first made by the five North African countries to the IAEA in 1989 and the General Conference adopted its resolution to resume the study. These countries are located in semi-arid zones and already suffer from water shortages. In recent years, interests have been also been indicated by Member States in South and South East Asia for the feasibility, as well as the demonstration, of nuclear desalination projects. The issue has since then been repeatedly stressed at the General Conference (Committee on the Whole) and supported by many Member States including most members of Group-77. The support stems not only from their expectation of its possible contribution to the freshwater issue but has also been motivated by a variety of reasons that include: the economic competitiveness of nuclear desalination in areas lacking cheap hydropower or fossil fuel resources, energy supply diversification, conservation of fossil fuel resources and spin-off effects of nuclear technology for industrial development. Looking to the future, there are several reasons for focusing now on expanding nuclear power’s contribution to desalination. Apart from the expanding demand for freshwater and the increasing concern about GHG emissions and pollution from fossil fuels, there is a renewed and growing emphasis on small and medium sized nuclear reactors, and this is particularly important for desalination because the countries most in need of new sources of freshwater often have limited industrial infrastructures and relatively weaker electricity grids. The size of the grid limits the possibilities for integrating a co-generating nuclear power plant into the grid to supply the electricity market, in addition to meeting the energy requirements of a desalination plant. The largest power unit that can be integrated into an electricity grid must not exceed about 10-20 % of the total grid capacity. Of course, smaller nuclear reactors would be more appropriate for remote areas that are not suitable for connections to the grid. For nuclear desalination to be attractive in any given country, two conditions have to be satisfied simultaneously: a lack of water and the ability to use nuclear energy for desalination. In most regions, only one of the two is present. Both are present for example in China, the Republic of Korea, India and Pakistan. These regions already account for almost half the world’s population, and thus represent a potential long term market for nuclear desalination. The market will expand further to the extent that regions with high projected water needs, such as the Middle East and North Africa, increase their nuclear expertise and capabilities. 1.3.3. Environmental impact of desalination by fossil fuelled energy sources Desalination is an energy intensive process. A future desalination strategy based only on the use of fossil fuelled systems is not sustainable: Fossil fuel reserves are finite and must be conserved for more important uses such as transport, petrochemical industry etc. Besides, the demands for desalted water would continue increasing as population grows and standards of living improve. Conservation measures such as the modernisation of water networks to minimise leakages, the recycling of used water etc. will certainly reduce the future water demands slightly but they would not be able to halt the dissemination of desalination plants and consequently of the fossil fuelled based systems for the production of needed electricity and heat. The following paragraphs illustrate the damaging consequences of such a policy by taking the example of the Mediterranean region. Following the recent “Blue Plan” [2], the total available natural water resources (1), based on the statistics from 1990 to 1998, in the principle countries of the Mediterranean region, are as shown in Table 2. The projected demands (3) for the year 2025 [31] are also included in Table 1. It is obvious that available natural water resources would rather decrease in 2025 because of increased pollution, over exploitation and other human activities. However, to keep matters simple, it would be supposed that they would remain at the same level as in 1998. It can be observed that, in 2025, the total projected water deficit (balance) in the Mediterranean region would of the order of 294 km3/per year. Not all this required capacity would be met by desalination plants. Current contribution of desalination is of the order of 1 to 2 %. If it is supposed that in 2025, this contribution would be about 2.5 %, then the total required desalting capacity would be 7.3 km3/year (20.1 million m3/day). According to the EC ExternE study2, the total emissions of GHG per MW(e).h of electricity produced by representative fossil fuelled power plants in France, are as presented in Table 3. The specific heat and electricity consumptions of three main desalination plants are given in Table 4, [3]. The data presented in the above Tables allows to calculate the approximate3 total GHG emissions produced by the fossil fuelled plants and the three desalination plants. Results for a total desalting capacity of 20.1 million m3/day are presented in Table 5. It can thus be concluded that for a desalting capacity of 20.1 million m3/day in the Mediterranean region alone, required in 2025, one would produce, depending upon the energy source and the desalination process used, 13 to 264 million tonnes/year of CO2. 1350 to 1 310 000 tonnes/year of SOx. 21 100 to 540 000 tonnes/year of NOx. 1190 to 40 000 tonnes/year of particles. The potential levels of GHG and particle emissions on the world scale could then be more than double these figures. These could naturally be avoided through the use of nuclear energy.

#### Key to deescalate conflicts

**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. 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.”

#### It’s economically viable

Seneviratne ‘7 (Gamini Seneviratne 7, Nuclear News’s Vienna Correspondent, “Research projects show nuclear desalination economical”, April, <http://www.ans.org/pubs/magazines/nn/docs/2007-4-3.pdf>)

The desalination of seawater using nuclear power is cost-effective compared with other primary energies, according to researchers in 10 countries who have studied various options at specific sites in their own countries. Their findings show nuclear to be at least competitive in all cases. Researchers from Argentina, China, Egypt, France, India, Korea, Pakistan, Russia, Syria, and the United States focused on the economics of producing potable water by using various desalination technologies and energy sources at particular sites. The participants followed an agreed procedure throughout a coordinated research project (CRP), Economics of Nuclear Desalination— New Developments and Site-specific Studies, set up by the International Atomic Energy Agency. The findings of the studies, carried out over three years and ending in November 2006, are included in a technical document (IAEA-TECDOC) already at the printer. “There is a dire shortage of fresh water for drinking in many countries already, and when you realize that 70 percent of the planet is covered with water but only 2.5 percent of that is fresh water, it is hardly surprising,” Ibrahim Khamis, who heads the IAEA’s desalination unit, told Nuclear News. He added that 70 percent of that fresh water is frozen in the polar icecaps and Greenland, and most of the rest is in soil moisture, inaccessible underground aquifers, or comes as heavy rain that is difficult to capture. “So only some 0.008 percent, about 70 000 km3, is readily available, and even that is very unevenly distributed.” According to Khamis, recent statistics show 2.3 billion people living in water stressed areas, 1.7 billion of them in areas where the availability is on average less than 1000 m3 a year. Given human population growth and the increasing demands of industry and agriculture, the projections point to a continuously worsening situation, even if the effects of global warming are not taken into account. Khamis said he foresaw a time when nuclear power will be sought for desalination rather than for electricity generation, at least in some specific regions of the world such as the Middle East. “You can live without electricity for quite a long time; without water, only a matter of days.” The U.S. study, which was undertaken by Argonne National Laboratory (ANL), notes that “the need for fresh water, high-purity water, and other grades of water for various domestic, industrial, and agricultural applications is ever increasing in the United States.” Demand is driven mainly by population, as well as continuous economic and technological growth, and it is predicted that more than an additional 60 billion m3 of water a year will be needed for municipal and light industrial uses by the year 2020. An additional 11–19 liters per day per person will be needed to generate hydrogen, should transportation be based mainly on hydrogen-powered vehicles in the future. “Cogeneration of water and power could offer a major portion of the additional water needed, in addition to providing much needed energy for maintaining sustainable development and growth,” the ANL report says. The IAEA report says that desalinating seawater is not the only solution under discussion for remedying the water scarcity, but it is an important one. There are essentially two methods: distillation using heat, and the use of membranes and electricity directly. The two main distillation modes, known as multistage flash (MSF) and multieffect distillation (MED), both involve heating seawater to produce steam, followed by evaporation, condensation, and, finally, pure water collection. The method using membranes, which is called reverse osmosis (RO), uses electricity to create a pressure differential across a semipermeable membrane, allowing fresh water to pass through to the low-pressure side, and leaving salty seawater on the high-pressure side. Desalination plant capacity worldwide is close to 40 million m3 today, mostly by distillation using fossil energy, and mostly in the Middle East and North Africa. Nuclear desalination has so far been exclusively for use within the nuclear power plants themselves, except at the Soviet-built BN-350 fast reactor in Aktau, Kazakhstan, which supplied potable water to local communities until it was shut down in 1999. Currently, only India supplies nuclear desalinated water outside the plant site. Having earlier used MSF to get plant-use water, it has also integrated RO to the desalination unit at its Kalpakkam pressurized heavy-water reactor (PHWR) in Chenai, and it has begun (experimentally) supplying some water outside the power station. Pakistan has begun a similar project at its Karachi nuclear power plant (KANUPP) to couple a 1600 m3/day MED unit to the nuclear plant, which earlier operated a 454 m3/day RO facility for plant use. Fresh water is needed for many purposes. Saudi Arabia alone already irrigates crops with desalinated water. A number of countries, notably Egypt, the Persian Gulf States, Israel, Jordan, and Libya, depend on the technology to maintain tourism. Khamis said nuclear desalination has been held back by two key factors: economics, and the unavailability of reactors of appropriate size. The CRP addressed the former, comparing cost performance between reactor plus desalination method combinations. The perception that nuclear is less cost-effective than other energy sources was repudiated by the studies. The report says that the country case studies “have shown that in general, the nuclear desalination costs can vary from $0.5 to $0.94/m3 for RO, from $0.6 to $0.96/m3 for MED, and from $1.18 to $1.48/m3 for MSF plants. All nuclear options are economically attractive as compared with the gas turbine combined-cycle–based desalination systems, as long as gas prices remain higher than $150/toe [metric tons oil equivalent] or $21/bbl [barrel].”

Contention [ ]: Solvency {~4:20}

#### First is Small Modular Nuclear Reactor solves-

#### SMR’s are an energy game changer- but purchasing agreements are key to jump-start the industry

Madia (Chairman of the Board of Overseers and Vice President for the NAL at Stanford and was the Laboratory Director at the Oak Ridge National Laboratory and the Pacific Northwest National Laboratory) ‘12 (William Madia, Stanford Energy Journal, Dr. Madia serves as Chairman of the Board of Overseers and Vice President for the SLAC National Accelerator Laboratory at Stanford University. Previously, he was the Laboratory Director at the Oak Ridge National Laboratory from 2000-2004 and the Pacific Northwest National Laboratory from 1994-1999., “SMALL MODULAR REACTORS: A POTENTIAL GAME-CHANGING TECHNOLOGY”, <http://energyclub.stanford.edu/index.php/Journal/Small_Modular_Reactors_by_William_Madia>, Spring 2012, LEQ)

There is a new type of nuclear power plant (NPP) under development that has the potential to be a game changer in the power generation market: the small modular reactor (SMR). Examples of these reactors that are in the 50-225 megawatt electric (MW) range can be found in the designs being developed and advanced by Generation mPower (http://generationmpower.com/), NuScale (http://nuscale.com/), the South Korean SMART reactor (http://smart.kaeri.re.kr/) and Westinghouse (http://www.westinghousenuclear.com/smr/index.htm/). Some SMR concepts are up to 20 times smaller than traditional nuclear plants Today’s reactor designers are looking at concepts that are 5 to 20 times smaller than more traditional gigawatt-scale (GW) plants. The reasons are straightforward; the question is, “Are their assumptions correct?” The first assumption is enhanced safety. GW-scale NPPs require sophisticated designs and cooling systems in case of a total loss of station power, as happened at Fukushima due to the earthquake and tsunami. These ensure the power plant will be able to cool down rapidly enough, so that the nuclear fuel does not melt and release dangerous radioactive fission products and hydrogen gas. SMRs are sized and designed to be able to cool down without any external power or human actions for quite some time without causing damage to the nuclear fuel. The second assumption is economics. GW-scale NPPs cost $6 billion to $10 billion to build. Very few utilities can afford to put this much debt on their balance sheets. SMRs offer the possibility of installing 50-225 MW of power per module at a total cost that is manageable for most utilities. Furthermore, modular configurations allow the utilities to deploy a more tailored power generation capacity, and that capacity can be expanded incrementally. In principle, early modules could be brought on line and begin producing revenues, which could then be used to fund the addition of more modules, if power needs arise. The third assumption is based on market need and fit. Utilities are retiring old fossil fuel plants. Many of them are in the few hundred MW range and are located near load centers and where transmission capacity currently exists. SMRs might be able to compete in the fossil re-power markets where operators don’t need a GW of power to serve their needs. This kind of “plug and play” modality for NPPs is not feasible with many of the current large-scale designs, thus giving carbon-free nuclear power an entry into many of the smaller markets, currently not served by these technologies. There are numerous reasons why SMRs might be viable today. Throughout the history of NPP development, plants grew in size based on classic “economies of scale” considerations. Bigger was cheaper when viewed on a cost per installed kilowatt basis. The drivers that caused the industry to build bigger and bigger NPPs are being offset today by various considerations that make this new breed of SMRs viable. Factory manufacturing is one of these considerations. Most SMRs are small enough to allow them to be factory built and shipped by rail or barge to the power plant sites. Numerous industry “rules of thumb” for factory manufacturing show dramatic savings as compared to “on-site” outdoor building methods.

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Significant schedule advantages are also available because weather delay considerations are reduced. Of course, from a total cost perspective, some of these savings will be offset by the capital costs associated with building multiple modules to get the same total power output. Based on analyses I have seen, overnight costs in the range of $5000 to $8000 per installed kilowatt are achievable. If these analyses are correct, it means that the economies of scale arguments that drove current designs to GW scales could be countered by the simplicity and factory-build possibilities of SMRs. No one has yet obtained a design certification from the Nuclear Regulatory Commission (NRC) for an SMR, so we must consider licensing to be one of the largest unknowns facing these new designs. Nevertheless, since the most developed of the SMRs are mostly based on proven and licensed components and are configured at power levels that are passively safe, we should not expect many new significant licensing issues to be raised for this class of reactor. Still, the NRC will need to address issues uniquely associated with SMRs, such as the number of reactor modules any one reactor operator can safely operate and the size of the emergency planning zone for SMRs. To determine if SMRs hold the potential for changing the game in carbon-free power generation, it is imperative that we test the design, engineering, licensing, and economic assumptions with some sort of public-private development and demonstration program. Instead of having government simply invest in research and development to “buy down” the risks associated with SMRs, I propose a more novel approach. Since the federal government is a major power consumer, it should commit to being the “first mover” of SMRs. This means purchasing the first few hundred MWs of SMR generation capacity and dedicating it to federal use. The advantages of this approach are straightforward. The government would both reduce licensing and economic risks to the point where utilities might invest in subsequent units, thus jumpstarting the SMR industry. It would then also be the recipient of additional carbon-free energy generation capacity. This seems like a very sensible role for government to play without getting into the heavy politics of nuclear waste, corporate welfare, or carbon taxes. If we want to deploy power generation technologies that can realize near-term impact on carbon emissions safely, reliably, economically, at scale, and at total costs that are manageable on the balance sheets of most utilities, we must consider SMRs as a key component of our national energy strategy.

#### And a purchase-power agreement solves best- generates learning benefits - the most qualified studies go aff- this comes from a 140 page U of Chicago economic study with over 100 authors that took 6 years

Rosner, Goldberg, and Hezir et. al. ‘11 (Robert Rosner, Robert Rosner is an astrophysicist and founding director of the Energy Policy Institute at Chicago. He was the director of Argonne National Laboratory from 2005 to 2009, and Stephen Goldberg, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, Joseph S. Hezir, Principal, EOP Foundation, Inc., Many people have made generous and valuable contributions to this study. Professor Geoff Rothwell, Stanford University, provided the study team with the core and supplemental analyses and very timely and pragmatic advice. Dr. J’Tia Taylor, Argonne National Laboratory, supported Dr. Rothwell in these analyses. Deserving special mention is Allen Sanderson of the Economics Department at the University of Chicago, who provided insightful comments and suggested improvements to the study. Constructive suggestions have been received from Dr. Pete Lyons, DOE Assistant Secretary of Nuclear Energy; Dr. Pete Miller, former DOE Assistant Secretary of Nuclear Energy; John Kelly, DOE Deputy Assistant Secretary for Nuclear Reactor Technologies; Matt Crozat, DOE Special Assistant to the Assistant Secretary for Nuclear Energy; Vic Reis, DOE Senior Advisor to the Under Secretary for Science; and Craig Welling, DOE Deputy Office Director, Advanced Reactor Concepts Office, as well as Tim Beville and the staff of DOE’s Advanced Reactor Concepts Office. The study team also would like to acknowledge the comments and useful suggestions the study team received during the peer review process from the nuclear industry, the utility sector, and the financial sector. Reviewers included the following: Rich Singer, VP Fuels, Emissions, and Transportation, MidAmerican Energy Co.; Jeff Kaman, Energy Manager, John Deere; Dorothy R. Davidson, VP Strategic Programs, AREVA; T. J. Kim, Director—Regulatory Affairs & Licensing, Generation mPower, Babcock & Wilcox; Amir Shahkarami, Senior Vice President, Generation, Exelon Corp.; Michael G. Anness, Small Modular Reactor Product Manager, Research & Technology, Westinghouse Electric Co.; Matthew H. Kelley and Clark Mykoff, Decision Analysis, Research & Technology, Westinghouse Electric Co.; George A. Davis, Manager, New Plant Government Programs, Westinghouse Electric Co.; Christofer Mowry, President, Babcock & Wilcox Nuclear Energy, Inc.; Ellen Lapson, Managing Director, Fitch Ratings; Stephen A. Byrne, Executive Vice President, Generation & Transmission Chief Operating Officer, South Carolina Electric & Gas Company; Paul Longsworth, Vice President, New Ventures, Fluor; Ted Feigenbaum, Project Director, Bechtel Corp.; Kennette Benedict, Executive Director, Bulletin of the Atomic Scientist; Bruce Landrey, CMO, NuScale; Dick Sandvik, NuScale; and Andrea Sterdis, Senior Manager of Strategic Nuclear Expansion, Tennessee Valley Authority. The authors especially would like to acknowledge the discerning comments from Marilyn Kray, Vice-President at Exelon, throughout the course of the study, “Small Modular Reactors – Key to Future Nuclear Power”, <http://epic.uchicago.edu/sites/epic.uchicago.edu/files/uploads/SMRWhite_Paper_Dec.14.2011copy.pdf>, November 2011, LEQ)

6.2 GOVERNMENT SPONSORSHIP OF MARKET TRANSFORMATION INCENTIVES Similar to other important energy technologies, such as energy storage and renewables, “market pull” activities coupled with the traditional “technology push” activities would significantly increase the likelihood of timely and successful commercialization. Market transformation incentives serve two important objectives. They facilitate demand for the off-take of SMR plants, thus reducing market risk and helping to attract private investment without high risk premiums. In addition, if such market transformation opportunities could be targeted to higher price electricity markets or higher value electricity applications, they would significantly reduce the cost of any companion production incentives. There are three special market opportunities that may provide the additional market pull needed to successfully commercialize SMRs: the federal government, international applications, and the need for replacement of existing coal generation plants. 6.2.1 Purchase Power Agreements with Federal Agency Facilities Federal facilities could be the initial customer for the output of the LEAD or FOAK SMR plants. The federal government is the largest single consumer of electricity in the U.S., but its use of electricity is widely dispersed geographically and highly fragmented institutionally (i.e., many suppliers and customers). Current federal electricity procurement policies do not encourage aggregation of demand, nor do they allow for agencies to enter into long-term contracts that are “bankable” by suppliers. President Obama has sought to place federal agencies in the vanguard of efforts to adopt clean energy technologies and reduce greenhouse gas emissions. Executive Order 13514, issued on October 5, 2009, calls for reductions in greenhouse gases by all federal agencies, with DOE establishing a target of a 28% reduction by 2020, including greenhouse gases associated with purchased electricity. SMRs provide one potential option to meet the President’s Executive Order. One or more federal agency facilities that can be cost effectively connected to an SMR plant could agree to contract to purchase the bulk of the power output from a privately developed and financed LEAD plant. 46 A LEAD plant, even without the benefits of learning, could offer electricity to federal facilities at prices competitive with the unsubsidized significant cost of other clean energy technologies. Table 4 shows that the LCOE estimates for the LEAD and FOAK-1plants are in the range of the unsubsidized national LCOE estimates for other clean electricity generation technologies (based on the current state of maturity of the other technologies). All of these technologies should experience additional learning improvements over time. However, as presented earlier in the learning model analysis, the study team anticipates significantly greater learning improvements in SMR technology that would improve the competitive position of SMRs over time. Additional competitive market opportunities can be identified on a region-specific, technology-specific basis. For example, the Southeast U.S. has limited wind resources. While the region has abundant biomass resources, the estimated unsubsidized cost of biomass electricity is in the range of $90-130 per MWh (9-13¢/kWh), making LEAD and FOAK plants very competitive (prior to consideration of subsidies). 47

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Competitive pricing is an important, but not the sole, element to successful SMR deployment. A bankable contractual arrangement also is required, and this provides an important opportunity for federal facilities to enter into the necessary purchase power arrangements. However, to provide a “bankable” arrangement to enable the SMR project sponsor to obtain private sector financing, the federal agency purchase agreement may need to provide a guaranteed payment for aggregate output, regardless of actual generation output. 48 Another challenge is to establish a mechanism to aggregate demand among federal electricity consumers if no single federal facility customer has a large enough demand for the output of an SMR module. The study team believes that highlevel federal leadership, such as that exemplified in E.O. 13514, can surmount these challenges and provide critical initial markets for SMR plants.

#### And United States creates a massive export market for SMR’s – latent nuclear capability ensures speed- significant reduction of emissions

Rosner, Goldberg, and Hezir et. al. ‘11 (Robert Rosner, Robert Rosner is an astrophysicist and founding director of the Energy Policy Institute at Chicago. He was the director of Argonne National Laboratory from 2005 to 2009, and Stephen Goldberg, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, Joseph S. Hezir, Principal, EOP Foundation, Inc., Many people have made generous and valuable contributions to this study. Professor Geoff Rothwell, Stanford University, provided the study team with the core and supplemental analyses and very timely and pragmatic advice. Dr. J’Tia Taylor, Argonne National Laboratory, supported Dr. Rothwell in these analyses. Deserving special mention is Allen Sanderson of the Economics Department at the University of Chicago, who provided insightful comments and suggested improvements to the study. Constructive suggestions have been received from Dr. Pete Lyons, DOE Assistant Secretary of Nuclear Energy; Dr. Pete Miller, former DOE Assistant Secretary of Nuclear Energy; John Kelly, DOE Deputy Assistant Secretary for Nuclear Reactor Technologies; Matt Crozat, DOE Special Assistant to the Assistant Secretary for Nuclear Energy; Vic Reis, DOE Senior Advisor to the Under Secretary for Science; and Craig Welling, DOE Deputy Office Director, Advanced Reactor Concepts Office, as well as Tim Beville and the staff of DOE’s Advanced Reactor Concepts Office. The study team also would like to acknowledge the comments and useful suggestions the study team received during the peer review process from the nuclear industry, the utility sector, and the financial sector. Reviewers included the following: Rich Singer, VP Fuels, Emissions, and Transportation, MidAmerican Energy Co.; Jeff Kaman, Energy Manager, John Deere; Dorothy R. Davidson, VP Strategic Programs, AREVA; T. J. Kim, Director—Regulatory Affairs & Licensing, Generation mPower, Babcock & Wilcox; Amir Shahkarami, Senior Vice President, Generation, Exelon Corp.; Michael G. Anness, Small Modular Reactor Product Manager, Research & Technology, Westinghouse Electric Co.; Matthew H. Kelley and Clark Mykoff, Decision Analysis, Research & Technology, Westinghouse Electric Co.; George A. Davis, Manager, New Plant Government Programs, Westinghouse Electric Co.; Christofer Mowry, President, Babcock & Wilcox Nuclear Energy, Inc.; Ellen Lapson, Managing Director, Fitch Ratings; Stephen A. Byrne, Executive Vice President, Generation & Transmission Chief Operating Officer, South Carolina Electric & Gas Company; Paul Longsworth, Vice President, New Ventures, Fluor; Ted Feigenbaum, Project Director, Bechtel Corp.; Kennette Benedict, Executive Director, Bulletin of the Atomic Scientist; Bruce Landrey, CMO, NuScale; Dick Sandvik, NuScale; and Andrea Sterdis, Senior Manager of Strategic Nuclear Expansion, Tennessee Valley Authority. The authors especially would like to acknowledge the discerning comments from Marilyn Kray, Vice-President at Exelon, throughout the course of the study, “Small Modular Reactors – Key to Future Nuclear Power”, <http://epic.uchicago.edu/sites/epic.uchicago.edu/files/uploads/SMRWhite_Paper_Dec.14.2011copy.pdf>, November 2011, LEQ)

As stated earlier, SMRs have the potential to achieve significant greenhouse gas emission reductions. They could provide alternative base load 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.

#### Second- the Department of Defense is key - a demonstration project coupled with purchasing is best

Andres and Breetz ‘11 (Richard B. Andres is 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 is a doctoral candidate in the Department of Political Science at the Massachusetts Institute of Technology, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications”, February 16, 2011, LEQ)

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 mar- ketplace.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 nuclear 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 pre- vailing fear of first-of-a-kind designs.”31 In addition, Massachusetts Institute of Technology 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 nuclear 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.

#### DOD implementation is vital to get optimal capabilities- key to solvency- this takes out any free market or States counterplans

Andres and Breetz ‘11 (Richard B. Andres is 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 is a doctoral candidate in the Department of Political Science at the Massachusetts Institute of Technology, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications”, February 16, 2011, LEQ)

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 demonstration 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 market. 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 designs. On one hand, Matthew Bunn and Martin Malin 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 settings in which they can be used, and it is quite possible 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.

#### Third is the licensing process-

#### A DOD Power-Purchase Agreement is key to resolve NRC’s lack of licensing experience- this shapes the global future for nuclear power

Cunningham 10/16 (Nick, Policy Analyst for Energy and Climate at the American Security Project, “Small Modular Reactors: A Possible Path Forward for Nuclear Power,” October 16th, <http://americansecurityproject.org/ASP%20Reports/Ref%200087%20-%20Small%20Modular%20Reactors.pdf>)

The most difficult challenge currently facing SMRs is the institutional barriers. Currently, the Nuclear Regulatory Commission has not certified a single SMR design. Despite the variety of SMR designs from several nuclear vendors, the NRC has lacked sufficient human and technical capacity to license small modular reactors in the past. 33 Even as policymakers have expressed greater interest in SMRs in recent years, the licensing process for a new design takes several years at a cost of hundreds of millions of dollars. 34 Also, many regulations create a difficult environment for small reactors and favor large reactors. For example, the NRC requires 10 mile emergency planning zones around nuclear power plants, making it difficult to site a small reactor near urban centers where it could be used for energy applications other than centralized electricity generation. 35 SMRs will need to overcome this long history of institutional bias towards large reactors. As the most prominent licensing body for the nuclear industry worldwide, the NRC to a certain degree, shapes the global future for nuclear power. If the NRC does not lead on small modular reactors, it may be an uphill battle for the SMR industry No Performance History The nuclear industry has maintained a high performance standard with its fleet of large light water reactors, and SMRs would need to demonstrate the same high performance. However, as with any new technology, SMRs have no track record to prove their performance. The industry lacks a credible demonstration project that would inform future projects and inspire confidence. 36 SMRS need to demonstrate advantages over conventional plants, including advantages in cost, safety and flexibility. Looking forward, this creates a “chicken and egg” problem. In order to bring costs down, nuclear vendors will need a high-tech manufacturing facility to mass produce small reactors. However, in order to justify the construction of such a facility, the industry estimates it will need to book dozens of orders upfront. It cannot book these orders without proof of cost, safety and performance. Industry leaders are hesitant to be the “first-mover” in an uncertain market, and governments are reluctant to provide incentives or invest in unproven products. Safety Concerns While there are real safety benefits of SMRs, critics site new safety concerns with SMRs that are not associated with conventional nuclear plants. The owner of small modular reactors would need to manage, inspect, and maintain more reactors for the same amount of power output as a single large reactor. 37 The industry needs to prove that the inherent safety benefits of SMRs over large reactors outweigh the downsides. Nuclear Waste Disposal of spent nuclear fuel has confounded the nuclear industry for decades and the problem of waste disposal will still need to be dealt with for SMRs. While large reactors suffer from the same problem, expanding the use of SMRs would mean waste from more reactor sites would need to be coordinated. 38 The quantity of waste may not change, but a given amount of waste is easier to manage from one site, rather than multiple. The problem of disposing nuclear waste is a serious one, and the lack of a solution despite 30 years of debate is troubling. In January 2010, President Obama setup a Blue Ribbon Commission (BRC) to study the problem and to recommend actions to finally address the nuclear waste problem. The BRC recommended the establishment of a consent-based approach to siting a waste facility, the development of interim storage facilities, the creation of a separate government entity tasked only with addressing nuclear waste, as well as several other recommendations. 39 The recommendations will be difficult to pass through Congress, but until resolved, the nuclear waste problem will bedevil the entire nuclear industry, including SMRs. Low Natural Gas Prices Another problem that is not unique to SMRs, but plagues the nuclear industry as a whole, is the current low prices of natural gas. Due to major advances in hydraulic fracturing and horizontal drilling, the U.S. is awash in natural gas. Prices have plummeted, and the Energy Information Administration (EIA) estimates that prices will rise very slowly over the next two decades. For example, in their 2012 Annual Energy Outlook, the EIA predicts that natural gas prices will not rise back above $6 per million Btu until around 2030. 40 SMRs may need natural gas prices to reach $7 or $8 per million Btu to be competitive. 41 This makes any new nuclear power plant, including an SMR, uneconomical compared to natural gas. Unless natural gas prices rise more quickly than expected, or Congress implements a price on carbon, nuclear power may struggle to compete. Progress in Rolling Out SMRs In recent years, the government has tried to provide incentives to kick-start the moribund nuclear industry. As part of the Energy Policy Act of 2005, loan guarantees and risk insurance were extended to new nuclear power plants. 42 However, although loan guarantees have provided enough support to help four new reactors move forward, these have proven to be the exception. Looking foward, it will be exceedingly difficult to build additional large nuclear power plants. Policymakers have become increasingly interested in making SMRs a reality as an alternative to large plants. In January 2012, the Department of Energy announced a new initiative to support SMR development. DOE plans on spending $452 million over the next five years (subject to congressional appropriations) to help nuclear vendors through the design and licensing process. 43 The program will provide 50% of the cost in the form of a grant while the industry would need to pay for the other half. DOE stated that it is looking for designs that can be licensed and up and running by 2022. Several companies have applied for the funding. More Needs To Be Done Several of the issues discussed above – difficult in licensing, unproven projects, and a “first-mover” problem – present a role for the government. The NRC can work with nuclear vendors through the licensing process to reduce the time required for licenses to be issued. Reducing the time and cost for design licensing will accelerate the development of SMRs. Also, the NRC and other agencies can devise ways to support the first wave of demonstration projects. For example, the Department of Defense, with its large procurement budget, can purchase SMRs for its military installations. Government entities can establish long-term power purchasing agreements (PPAs) to provide a minimum level of demand for SMRs. This will allow the industry to book early orders, prove the concept and bring down costs.

#### That builds NRC expertise

CSPO ’10 (Consortium for Science, Policy and Outcomes at ASU, “four policy principles for energy innovation & climate change: a synthesis”, June, <http://www.catf.us/resources/publications/files/Synthesis.pdf>)

Government purchase of new technologies is a powerful way to accelerate innovation through increased demand (Principle 3a). We explore how this principle can be applied by considering how the DoD could purchase new nuclear reactor designs to meet electric power needs for DoD bases and operations. Small modular nuclear power reactors (SMRs), which generate less than 300 MW of power (as compared to more typical reactors built in the 1000 MW range) are often listed as a potentially transformative energy technology. While typical traditional large-scale nuclear power plants can cost five to eight billion dollars, smaller nuclear reactors could be developed at smaller scale, thus not presenting a “bet the company” financial risk. SMRs could potentially be mass manufactured as standardized modules and then delivered to sites, which could significantly reduce costs per unit of installed capacity as compared to today’s large scale conventional reactor designs. It is likely that some advanced reactors designs – including molten salt reactors and reactors utilizing thorium fuels – could be developed as SMRs. Each of these designs offers some combination of inherently safe operation, very little nuclear proliferation risk, relatively small nuclear waste management needs, very abundant domestic fuel resources, and high power densities – all of which are desirable attributes for significant expansion of nuclear energy. Currently, several corporations have been developing small nuclear reactors. Table 2 lists several of these companies and their reactor power capacities, as well as an indication of the other types of reactor innovations that are being incorporated into the designs. Some of these technologies depend on the well-established light water reactor, while others use higher energy neutrons, coolants capable of higher temperature operation, and other innovative approaches. Some of these companies, such as NuScale, intend to be able to connect as many as 24 different nuclear modules together to form one larger nuclear power plant. In addition to the different power ranges described in Table 2, these reactors vary greatly in size, some being only 3 to 6 feet on each side, while the NuScale reactor is 60 feet long and 14 feet in diameter. Further, many of these reactors produce significant amounts of high-temperature heat, which can be harnessed for process heating, gas turbine generators, and other operations. One major obstacle is to rapid commercialization and development are prolonged multi-year licensing times with the Nuclear Regulatory Commission. Currently, the NRC will not consider a reactor for licensing unless there is a power utility already prepared to purchase the device. Recent Senate legislation introduced by Senator Jeff Bingaman (D-NM) has pushed for DOE support in bringing down reactor costs and in helping to license and certify two reactor designs with the NRC. Some additional opportunities to facilitate the NRC licensing process for innovative small modular reactors would be to fund NRC to conduct participatory research to get ahead of potential license applications (this might require ~$100million/year) and potentially revise the current requirement that licensing fees cover nearly all NRC licensing review costs. One option for accelerating SMR development and commercialization, would be for DOD to establish SMR procurement specifications (to include cost) and agree to purchase a sufficient amount of SMR’s to underwrite private sector SMR development. Of note here may be that DARPA recently (3/30/10) issued a “Request for Information (RFI) on Deployable Reactor Technologies for Generating Power and Logistic Fuels”2 that specifies may features that would be highly desirable in an advanced commercial SMR. While other specifications including coproduction of mobility fuel are different than those of a commercial SMR power reactor, it is likely that a core reactor design meeting the DARPA inquiry specifications would be adaptable to commercial applications. While nuclear reactors purchased and used by DOD are potentially exempt from many NRC licensing requirements3, any reactor design resulting from a DOD procurement contract would need to proceed through NRC licensing before it could be commercially offered. Successful use of procured SMR’s for DOD purposes could provide the knowledge and operational experience needed to aid NRC licensing and it might be possible for the SMR contractor to begin licensing at some point in the SMR development process4. Potential purchase of small modular nuclear reactors would be a powerful but proven way in which government procurement of new energy technologies could encourage innovation. Public procurement of other renewable energy technologies could be similarly important.

#### Fourth is waste-

#### Small modular reactors are built underground- solves waste, cost, and safety

**Giraud et. al. ‘10** (Kellen M. Giraud is a nuclear engineer for Babcock and Wilcox and a Ph.D. student at Idaho State University. Jay F. Kunze, a licensed professional engineer and an ASME Fellow, is professor and chair of nuclear engineering at Idaho State University. James M. Mahar is a geotechnical engineer and licensed geologist, and professor of civil engineering at Idaho State University. Carl W. Myers is an affiliate at Los Alamos National Laboratory, where he was the director of the Earth and Environmental Sciences Division“Below the Horizon,” Mechanical Engineering 132. 12 (Dec 2010): 30-34.)

There is an innovative solution to both the perception and safety problems—a solution that offers many other technical advantages. The concept is to place new nuclear reactors in integrated underground facilities. In addition to bringing substantial increases in safety and security, underground nuclear complexes would also greatly reduce the capital and operating costs and essentially eliminate the concerns of the public with high—level nuclear waste transportation. Co—locating reactors with reprocessing and fuel manufacturing fàcilities—all underground—would reduce proliferation risks associated with transportation of nuclear materials over long distances. Changing the industry’s conception of what a power plant should look like won’t be easy. And the biggest practical hurdle to building underground nuclear parks is the common perception that it would be excessively complicated and prohibitively expensive to construct something as complex as a nuclear power plant deep underground. We have looked into those objections, and have discovered that they are not as formidable as first thought. A nuclear power plant can be thought of as three domains: the reactor area, the electricity generation area, and auxiliary areas. For example, assuming a Genlil light water reactor design, the reactor area includes all the equipment for generating steam, from the heat exchangers or moisture separa tors (depending on whether the water is pressurized or boiled) to the reactor vessels to the containment struc ture. This is an area that is unique to a nuclear power plant. It’s also the domain that is under the most strict requirements for the arrangement of its components. The electricity generation equipment includes high and low pressure turbines, condensers, a moisture separator heater, and the generator. The turbines and generator are typically aligned in a ro’ with other equipment located in the surrounding space. The entire electricity generation equipment could prob ably he placed in a volume approximately 35 tèet high by 35 feet wide by 200 fet long, with the exception of condensers, which take up significant space beneath low—pressure turbines. Auxiliary areas of a nuclear power plant include such facilities as control rooms, emergency power systems. fuel storage, chemical and volume control systems, and waste heat removal systems. In general. the auxiliary facilities can be laid out in the manner that’s most convenient, with the exception of the spent fuel pool, which must be accessible from the reactor room. With nuclear power plants typically being sited on large parcels of land, designers have not had to concern themselves to a great extent with the volume of the var ious components. But to propose placing such facilities deep underground changes the C21CLIIUS. Underground spaces are, by their very nature, limited in volume that can be economically excavated. As excavation volumes increase, the costs of construction and of support for the excavation increases rapidly. It’s important, then, to get a sense for the minimun volume a functional nuclear power plant could occupy. The pressure vessel for a boiling water reactor is typically around 80 feet tall and 24 feet in dianieter; comparable dimensions for a pressurized water reactor are around 40 feet tall and 18 feet in diameter. The interior volumes of sorne containment structures can be more than 3 million cubic fiet. Sonic of this volume is “empty space” that would not need to be incorporated into an underground nuclear plant. There are designs for very small, modular reactors that cut this volume down considerably: the NuS— cale reactor calls for a containment inner volume of just 11,000 cubic feet, about the size of an apartment. ‘ We have estimated that the volume needed for a single full—size (1,000 MWe) nuclear reactor together with all the generating and auxiliary equiprneiit is approximate ly 2 million cubic feet. While that seems large—it’s the volume of a 12-story cube—tunneling technology has advanced to make such spaces relatively routine to construct, especially when innovative excavation methods are employed. Specialized construction companies use large tunnel boring machines that are capable of driving under ground openings up to 47 feet in diameter through granite-like rock at rates of between 50 and lOO feet per day. (Tunnel lengths should be at least 2,000 feet to take full advantage of tunnel boring machines.) Costs for excavation by tunnel boring machines vary widely based on ground type, lining requirements, and project specifications. Boring through good ground that requires minimal support can cost about $2 per cubic foot, while more challenging conditions may cost upwards of $3.50 per cubic foot. Such costs represent excavation and support alone, and do not include costs for tunnel lining, finishing, or contingency. These additional requirements may be expected to multiply the total cost of excavation by about a factor of three. It would be expected that an underground nuclear plant would be constructed in only the most favorable areas, so excavation may he accomplished for around $6 per cubic foot. So it would be expected that excavation for underground nuclear plants would add millions of dollars to the up-front cost of a nuclear power plant. Do the advantages outweigh those costs? Siting nuclear reactors underground is not a new idea. It can be argued that the first nuclear reactor—the sustained chain reaction devised by a team of scientists and engineers led by Enrico Fermi at the University of Chicago—was effectively underground: the bottom of the pile tinder the bleachers at Stagg Field was a few feet below grade. During the 1950s and 1960s special-purpose and small research reactors were built into excavated sites in Russia. Norway, Sweden, France, and Switzerland, and thus proved by demon stration the overall feasibility of underground reactor placement. However, studies in the 1970s that evaluated underground placement of a large power reactor suggested that the increase in safety and security would not compensate for the additional time and money needed to construct the required chambers, tunnels, and other openings. Instead of installing a single nuclear reactor and its attendant equipment underground, we propose something larger that can make the investment in excavation cost-effective. We propose building several reactors on one site, creating what we call an underground nuclear park that’s analogous to a research or office park. Several reactors would be built into the bedrock some 300 to l,000 feet below the surface. These reactors would share heat rejection systems and storage areas for spent fuel as well as long—term repositories for radioactive waste, which could be built on site. The co—location of so much infrastructure would more than compensate for the costs of excavation. Underground nuclear parks have many advantages over conventional nuclear power plant designs. Locating the reactors a few hundred feet underground in bedrock at a suitable site eliminates the need for containment structures, and the site would be largely impervious to physical attack from terrorists. (Indeed, it would be far easier to secure the few access points to an underground nuclear park than it is to protect the large perimeter of an isolated nuclear power plant.) A properly constructed underground facility would also be less subject to weather—related construction delays or the eflicts of hurricanes, tornadoes, flooding, or heat waves. Also, if designers were careful in the site selection. an underground nuclear park could virtually eliminate the transportation of hazardous nuclear waste material. Spent nuclear fuel could be moved via tunnel from the reactors to an array of storage tunnels; high—level vaste could he permanently stored in another set of tunnels. What’s more, when the reactors reach the end of their productive life, they can be decommissioned in place— essentially buried in their chamber along with the low—level waste produced by those reactors during their decades of operation. That solution would be safer and more cost—effective than conventional decontamination and decommissioning ola surface-sited reactor. There are many differentt ways an underground nuclear park could be built. Perhaps tue most efficient method from an excavation and support standpoint would be to make a single pass with a tunnel horing machine, creating a circular passageway 50 feet wide and a few thousand feet long. Into this tunnel, several reactors and gen erator sets could be constructed, each one occupying one segment along one side of the rectangle. We expect that almost all the components of a nuclear power plant can travel through a tunnel of this diameter. To create more headroom for the reactors themselves, the bottom of the excavation could be lowered by drill and blast methods. Because drill and blast methods are more expensive and time—consuming per unit of rock volume than are tunnel boring machine methods, excavation beyond the initial tunnel should be kept to a minimum. A second smaller diameter tunnel is bored parallel to the nuclear chambers and connected to it with adits to provide independent access to the nuclear facilities. After excavation and the removal of the tunnel bor ing machines, the tunnel opening is further excavated by drill and blast methods to the required dimensions. Each straight-line section would then be subdivided into a minimum of three nuclear reactor chambers that would contain all the elements needed to generate electric power except for waste heat rejection. Removal otcondenser waste heat would be accomplished at the surface by cooling towers or a surface water body SUCh as a lake or river displaced laterally from the under ground facility. At least 10 nuclear generating units could be built within the initial rectangular area. Tunnel segments could be used along with subsequently excavated spaces to install fuel reprocessing and manufacturing ficiIities, and for storage and disposal of low-level and high—level radioactive wastes. Using the expected cost for tunnels excavated by a tunnel boring machine, the main 1.6—mile tunnel for an underground nuclear park would cost approximately $100 million. The excavation of shafts and construction of systems for facility access and ventilation would add roughly an additional $l00 million to the total excavation Cost. Excavation of additional access tunnels and openings for auxiliary areas and power plant components that could not fit within the main tunnel would also cost roughly $100 million. The total cost—$300 million—must be compared to the costs of constructing a dozen conventional nuclear plants on the surface. Nuclear power plant construction is estimated to cost $4,000 per kilowatt of electric capacity, so an underground nuclear park with 12 plants, each with a capacity of about 1,000 MWe, would cost about $48 billion in power plants alone. The excavation of an underground facility would account for less than 1 percent of the total construction cost of the nuclear facilities. The cost of siting a large nuclear complex underground is negligible compared to the overall cost of the facility. Couple that to the significant political, safety, and security advantages, and the case for underground nuclear parks is strong. To be sure, there are sorne issues left to be resolved—such as designing ventilation systems, allowing for access and egress under emergency conditions, and resolving electricity transmission issues for such a large generating facility—but it seems certain that those matters can be settled satisfactorily. Perhaps the best opportunity for demonstrating the advantages of this concept will come with the introduction of the so-called Generation IV reactors. These designs. which are being researched by an international collaboration of nuclear engineers, mark a break with the types of reactors that have dominated nuclear power’s first 50 years. The fresh approach for reactor design easily could be coupled with a new concept in power plant infrastructure, Such as the underground nuclear park.

#### Last- there are no disads

#### Obama just massively increased SMR incentives

**Koch 11/20** (Wendy, writer for USA today, “U.S. to fund small, modular nuclear reactors,” <http://www.usatoday.com/story/news/nation/2012/11/20/obama-doe-fund-modular-nuclear-reactors/1717843/>, November 20, 2012)

To develop a new generation of nuclear power, the Obama administration announced Tuesday that it will fund up to half the cost of a five-year project to design and commercialize small, modular reactors for the United States. The Department of Energy said it aims to have these reactors, which have attracted private funding from investors including Bill Gates, in operation by 2022. It said it will negotiate the project's total cost with Babcock & Wilcox, an energy technology company based in Charlotte, that will lead the project in partnership with the Tennessee Valley Authority and Bechtel International. "Low-carbon nuclear energy has an important role to play in America's energy future," Energy Secretary Steven Chu said in announcing the award, citing President Obama's push for an all-of-the-above energy strategy that reduces greenhouse gas emissions. He said DOE will accept funding requests from other companies developing such technology. Small modular reactors (SMRs) are typically about one-third the size of current nuclear power plants. Although some of the technology has been used in naval propulsion plants, DOE says it's not been commercialized yet in the United States but could offer lower upfront costs, improved safety and greater flexibility. It says SMRs could be made in U.S. factories and moved to sites, including remote or small areas that cannot support large reactors, where they would be ready to "plug and play" upon arrival.

#### And DOD is performing 50 energy demonstrations now

Sarewitz et al ‘12 (Daniel Sarewitz and Samuel Thernstrom Co-Directors, John Alic Technical Consultant, and Writer Travis Doom Research Assistant, A joint project of CSPO and CATF, We are grateful for their time and their insights. Fred Beach Postdoctoral Fellow, University of Texas at Austin William Bonvillian Washington Office Director, Massachusetts Institute of Technology Hanna Breetz PhD Candidate, Massachusetts Institute of Technology Kay Sullivan Faith Graduate Fellow, RAND Erica Fuchs Assistant Professor of Engineering and Public Policy, Carnegie Mellon University Ken Gabriel Deputy Director, Defense Advanced Research Project Agency Anthony Galasso Director of Advanced Integration Capabilities, Boeing Phantom Works David Garman Consultant Eugene Gholz Associate Professor of Public Affairs, University of Texas at Austin Sherri Goodman Senior Vice President, Center for Naval Analysis Kevin Hurst Assistant Director for Energy R&D, Office of Science and Technology Policy John Jennings Deputy Director for Innovation, Office of the Assistant Secretary of Defense, Operational Energy Todd Laporte Professor of Political Science, University of California Berkley George Lea Military Branch Chief, Engineering and Construction, U.S. Army Corps of Engineers Sasha Mackler Bipartisan Policy Center Jeffrey Marqusee Executive Director, SERDP and ESTCP, U.S. Department of Defense William McQuaid Liaison for DoD Energy Conservation Programs, Office of Management and Budget Srini Mirmira Commercialization, Advance Research Projects Agency-Energy Dorothy Robyn Deputy Under Secretary of Defense, Installations and Environment Richard Van Atta Institute for Defense Analyses Andrew Wiedlea Defense Threat Reduction Agency Aubrey Wigner Graduate Student, Arizona State University Project Staff and Affiliates Daniel Sarewitz Co-Director, Consortium for Science, Policy and Outcomes, Arizona State University Samuel Thernstrom Senior Climate Policy Advisor, Clean Air Task Force John Alic Consultant Travis Doom Program Specialist, Consortium for Science, Policy and Outcomes, Arizona State University Joseph Chaisson Research and Technical Director, Clean Air Task Force Armond Cohen Executive Director, Clean Air Task Force Nate Gorence Associate Director for Energy Innovation, Bipartisan Policy Center Suzanne Landtiser Graphic Designer, Fine Line Studio, “Energy Innovation At The Department Of Defense Assessing The Opportunities”, March 2012, LEQ)

DoD began the Installation Energy Test Bed as a pilot program in 2009 with $20 million in funds from the Stimulus Act. Seeing the value of these demonstrations, in 2010 the Department directed $30 million from the Energy Conservation Investment Program, a flexible military construction budget line, to ESTCP to continue the test bed. For FY2012, the President’s budget proposes $30 million in RDT&E funds for the test bed. ESTCP has successfully piloted the test bed over the last two years. Each year, ESTCP has invited private firms, universities, and government labs to identify emerging technologies that would meet DoD installation needs. The response from industry has been extremely strong: many of the ongoing demonstrations are viewed as critical elements in the business plans of both large and small companies seeking to bring their technologies to full commercialization and widespread deployment. In 2010, ESTCP received more than 300 proposals from leading corporations in the building energy sector, small start-ups with venture capital funding, and the major DOE labs. The proposals were reviewed by teams made up of technical experts from inside and outside of DoD, as well as service representatives familiar with the installations’ needs. Winning proposals (about 15 percent of the total submitted) were then matched up with a service and an installation at which to demonstrate the technology. ESTCP expected some of the early projects to begin to show results in late 2011. The most recent solicitation closed in late March 2011; ESTCP received 600 preproposals whose combined requested funds were over a billion dollars. The timing for an energy test bed is ideal, which is one reason the response from industry has been so strong. The federal government is investing significant resources in building energy R&D, largely through the Department of Energy, and the private sector is making even larger investments, as evidenced by the growth of venture capital backing for “clean tech.” As a structured demonstration program linked to the large DoD market, the ESTCP test bed can leverage these resources for the military’s benefit. The test bed program carries out demonstrations in three broad technical areas: energy component technologies, both for efficiency and generation; system approaches to building energy control, management, and decision making; and installation-level smart-microgrid technologies. Component Technologies The test bed program demonstrates and evaluates advanced component technologies for both demand reduction and distributed generation—technologies that, due to real or perceived risks, are not being used across DoD. The value of these technologies is very cost sensitive: a new component must provide equal or better performance while reducing life-cycle costs. Life-cycle costs are highly sensitive to a number of factors, including the technology’s operational efficiency, its maintenance costs, and the component’s life expectancy. For technologies that appear particularly promising, ESTCP shoulders the cost of first implementation, feeds information back to the developers, and stimulates the adoption of technologies that have been shown to be cost-effective. This also saves DoD the expense of having costly mistakes repeated at individual installations. One example of DoD’s approach is the pilot program currently testing building integrated photo voltaic (BIPV) technologies. BIPV technologies are commercially available and could be deployed on thousands of DoD flat roofs; they could be installed during required roof replacements in place of a traditional roof, providing both a protective roof and a source of energy. Currently, however, neither the Army Corps of Engineers nor the Naval Facilities Engineering Command (NAVFAC) includes BIPV as a roofing option, because neither has data on the performance of the technology. The pilot program is collecting detailed data on the performance of BIPV along multiple criteria. NAVFAC leads this project in collaboration with Lawrence Berkeley National Laboratory. Systems Approaches to Energy Control and Management Although individual component technologies are important, the largest potential payoff lies in the opportunities to integrate technologies throughout a building and across an entire installation. Unlike other DoD platforms, such as aircraft and ships, buildings and installations have not been designed or maintained with a systems perspective. They are complex entities with many nonlinear interactions that affect energy flows and operations. A systems approach is needed to optimize performance for individual buildings and building clusters within an installation. Systems approaches will focus on new design tools and the exploitation of distributed sensors linked to innovative control strategies. In addition to the impediments to commercialization discussed above, systems approaches face another major obstacle: the lack of real-world testing, particularly in the retrofit market, where DoD has the greatest interest. DoD has a unique opportunity in this area due to the nature of its installations and the unique security concerns associated with information assurance that a demonstration must address. For example, the pilot program is testing an innovative approach to “continuous building commissioning.” Over time, the energy performance of buildings degrades; most buildings rarely meet their design intent, much less perform optimally. Advances in monitoring and modeling tools now make it possible to continuously optimize building performance. Two pilot projects demonstrating a whole-building monitoring system are assessing its ability to do the following: 1) Identify, classify, and quantify deviations from design intent or optimal performance regarding consumption of energy and water in the building; 2) Classify and identify the root causes of such deviation; 3) Identify corrective actions; and 4) Quantify the value of these actions in terms of energy and water savings and other economic benefits. Project participants include United Technologies Research Center (lead), Lawrence Berkeley National Laboratory, the University of California at Berkeley, and Oak Ridge National Laboratory. Smart-Microgrid Technologies In addition to demand reduction and increased distributed energy generation, DoD’s energy security goal requires the deployment of smart-microgrid technologies that allow DoD installations to “island” and provide operational capability in the event of grid failure. These same technologies offer DoD opportunities to reduce operational costs through demand response management. DoD’s requirement for this class of technology puts it in a unique position: although DoD has security concerns not found in the private sector, it expects to use commercial smart-grid technologies in the future, rather than developing its own solutions. Standards and smart-grid technologies are expected to change significantly in the coming years; DoD should not adopt an approach that is independent of, or inconsistent with, the changing commercial market. The test bed program will demonstrate emerging commercial technologies configured to meet DoD’s unique security needs, and evaluate the critical operational and information security issues related to the use of these technologies. For example, the pilot program is currently testing a General Electric smart-microgrid technology at the Marine Corps’ Twentynine Palms installation in California. The technology is designed to manage and control the complicated interactions among heat and electrical power generation, power demand, energy storage, and power distribution and delivery. It can also optimize energy usage, and offers energy security by managing backup power operation for critical loads if the microgrid is disconnected from the bulk grid (or “islanded”). The technology is scalable and is applicable to multiple DoD installations that contain renewable resources. However, the economic value and security of such a system cannot be determined in the absence of real-world testing on a DoD installation. The system needs to be integrated with real-world generation and loads to assess its performance and finalize design details. To date, nearly 50 demonstrations are under way across DoD as part of ESTCP’s Installation Energy Test Bed (see figure 3.8). DoD plans to continue this program in FY2012. A competitive process is under way to identify the next round of technology demonstrations in the following areas: 1) Smart microgrids and energy storage to increase energy security on DoD installations 2) Renewable energy generation on DoD installations 3) Advanced component technologies to improve building energy efficiency 4) Advanced building energy management and control 5) Tools and processes for design, assessment, and decision making associated with energy use and management The interest from industry has been extremely high. Companies see the ongoing demonstrations as crucial means of bringing their technologies to full commercialization and widespread deployment. The current solicitation has attracted enormous interest, highlighting the pent-up need for efforts to move energy technologies beyond research and development and to overcome the Valley of Death.

# 2ac heg

**No impact to failed states**

**Logan and Preble o8** — associate director of foreign policy studies at the Cato Institute, AND, director of foreign policy studies at the Cato Institute (Justin and Christopher Preble, Harvard International Review, Winter 2008, Volume 29, Issue 4, pg. 62)

Anti-sovereignty academics and pro-empire Beltway pundits frequently defend their arguments by making assertions along the lines that "weak and failed states pose an acute risk to US and global security," as Carlos Pascual, the US State Department's first Coordinator for reconstruction and Stabilization, and Stephen Krasner wrote in Foreign Affairs in 2005. This is a rather dubious claim. The Fund for Peace/Foreign Policy magazine Failed States Index, for example, includes on its top 10 "most failed" states list Zimbabwe, Chad, Ivory Coast, the Democratic republic of the Congo, Guinea, and the Central African republic. It is difficult to imagine what threats are emerging from these countries that merit significant attention from US security strategists. To be sure, Afghanistan in the late 1990s was both a failed state by any definition and a threat to the United States. It should serve as a pointed reminder that we cannot ignore failed states. Traditional realist definitions of power reliant on conventional military capability, size of economy, and population, must now be supplemented with a recognition that small bands of terrorists could emerge from a backward corner of the globe and strike at the heart of the United States as well. But even here the interventionists' logic is weak. Attacking the threat that resided in failed Afghanistan in the 1990s would have had basically no effect on the health of the Afghan state. Killing Osama bin Laden and his comrades would have more substantially reduced the threat that bloomed on 9/11 than sending in US or international development personnel would have done. Attacking a threat rarely involves paving roads or establishing new judicial standards. It is this categorical error that is at the heart of the trouble with obsessing over state failure. To the extent that a threat has ever emanated from a failed state-and Afghanistan is essentially the only example of this-addressing the failure is different from attacking the threat. At best, the attempt to correlate state failure with terrorism relies on a dubious interpretation of terrorism: that terrorism is, at its root, a result of poverty that can be eradicated by an aggressive development effort. As Alan B. Krueger and others have demonstrated, however, terrorism is a response to political grievances, not a consequence of poverty. Accordingly, using the threat of terrorism to justify nation building in failed states is inappropriate.

**Monteiro’s wrong**

**Busby 12**, Josh, assistant professor of public affairs at the Lyndon B. Johnson School of Public Affairs [“Josh Busby on Unipolarity and International Relations,” January 6th, http://www.strausscenter.org/strauss-news/josh-busby-on-unipolarity-and-international-relations.html]

Strauss Scholar, Joshua Busby, wrote a three-part piece on the blog The Duck of Minerva, responding to two articles published by University of Chicago scholars Nuno Monteiro, and Sebastian Rosato and John Schuessler. The articles, and Busby’s response, focus on international relations, unipolarity and the realist approach to foreign policy. Busby’s first post critiques Nuno Monteiro’s article, “Unrest Assured: Why Unipolarity Is Not Peaceful” published in International Security. Monteiro argued that unipolarity has been less peaceful than other time periods. Busby disagrees with this argument, citing the contemporary era may create a “presentist bias” due to the overemphasis of our own lived experience and the omnipresence of the news media. Finally Busby addressed Moneiro’s argument that unipolarity drives conflict. Busby argues that **domestic-level factors in** both the United States and **potential adversaries, rather than U.S. power** alone, help explain recent conflicts.

**Monteiro agrees the alt doesn’t solve**

**Cambanis 12**, Thanassis, journalist, expert on Mideast policy[“The lonely superpower,” January 22nd, <http://articles.boston.com/2012-01-22/ideas/30646076_1_cold-war-nuclear-war-arms-race/5>]

Not everyone agrees that the United States would benefit from having a major rival. The best-known academic authority on American unipolarity, Dartmouth College political scientist William C. Wohlforth, argues that it’s still far better to be alone at the top. Overall, Wohlforth says, America spends less of its budget on defense than during the Cold War, and fewer Americans are killed in the conflicts in which it does engage. “Those who wish to have a peer competitor back are mistaken,” he said. “They forget the huge interventions of the Cold War.” Between 1945 and 1989, Wohlforth says, proxy wars between America and the Soviet Union killed hundreds of thousands of people, against the backdrop of a very real and terrifying threat of nuclear annihilation. Today, he says, the world is still dangerous, but it’s much less deadly and frightening than it was in the time of the nuclear arms race. For his part, Monteiro agrees that the Cold War was nasty and scary; he just wants to debunk the notion that what came next was any better. **According to Monteiro, bipolarity and unipolarity** pose different kinds of dangers, but **are equally problematic**.

**Concedes heg is key to solve great power war**

**Monteiro 11** \*Nuno P. Monteiro is Assistant Professor of Political Science at Yale University [<http://www.mitpressjournals.org/doi/pdf/10.1162/ISEC_a_00064>, “Unrest Assured: Why Unipolarity is not Peaceful”]

In addition, Wohlforth claims that wars among major powers are unlikely, because the unipole will prevent conflict from erupting among important states. He writes, “The sole pole’s power advantages matter only to the degree that it is engaged, and it is most likely to be engaged in politics among the other major powers. 44 **I agree** that if the unipole were to pursue a strategy of defensive dominance, major power wars would be unlikely. Yet, there is no compelling reason to expect that it will always follow such a course. Should the unipole decide to disengage, as Wohlforth implies, **major power wars would be possible**

**his statistics are stupid**

**Wohlforth 12**, William, Daniel Webster Professor in the Department of Government at Dartmouth College “Nuno Monteiro. “’Unrest Assured: Why Unipolarity is not Peaceful.’ Reviewed by William Wohlforth” October 31st, http://www.h-net.org/~diplo/ISSF/PDF/ISSF-AR17.pdf

Third, setting up the article as a claim that unipolarity is not peaceful runs into a problem: **Unipolarity is peaceful. The Most Peaceful. Ever. Period**. No one expects any imaginable anarchic inter-state system to be perfectly peaceful, with no war at all. In my 1999 paper, I stressed that “unipolarity does not imply the end of all conflict... It simply means the absence of two big problems” — hegemonic rivalry and counter-hegemonic balancing—that were present in all earlier systems. As a result “unipolarity favors the absence of war among the great powers.” Like any statement about the war-proneness of any international system, this is a relative claim. International relations scholarship does not have theories that make anything other than relative predictions about the war-proneness of systems. Monteiro tries but fails to escape this reality. He writes: “Rather than assess the relative peacefulness of unipolarity vis-à-vis bipolar or multipolar systems, I identify causal pathways to war that are characteristic of a unipolar system and that have not been developed in the extant literature (12). The latter portion of this sentence is exactly right, but the former bit is contradicted just a few pages later when Monteiro presents evidence that “Unipolarity is the most conflict prone of all systems .. .“ (18). While **conflict researchers** debate the causes, they **are nearly united** in agreeing that the post-1990 international system is the least afflicted by war.5 There are many ways to measure war: the overall number that occur, the number of people killed, the probability that any state will be at war in any year, the size or cost of military forces compared to economic output or population, or, perhaps best, the probability that any individual will die as a result of organized inter-group violence. By all those measures, we are living in the most peaceful period since the modern inter-state system took shape in the seventeenth century. Indeed, Stephen Pinker assembles masses of evidence to suggest that there has never been a less violent time in all of human history.6 It is hard to think of any way to measure war that does not show the unipolar period as remarkably peaceful— except for the ones Monteiro uses: “the percentage of years that great powers spend at war, and the incidence of war involving great powers,” (18) with the United States defined as the only great power after 1990. That is a very convoluted way to say ‘Iraq and Afghanistan.’ The fact that the United States ended up in two grinding counter-insurgency operations in no way contradicts the claim that unipolarity is unprecedentedly peaceful.

**Err heavily aff – Monteiro concedes that if we’re even a little bit right about cling to heg all of their offense is inevitable**

**Monteiro 11** \*Nuno P. Monteiro is Assistant Professor of Political Science at Yale University [<http://www.mitpressjournals.org/doi/pdf/10.1162/ISEC_a_00064>, “Unrest Assured: Why Unipolarity is not Peaceful”]

Besides facilitating conflict among major and minor powers in other regions, disengagement will yield peace for the unipole only if two requirements are fulfilled. First, the unipole must disengage from all regions beyond its own. Second, it must disengage completely from each of these regions. Disengagement must be global because dominance in one region leads to the emergence of recalcitrant minor powers. In addition, this would alert minor powers in other regions to the dangers of extreme self-help. In the absence of a pure disengagement strategy at the global level, therefore, potential recalcitrant minor powers everywhere are likely to act as if the unipole were engaged in their region, and will thus take actions that bolster their chances of survival vis-à-vis a potentially threatening unipole. Disengagement must also be complete because even defensive dominance places recalcitrant minor powers in a situation of extreme self-help. Disengagement thus requires the unipole to extract itself completely from military alliances, withdraw its security guarantees to others, recall forward-deployed forces, and so on. Limited, or selective, engagement is likely to trigger the same type of conflict (though through different causal mechanisms) as complete offensive dominance. 105 Failure to meet these two conditions effectively turns the unipole’s strategy into a form of defensive dominance, albeit a selective one. Incomplete disengagement decreases the predictability of the unipole’s future behavior, leading recalcitrant minor powers to behave as if the unipole remained engaged and, therefore, threatening to their survival. Disengagement, then, while always producing regional wars, staves off wars involving the unipole only if it is implemented as a pure strategy. A mixed strategy—a form of dominance limited either in its regional scope or in the means involved—is likely to compound the problems of disengagement with those of dominance. In sum, **disengagement opens the door to regional competition, leading to wars involving both minor and major powers**. If incomplete, disengagement will also result in wars involving the unipole, similar to the ones described in the previous two sections.

Kagan prodict

**Whitman 12 -**  Dan Whitman teaches Foreign Policy at the Washington Semester Program, American University. As Public Diplomacy officer in USIA and the Department of State for more than 25 years, he drafted and edited speeches for U.S. ambassadors in Denmark, Spain, South Africa, Cameroon, Haiti, and Guinea-Conakry. A senior Foreign Service Officer, he retired in 2009 from the Bureau of African Affairs, U.S. Department of State. ( Dan March 12 Declinism in Decline <http://punditwire.com/2012/03/18/declinism-in-decline/)bs>

A Romney advisor, Kagan spoke March 15 at the American Enterprise Institute, delivering an off-the-cuff account of the notions in his book. NPR’s Tom Gjelten artfully moderated the panel discussion, and joked about his own failure to spark controversy among experts from AEI, the New American Foundation, Brookings. The panel found consensus that the declinism debate may finally have spun itself out. Elsewhere, Heritage says something similar. All claimed that the global structure currently owes its stability and flourishing to the United States, and that American decline would lead to a sort of new Dark Age of anarchy. One awaits a European, Asian, African, or Latin American voice to verify or challenge these findings. None was present on March 15, unless you count Peter Bergen, the brilliant British-American who says “we” when referring to the United States. Bolstered by others, Kagan’s is a voice to be reckoned with. Listen for his ideas in future Romney articulations on the subject. What to do about Syrian massacres? “There will be no Syrian action before the election – maybe after.” We will likely intervene after the U.S. elections, “If not, President Obama should not say, ‘Assad must go.’” Kagan’s good joke March 15 was that his liberal friends had told him in 2008, “If I voted for McCain, we would invade yet another Muslim country. And they were right. I did vote for McCain, and we did.” One panelist ridiculed Soft Power as “squishy power, goofy power,” and deserves compassion for how he must have suffered away from books or conversation outside of his office in the past ten years. Much silliness is heard in the land about the irrelevance of the minds, hearts, and opinions of seven billion people. Kaiser Wilhelm, too, mistook arms and economy as the sole source of national strength. Such solipsisms have led mainly to war and defeat, and the belief that they could yield different results. They never do. This was not part of Kagan’s arguments, however. His hold up. Competing think tanks now rise to a high level of civility and unanimity. March 15, all agreed with Kagan that if the U.S. Congress savages the U.S. budget, we will lose hard power; that a consensus exists in the United States (and always did) that the United States should play a strong role in world affairs for its own, and the world’s, interests. All agreed that the Ron Paul notion of retraction is a non-starter, and that the United States has a “special nature” (read: “exceptionalism.”) None questioned that the rise of non-threatening powers such as India, Brazil, and others (China??) can be an advantage in a world where power and wealth are an expanding universe and not/not a zero sum game. Agreed: President Obama has intensified, not contracted, the combative stance of the United States in overseas conflicts. Will the Chicago May NATO summit establish and finalize a SOFA (Status of Forces Agreement) with Afghanistan? Likely. And the U.S. will certainly not seek to cut and run from Afghanistan in the near future, despite White House pronouncements to the contrary. Thus spake Bergen and others. But the love feast was lacking a main course: might others see American declinism from other perspectives? Do alternative judgments exist of America’s “unique” role in securing global peace? On this, we’ve had thin gruel, and could use some input on a matter that has been “settled” by American intellects. Friendly voices from outside might see us differently.

Add-ons

**Grid collapse causes nuclear lashout**

**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?

**Drones solve pakistan instability.**

**Bergen and Tiedemann 11** – (July/Aug. 2011, Peter Bergen, the director of the national security studies program at the New America Foundation, and Katherine Tiedemann, Research Fellow at the National Security Studies Program at the New America Foundation, “Washington’s Phantom War,” Foreign Affairs, http://www.foreignaffairs.com/articles/67939/peter-bergen-and-katherine-tiedemann/washingtons-phantom-war?page=show)

Despite the drone program’s shortcomings, it is likely to continue–put simply, Washington has no better military options for combating the anti-Western militants who have made their home in Pakistan’s tribal areas. Pakistan’s army has proved itself unwilling or unable to clear out the Taliban and other insurgent groups from North Waziristan, where around 90 percent of last year’s drone strikes took place. Although the Pakistani armed forces have in recent years undertaken operations in the six other agencies of FATA, the military’s high command remains resistant to attacking North Waziristan, a base of the Haqqani network, al Qaeda and other foreign fighters, and local Taliban militants, some of whom Pakistan views as a hedge against Indian influence in the region. Pakistan’s ambassador to United States, Husain Haqqani, has argued that Pakistan is not in a position to begin an offensive in North Waziristan because its military is already stretched thin by its work on reconstruction efforts necessitated by the country’s devastating floods in the summer of 2010. And Pakistan’s powerful army chief, General Ashfaq Parvez Kayani, has resisted the efforts of countless U.S. officials to convince him to attack the insurgents based in North Waziristan. Kayani, it seems, is concerned not only with overcommitting his already overstretched forces but also with retaining the loyalty of the Haqqani network, which has long been an asset of Pakistani military intelligence, according to U.S. officials. The military alternatives to drone strikes in the tribal areas–U.S. Special Forces operations using ground troops, for example, or conventional NATO-led air strikes–are not supported by Pakistani officials and would be met with strong resistance. In September 2008, U.S. commandos carried out a raid against alleged al Qaeda and Taliban militants just over the border from Afghanistan in South Waziristan, angering Kayani, who said that Pakistan’s sovereignty would be defended “at all cost.” Two years later, when NATO helicopters flew into Pakistani airspace in the Kurram Agency, Pakistan’s reaction was even harsher–officials closed the Torkham border crossing, a key link in NATO’s supply lines to Afghanistan. Last December, when a report in The New York Times suggested that Washington might be interested in expanding U.S. special operations raids into Pakistani territory, Ambassador Haqqani immediately registered his disapproval and noted that no foreign forces would be allowed to operate inside Pakistan. And the operation that killed bin Laden was met with outcries from Pakistani officials concerned about violations of the country’s sovereignty. Behind the scenes, many Pakistani officials–including President Asif Ali Zardari and Prime Minister Yousaf Raza Gilani–have supported the drone strikes, despite their occasional public protests. In a State Department cable from August 2008, just when Washington was ramping up the drone program, Gilani said, “I don’t care if they [the Americans] do it as long as they get the right people. We’ll protest in the National Assembly and then ignore it.” A few months later, Zardari gave his blessing to the program with the brusque comment, “Kill the seniors. Collateral damage worries you Americans. It does not worry me.” And of course, the greatest proof of Islamabad’s cooperation is the fact that the program has continued; for the strikes to be even minimally successful, they require some coordination with Pakistan’s military and intelligence services. As one U.S. official commented, “You need guys on the ground to tell you who they [militant targets] are, and that isn’t coming from some white guy running around the FATA.” Although Pakistani officials have recently resumed their public criticism of the strikes, Islamabad has some strong reasons to cooperate. The strikes routinely kill enemies of the Pakistani state, such as Mehsud, who targeted police officers, soldiers, and civilians across the country with suicide bombings. Anecdotal evidence suggests that the strikes are also having an effect on the insurgents’ morale and operational practices. Low-level militants have grown to fear the drones, which some have dubbed machay, or “wasps,” for the buzzing sound they make as they hover for hours before or after attacks. David Rohde, the New York Times reporter who was held by the Haqqani network for over seven months in North and South Waziristan in 2008 and 2009, wrote later that “the drones [were] a terrifying presence that … unnerved and angered the guards.” Today, Haqqani fighters set up camp in groups no larger than ten men to avoid attracting the attention of the Predators and Reapers patrolling the skies above them. Some militants in North Waziristan have reportedly gone so far as to take up living in underground tunnels. Finally, it is important to remember that Pakistan’s tribal areas are a major source of human and material support for attacks against U.S. and NATO forces in Afghanistan, according to the United Nations. Washington is therefore loath to abandon, or even slow down, a program that may have any kind of positive effects in taming this troublesome region. Lacking other military alternatives and facing a persistent threat from the tribal areas, the U.S. program of drone strikes is not likely to end in the near future. As Leon Panetta, the outgoing CIA director, once said, the drone program is “the only game in town.”

**Global nuclear war**

**Pitt, 9** - a New York Times and internationally bestselling author of two books: "War on Iraq: What Team Bush Doesn't Want You to Know" and "The Greatest Sedition Is Silence." (5/8/09, William, “Unstable Pakistan Threatens the World,” http://www.arabamericannews.com/news/index.php?mod=article&cat=commentary&article=2183)

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But a suicide bomber in Pakistan rammed a car packed with explosives into a jeep filled with troops today, killing five and wounding as many as 21, including several children who were waiting for a ride to school. Residents of the region where the attack took place are fleeing in terror as gunfire rings out around them, and government forces have been unable to quell the violence. Two regional government officials were beheaded by militants in retaliation for the killing of other militants by government forces. As familiar as this sounds, it did not take place where we have come to expect such terrible events. This, unfortunately, is a whole new ballgame. It is part of another conflict that is brewing, one which puts what is happening in Iraq and Afghanistan in deep shade, and which represents a grave and growing threat to us all. Pakistan is now trembling on the edge of violent chaos, and is doing so with nuclear weapons in its hip pocket, right in the middle of one of the most dangerous neighborhoods in the world.The situation in brief: Pakistan for years has been a nation in turmoil, run by a shaky government supported by a corrupted system, dominated by a blatantly criminal security service, and threatened by a large fundamentalist Islamic population with deep ties to the Taliban in Afghanistan. All this is piled atop an ongoing standoff with neighboring India that has been the center of political gravity in the region for more than half a century. The fact that Pakistan, and India, and Russia, and China all possess nuclear weapons and share the same space means any ongoing or escalating violence over there has the real potential to crack open the very gates of Hell itself.

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Recently, the Taliban made a military push into the northwest Pakistani region around the Swat Valley. According to a recent Reuters report: The (Pakistani) army deployed troops in Swat in October 2007 and used artillery and gunship helicopters to reassert control. But insecurity mounted after a civilian government came to power last year and tried to reach a negotiated settlement. A peace accord fell apart in May 2008. After that, hundreds — including soldiers, militants and civilians — died in battles. Militants unleashed a reign of terror, killing and beheading politicians, singers, soldiers and opponents. They banned female education and destroyed nearly 200 girls' schools. About 1,200 people were killed since late 2007 and 250,000 to 500,000 fled, leaving the militants in virtual control. Pakistan offered on February 16 to introduce Islamic law in the Swat valley and neighboring areas in a bid to take the steam out of the insurgency. The militants announced an indefinite cease-fire after the army said it was halting operations in the region. President Asif Ali Zardari signed a regulation imposing sharia in the area last month. But the Taliban refused to give up their guns and pushed into Buner and another district adjacent to Swat, intent on spreading their rule. The United States, already embroiled in a war against Taliban forces in Afghanistan, must now face the possibility that **Pakistan could collapse** under the mounting threat of Taliban forces there. Military and diplomatic advisers to President Obama, uncertain how best to proceed, now face one of the great nightmare scenarios of our time. "Recent militant gains in Pakistan," reported The New York Times on Monday, "have so alarmed the White House that the national security adviser, Gen. James L. Jones, described the situation as 'one of the very most serious problems we face.'" "Security was deteriorating rapidly," reported The Washington Post on Monday, "particularly in the mountains along the Afghan border that harbor al-Qaeda and the Taliban, intelligence chiefs reported, and there were signs that those groups were working with indigenous extremists in Pakistan's populous Punjabi heartland. The Pakistani government was mired in political bickering. The army, still fixated on its historical adversary India, remained ill-equipped and unwilling to throw its full weight into the counterinsurgency fight. But despite the threat the intelligence conveyed, Obama has only limited options for dealing with it. Anti-American feeling in Pakistan is high, and a U.S. combat presence is prohibited. The United States is fighting Pakistan-based extremists by proxy, through an army over which it has little control, in alliance with a government in which it has little confidence." It is believed Pakistan is currently in possession of between 60 and 100 nuclear weapons. Because Pakistan's stability is threatened by the wide swath of its population that shares ethnic, cultural and religious connections to the fundamentalist Islamic populace of Afghanistan, fears over what could happen to those nuclear weapons if the Pakistani government collapses are very real. "As the insurgency of the Taliban and Al Qaeda spreads in Pakistan," reported the Times last week, "senior American officials say they are increasingly concerned about new vulnerabilities for Pakistan's nuclear arsenal, including the potential for militants to snatch a weapon in transport or to insert sympathizers into laboratories or fuel-production facilities. In public, the administration has only hinted at those concerns, repeating the formulation that the Bush administration used: that it has faith in the Pakistani Army. But that cooperation, according to officials who would not speak for attribution because of the sensitivity surrounding the exchanges between Washington and Islamabad, has been sharply limited when the subject has turned to the vulnerabilities in the Pakistani nuclear infrastructure." "The prospect of turmoil in Pakistan sends shivers up the spinesof those U.S. officials charged with keeping tabs on foreign nuclear weapons," reported Time Magazine last month. "Pakistan is thought to possess about 100 — the U.S. isn't sure of the total, and may not know where all of them are. Still, if Pakistan collapses, the U.S. military is primed to enter the country and secure as many of those weapons as it can, according to U.S. officials. Pakistani officials insist their personnel safeguards are stringent, but a sleeper cell could cause big trouble, U.S. officials say." In other words, a shaky Pakistan spells trouble for everyone, especially if America loses the footrace to secure those weapons in the event of the worst-case scenario. If Pakistani militants ever succeed in toppling the government, several very dangerous events could happen at once. Nuclear-armed India could be galvanized into military action of some kind, as could nuclear-armed China or nuclear-armed Russia. If the Pakistani government does fall, and all those Pakistani nukes are not immediately accounted for and secured, the specter (or reality) of loose nukes falling into the hands of terrorist organizations could place the **entire world on a collision course with unimaginable disaster**. We have all been paying a great deal of attention to Iraq and Afghanistan, and rightly so. The developing situation in Pakistan, however, needs to be placed immediately on the front burner. The Obama administration appears to be gravely serious about addressing the situation. So should we all.

**Sats key to disease monitoring**

**Harmon ‘9** (Katherine, News Reporter @ Scientific American “Satellites Used to Predict Infectious Disease Outbreaks” 8/24, <http://www.scientificamerican.com/author.cfm?id=1822>)

Rather than searching for weird weather or enemy missiles, some satellites are helping researchers to track—and predict—the spread of deadly diseases. With the pandemic spread of H1N1 swine fluand the continued advance of the H5N1 avian flu, scientists are anxious to better predict the spread of infectious diseases and are looking for new tools wherever they might be—even if that's hundreds of miles in the sky. "Ideally we could predict conditions that would result in some of these major outbreaks of cholera, malaria, even avian flu," says Tim Ford of the University of New England in Biddeford, Maine. Ford and a group of experts have co-authored a perspective paper (pdf), due out next month in Emerging Infectious Diseases, that proposes making use of environmental data—tracked via satellite—to predict disease outbreaks. "As climate changes, and even with many of our weather patterns, [it] directly affects the distribution of disease," Ford says. Hantavirus, the pulmonary disease spread by rodents, for example, has been linked to changes in precipitation. With more rainfall, vegetation increases, which then fuels rodent populations. And pinpointing an area as relevant conditions emerge—before an outbreak starts—buys precious time to spread public health messages. Satellite imaging can also help warn of cholera outbreaks, which are predicted to worsen with climate change. The satellites provide information about water surface temperatures, which are key to the spread of this waterborne disease. One study found that giving people simple preventative instructions, such as filtering water through a sari cloth, reduced cholera-related deaths by an estimated 50 percent in some areas. Remote data have already been used to map the avian flu in Asia. Xiangming Xiao, associate director of the University of Oklahoma's Center for Spatial Analysis in Norman, has been tracking likely outbreaks of this highly pathogenic flu by looking for key habitat and weather changes. The domestic duck—determined to be the main carrier of the disease—is a common inhabitant of Southeast Asia's rice paddies, and the movement of migratory birds—a secondary carrier—could be predicted based on temperatures. So using both land-use and temperature information from satellites, Xiao and his team could track the spread of the flu by estimating where the birds would be. If visual data from satellites is combined with information from radar and LiDAR, (light detecting and ranging, which provides laser-measured data about 3-D contours), Xiao explains, researchers can really hone prediction of some diseases down to a tree line. "You can look at… the transition of pasture grassland to forests," he says, habitats which determine the range of deer. "And this has very important implications for tick-borne diseases, like Lyme disease." Much of the satellite work, however, still relies on clear skies. And all of it has been dependent on quality information from willing providers, such as NASA and its Earth Observing System, the availability of which researchers hope will continue in the future. Even with the clearest NASA images, though, current methods are far from perfect. They employ complex models and incomplete information, risking false alarms and missed outbreaks. The satellite data are still just a portion of the equation. They allow researchers to start "standing back and looking at the picture from a distance," Ford says. He and others are heavily reliant on ground-based measurements and observations. Xiao notes that, "the in situ observations are still very, very important. So the key is to combine those together—that's a real challenge." To make the predictions as precise as possible takes understanding the ecology not just of the place being studied, but also of the disease and the human population. "You see tremendous variations in different areas," says Ford of how diseases behave, and "in some sense, [that is due to] just difference in human behavior." Judging the severity of avian flu's spread from satellite imaging, for instance, requires knowing how likely certain areas are to keep domestic chickens and ducks—a practice more common in countries that consume more poultry, Xiao explains. And getting precise poultry production statistics can be a real challenge, he notes, as record-keeping can vary greatly among countries and regions. But Ford thinks that even with these limitations, "There's no reason at all we shouldn't be able to say, 'This summer is going to be a bad hantavirus year' or 'This season will likely have a high cholera risk.'" Novel or long-dormant diseases present more challenges for remote prediction. "Whether we can predict emerging diseases is a whole other question," Ford says, especially as their vectors or risk factors might take time to assess. And some diseases that spread among people might turn out to be nearly impossible to predict using satellite and environmental data beyond what researchers already know about seasonal cycles, like that for the seasonal flu. And, the nonseasonal H1N1 flu, for example, "is probably going to be more to do with human patterns [and] rapid transport between countries" than environmental changes that can be mapped, Ford says. Predicting infectious diseases is a crucial step in curbing them, Ford notes. "With all our medical advances and our advances in sanitation…we still have not been able to grapple with diseases," he says. But he is hopeful for the future of satellite-based prediction—even as it becomes a greater necessity in a changing climate and globalized world. "There's really nowhere on the globe that a pathogen can really remain isolated," he says.

**Extinction**

Yu ‘9 (Victoria, “Human Extinction: The Uncertainty of Our Fate,” Dartmouth Journal of Undergraduate Science, May 22, <http://dujs.dartmouth.edu/spring-2009/human-extinction-the-uncertainty-of-our-fate>)

In the past, humans have indeed fallen victim to viruses. Perhaps the best-known case was the bubonic plague that killed up to one third of the European population in the mid-14th century (7). While vaccines have been developed for the plague and some other infectious diseases, new viral strains are constantly emerging — a process that maintains the possibility of a pandemic-facilitated human extinction**.** Some surveyed students mentioned AIDS as a potential pandemic-causing virus.  It is true that scientists have been unable thus far to find a sustainable cure for AIDS, mainly due to HIV’s rapid and constant evolution. Specifically, two factors account for the virus’s abnormally high mutation rate: 1. HIV’s use of reverse transcriptase, which does not have a proof-reading mechanism, and 2. the lack of an error-correction mechanism in HIV DNA polymerase (8). Luckily, though, there are certain characteristics of HIV that make it a poor candidate for a large-scale global infection: HIV can lie dormant in the human body for years without manifesting itself, and AIDS itself does not kill directly, but rather through the weakening of the immune system.  However, for more easily transmitted viruses such as influenza, the evolution of new strains could prove far more consequential. The simultaneous occurrence of antigenic drift (point mutations that lead to new strains) and antigenic shift (the inter-species transfer of disease) in the influenza virus could produce a new version of influenza for which scientists may not immediately find a cure. Since influenza can spread quickly, this lag time could potentially lead to a “global influenza pandemic,” according to the Centers for Disease Control and Prevention (9). The most recent scare of this variety came in 1918 when bird flu managed to kill over 50 million people around the world in what is sometimes referred to as the Spanish flu pandemic. Perhaps even more frightening is the fact that only 25 mutations were required to convert the original viral strain — which could only infect birds — into a human-viable strain (10).

# water

**heg is key to UN effectiveness**

**Brooks 12**, Stephen, Associate Professor of Government at Dartmouth College, John Ikenberry is the Albert G. Milbank Professor of Politics and International Affairs at Princeton University in the Department of Politics and the Woodrow Wilson School of Public and International Affairs, William C. Wohlforth is the Daniel Webster Professor in the Department of Government at Dartmouth College “Don’t Come Home America: The Case Against Retrenchment,” International Security, Vol. 37, No. 3 (Winter 2012/13), pp. 7–51

What goes for the global economy also applies to larger patterns of institutionalized cooperation. Here, too, the leadership enabled by the United States’ grand strategy fosters cooperation that generates diffuse benefits for many states but often disproportionately reflects U.S. preferences. This basic premise subsumes three claims. First, benefits flow to the United States from institutionalized cooperation to address a wide range of problems. There is general agreement that a stable, open, and loosely rule-based international order serves the interests of the United States. Indeed, we are aware of no serious studies suggesting that U.S. interests would be better advanced in a world that is closed (i.e., built around blocs and spheres of influence) and devoid of basic, agreed-upon rules and institutions. As scholars have long argued, under conditions of rising complex interdependence, states often can benefit from institutionalized cooperation. 109 In the security realm, newly emerging threats arguably are producing a rapid rise in the benefits of such cooperation for the United States. Some of these threats are transnational and emerge from environmental, health, and resource vulnerabilities, such as those concerning pandemics. Transnational nonstate groups with various capacities for violence have also become salient in recent decades, including groups involved in terrorism, piracy, and organized crime. 110 As is widely argued, these sorts of nontraditional, transnational threats can be realistically addressed only through various types of collective action. 111 Unless countries are prepared to radically restrict their integration into an increasingly globalized world system, the problems must be solved through coordinated action. 112 In the face of these diffuse and shifting threats, the United States is going to find itself needing to work with other states to an increasing degree, sharing information, building capacities, and responding to crises. 113 Second, U.S. leadership increases the prospects that such cooperation will emerge in a manner relatively favorable to U.S. interests. Of course, the prospects for cooperation are partly a function of compatible interests. Yet even when interests overlap, scholars of all theoretical stripes have established that institutionalized cooperation does not emerge effortlessly: generating agreement on the particular cooperative solution can often be elusive. And when interests do not overlap, the bargaining becomes tougher yet: not just how, but whether cooperation will occur is on the table. Many factors affect the initiation of cooperation, and under various conditions states can and have cooperated without hegemonic leadership. 114 As noted above, however, scholars acknowledge that **the likelihood of cooperation drops in the absence of leadership**. Finally, **U.S. security commitments are an integral component of this leadership**. Historically, as Gilpin and other theorists of hegemonic order have shown, the background security and stability that the United States provided facilitated the creation of multilateral institutions for ongoing cooperation across policy areas. 115 As in the case of the global economy, U.S. security provision plays a role in fostering stability within and across regions, and this has an impact on the ability of states to engage in institutional cooperation. Institutional cooperation is least likely in areas of the world where instability is pervasive. It is more likely to flourish in areas where states are secure and leaders can anticipate stable and continuous relations—where the “shadow of the future” is most evident. And because of the key security role it plays in fostering this institutional cooperation, the United States is in a stronger position to help shape the contours of these cooperative efforts. The United States’ extended system of security commitments creates a set of institutional relationships that foster political communication. Alliance institutions are in the first instance about security protection, but they are also mechanisms that provide a kind of “political architecture” that is useful beyond narrow issues of military affairs. Alliances bind states together and create institutional channels of communication. NATO has facilitated ties and associated institutions—such as the Atlantic Council—that increase the ability of the United States and Europe to talk to each other and do business. 116 Likewise, the bilateral alliances in East Asia also play a communication role beyond narrow security issues. Consultations and exchanges spill over into other policy areas. 117 For example, when U.S. officials travel to Seoul to consult on alliance issues, they also routinely talk about other pending issues, such as, recently, the Korea–United States Free Trade Agreement and the Trans-Pacific Partnership. This gives the United States the capacity to work across issue areas, using assets and bargaining chips in one area to make progress in another. It also provides more diffuse political benefits to cooperation that flow from the “voice opportunities” created by the security alliance architecture. 118 The alliances provide channels and access points for wider flows of communication—and the benefits of greater political solidarity and institutional cooperation that follow. The benefits of these communication flows cut across all international issues, but are arguably enhanced with respect to generating security cooperation to deal with new kinds of threats—such as terrorism and health pandemics—that require a multitude of novel bargains and newly established procedures of shared responsibilities among a wide range of countries. With the existing U.S.-led security system in place, the United States is in a stronger position than it otherwise would be to strike bargains and share burdens of security cooperation in such areas. The challenge of rising security interdependence is greater security cooperation. That is, when countries are increasingly mutually vulnerable to nontraditional, diffuse, transnational threats, they need to work together to eradicate the conditions that allow for these threats and limit the damage. The U.S.-led alliance system is a platform with already existing capacities and routines for security cooperation. These assets can be used or adapted, saving the cost of generating security cooperation from scratch. In short, having an institution in place to facilitate cooperation on one issue makes it easier, and more likely, that the participating states will be able to achieve cooperation rapidly on a related issue. 119

**Military SMRs key to mobile desalination and water delivery—only energy source that solve**

Butler 10

Lieutenant Colonel, Glen, Why the Marine Corps should lead the environmental and energy way forward and how to do it http://www.mca-marines.org/gazette/not-green-enough

Environmental and energy (E2) issues have been politically ladened topics throughout their existence in the public’s consciousness. In the 1970s, E2-concerned citizens were stereotypically depicted as hippies building solar farms on communes, although OPEC’s (Organization of Petroleum Exporting Country’s) actions and the oil embargo of 1973 shot fuel dependency into the mainstream. Nevertheless, the country took little sustained notice after a brief period of heightened concern. In the 1980s and 1990s, the Marine Corps’ E2 was largely focused on compliance with existing regulations, prevention of oil spills and hazardous material incidents, and stewardship of threatened or endangered species. However, “green fever” transitioned E2 from an emotional peacenik mantra—first into the marketer’s delight, and more recently, into genuine national concern. The government, for its part, has brought in another important consideration particularly emphasized within the last few years—E2 as a national security linchpin.1 Whether you stand behind global warming or “climategate” matters little; we as Marines should understand that these issues are not Republican or Democrat and not a mere debate between Al Gore and Sean Hannity.2 E2 issues are now at the forefront of everything we do, validated by a preponderance of Federal directives and related military mandates. Both the Secretary of the Navy (SecNav) and Commandant of the Marine Corps (CMC) have made their positions clear via broad and innovative guidance.3 From the CMC’s Marine Energy Assessment Team and Expeditionary Energy Office to Secretary Raymond Mabus’ “Great Green Fleet,”4 the Navy-Marine Team has never had stronger green leadership. Nevertheless, **the Marine Corps has yet to fully seize the moment and take truly bold and daring steps.** Most every Service and successful organization has embraced the green revolution in some form, but **the Marine Corps has work remaining if it desires to lead the charge in typical Marine fashion**. With support to our combat deployed forces remaining the number one priority, it is understandable that expeditionary energy is the focus. But if installations are truly the fifth element of the MAGTF,5 this emphasis must be broadened to include warfighters’ stateside homes. There are many avenues in the E2 arena to accomplish this; here are just a few recommendations. Back Policy With Resources Much green verbiage today is delivered in neat, round goals (“reduce XXX 20 percent by 2020,” etc.) bathed in cliché ecoterms like “alternative,” “renewable,” “clean,” and “sustainable.”6 Yet without resources to support those goals, this is but a promulgation of the ends but not the ways or means. To help correct this problem the Marine Corps should lead endeavors for joint force planning, identify potentially synergetic projects, lobby for substantial E2-targeted resources,7 and develop more Marine-specific, Corps-wide guidance to secure future mission capabilities. Continue Multifaceted Approach, but Standardize Best Practices Many significant E2 initiatives exist across the Corps, yet most remain a patchwork of uncoupled and often competing efforts cobbled together by energetic commanders and creative action officers. We need a centralized, web-based hub to share best practices, voice concerns, and foster additional E2 learning,8 and all bases and stations should establish dedicated, robust energy websites.9 Although installations should retain a degree of flexibility to suit local nuances of region, they should capitalize on successful programs by replication through directives and with resources from the top; where good ideas exist, adopt these best practices Service-wide.10 Pursue bold, long-term programs but also easy quick-kills to show progress and produce a gradual paradigm shift.11 Even so, be leery of excessive “innovations” that substitute unnecessary inconvenience (like trayless mess halls) in place of education and impractical rationing that ignores realities of operational requirements, mission expansion, and population growth.12 Focus on educating Marines and families to make proper choices. Enhance Education For better linkage with our Operating Forces, infuse the E2 sector across the fifth element with uniformed Marines. Just as developing computer/Internet technology and operations necessitated the creation of new computer-related MOSs/billets in the 1990s, so too should we now lean forward and inject professionally trained active duty officers into the E2 field (not just civilian logisticians).13 Higher level guidance on E2 issues is (overly) abundant,14 yet the education piece—(key to drive a cultural shift and often the most effective method for positive change) is severely lacking. Our resident and nonresident professional military education curricula lack any modern E2 instruction.15 The majority of actionable and educational initiatives are left to the local commander’s own resourcefulness. In addition to attendance at E2 conferences16 and liaison between the new Marine Corps/Navy Energy Offices, the Marine Corps should collaborate with our Navy leadership to develop high-quality educational programs, available on a variety of levels (from MarineNet to The Basic School to the war colleges to the Naval Postgraduate School), to ensure that our next generation of Marines and sailors is poised to lead the way forward in E2 fields, including renewable, alternative and, yes, nuclear energy technologies. Consider Nuclear Power On 16 March 1979, The China Syndrome opened in theaters across the country, depicting a fictitious story about a reporter witnessing an accident at the Ventanna nuclear plant outside Los Angeles and the subsequent evil plot to suppress the truth. Twelve days later the Three Mile Island partial core meltdown in Pennsylvania helped propel The China Syndrome to theatrical success and permanently scarred the American psyche. The nail in the nuclear energy coffin was the nuclear disaster 7 years later at Chernobyl, in the Ukrainian Soviet Socialist Republic.17 But despite these stains on the nuclear power industry, the time has never been better for the Marine Corps (and Navy) to dive in than now. Here’s why. First, the political climate, though still tenuous, is shifting to favorable, with the change coming from the top down. During his 27 January 2010 State of the Union address, President Barack Obama echoed themes from his campaign trail by clearly voicing his intention to include nuclear power in American’s playbook of energy security options.18 Similarly, as the Department of Energy’s (DoE’s) Secretary of Energy, Steven Chu has articulated similar sentiments, declaring that “President Obama and I are committed to restarting the nuclear industry in the United States.”19 Many other political leaders and policymakers indeed support a true “nuclear renaissance,”20 and the growing momentum stands a chance to bury the ghosts of Chernobyl once and for all. Second, with our **well-replicated but limited pursuit of the standard renewable energies,21 we’re putting all energy eggs in one basket, a vessel unlikely to hold a sufficient load for success**. Currently pursued renewable energy sources do have limitations.22 More importantly, with military installations relying almost exclusively on external sources for energy, and those sources largely unpredictable, unsecured, and reliant on foreign-based oil,23 if energy security is truly a national security issue, then nuclear power should be considered. Solar demonstrations at Miramar and Barstow are not enough. Third, nuclear technology today has advanced well beyond the days of Three Mile Island. Specifically, small modular reactors (**SMRs) offer great potential to safely and effectively provide energy island/net zero capabilities to Marine Corps** and Navy **installations** across the country.24 SMRs have relatively low plant cost, can replace aging fossil plants, and do not emit greenhouse gasses. Some are as small as a “hot tub” and can be stored underground, dramatically increasing safety and security from terrorist threats.25 Encouragingly, in fiscal year 2010 (FY10) the DoE allocated $0 to the U.S. SMR Program; in FY11, they’ve requested $38.9 million. This funding is to support two main activities—public/private partnerships to advance SMR designs and research and development and demonstrations. According to the DoE’s website, one of the planned program accomplishments for FY11 is to “collaborate with the Department of Defense (DoD) . . . to assess the feasibility of SMR designs for energy resources at DoD installations.”26 The Marine Corps should vigorously seek the opportunity to be a DoD entity providing one platform for this feasibility assessment.27 Fourth, SMR technology offers the Marine Corps another unique means to lead from the front—not just of the other Services but also of the Nation, and even the world.28 This potential Pete Ellis moment should be seized. There are simple steps we could take,29 and others stand ready to lead if we are not.30 But **the temptation to “wait and see**” and “let the others do it; **then we’ll adopt it” mentality is not always best.** Energy security demands boldness, not timidity. To be fair, nuclear technology comes with challenges, of course, and with questions that have been kicked around for decades. An April 1990 Popular Science article asked, “Next Generation Nuclear Reactors—Dare we build them?” and included some of the same verbiage heard in similar discussions today.31 Compliance with National Environment Policy Act requirements necessitates lengthy and detailed preaction analyses, critical community support must be earned, and disposal challenges remain. Still, none of these hurdles are insurmountable.32 Yet despite the advances in safety, security, and efficiency in recent years, nuclear in the energy equation remains the new “n-word” for most military circles. And despite the fact that the FY10 National Defense Authorization Act called on the DoD to “conduct a study [of] the feasibility of nuclear plants on military installations,” the Office of the Secretary of Defense has yet to fund the study.33 Fifth, the cumbersome, bureaucratic certification process of the Nuclear Regulatory Commission (NRC), often enough to scare away potential entrepreneurs and investors, is not necessarily a roadblock to success. The NRC is “responsible for licensing and regulating the operation of commercial nuclear power plants in the United States.” Military installations offer unique platforms that could likely bypass an extended certification process. With established expertise and a long safety record in nuclear reactor certification, operations, training, and maintenance, the Naval Nuclear Propulsion Program comprises the civilian and military personnel who: . . . design, build, operate, maintain, and manage the nuclear-powered ships and the many facilities that support the U.S. nuclear-powered naval fleet.”34 Bypassing the NRC and initiating SMR experimentation under ADM Hyman Rickover’s legacy umbrella of naval reactors could shorten the process to a reasonable level for Marine and naval installations.35 Finally, Marine Corps-SMR technology opens the pathway for related endeavors and synergetic undertakings. The Army has several smart and influential individuals poised to partner in nuclear energy endeavors, and our naval brethren enjoy a long history of nuclear reactor expertise. Partnerships and enhanced use leases to support SMR deployments should be leveraged.**36 As the collective military expertise in SMR technology grows**, additional capabilities, such as expeditionary and vehicular power sources, could be explored. And **related technologies, such as** hybrid/electric vehicle power storage and recharging facilities and **water desalination plants, could collocate with nuclear plants on installations to both use the energy.**37 Explore Desalination Desalination is another evolving technology that many avoid discussing, mainly because it is still a very expensive and immature technology with problems such as high energy consumption, brine disposal, and potential for harm to marine life. But once again, fear of the challenges should not prevent expanded exploration in this area. Worldwide, there are over 13,000 desalination plants, collectively producing more than 12 billion gallons of water each day, many of them in the Middle East, but the trend is spreading to the United States.38 Camp **Pendleton surfaced** in 2009 **as a potential** desalination **plant location, but the official Marine Corps stance has been hesitant** rather than an eager courtship of the opportunity.39 Indeed, many major Marine bases are in coastal areas and could benefit from SMR/desalination cogeneration plants. Potential **future Marine sites** like Guam could undeniably benefit from such advancements,40 and as the number of reverse osmosis sites increases, the cost per unit will decrease. The CMC has repeatedly explained how the Marine Corps Warfighting Laboratory looked 25 years into the future and believes that, by then, **water will be as precious a commodity as oil**, so the time to start preparing for that dire situation is now.41 Overall, the Navy-Marine Team has made huge strides in the E2 fields, yet much remains to be accomplished. E2 is more than compact fluorescent lightbulbs and protection of sea turtles and tern nests. The warfighting mission will always come first, but combat mission accomplishment and E2 goals are not mutually exclusive; the first can be strengthened through the latter. When considering the Marine Corps’ Service Campaign Plan 2009–2015,42 we should remember that one of the CMC’s seven main focus areas in his planning guidance is to “Posture the Marine Corps for the Future.” A decade ago, some discussed the “Revolution in Military Affairs.” Now is the time to be bold and daring, to recognize that the Marine Corps is not yet green enough. Now is the time to embark on a revolution in environmental and energy affairs. Our natural, and national, security depends on it.43 “What the Navy and Marine Corps are doing now is great, but I am here to encourage you and us to go farther—to dream what might be rather than to simply accept what is. Bold steps are in our nature as Americans and what make us a great nation; no one has ever gotten anything big done by being timid.”

**Water assistance vital to effective public diplomacy—key to combat perception of American foreign policy as militarized**

Seib, 10

(Professor of journalism and public diplomacy and director of the Center on Public Diplomacy-USC, Considering Water Diplomacy, 6/29, http://www.huffingtonpost.com/philip-seib/considering-water-diploma\_b\_629487.html)

The vitality and seriousness with which the institute addresses such issues is a reminder **that water-related assistance is an underused tool of public diplomacy**. Rather than an "advertising" approach to public diplomacy ("We are wonderful! Love us!"), water diplomacy answers a crucial question often asked by recipients of public diplomacy efforts but just as often ignored by public diplomacy planners: "What can you do for us?" Throughout the world, few things are more precious than a safe and abundant water supply. **A country that can help another nation improve the availability and quality of water is likely to win friends, regardless of how the respective governments get along**. Water diplomacy is an excellent tool for the United States to use in improving relations with Syria, which is enduring a prolonged drought, and other **countries where the public has been indifferent or even hostile toward American interests, but would welcome water-related assistance.** Public diplomacy does not need to be a unilateral enterprise. Engaging in water diplomacy offers the United States an opportunity to develop international partnerships for creating and delivering public diplomacy programs. A U.S.-Singapore joint venture in this field would enhance both countries' credentials as leaders in improving lives throughout the world, and for the United States it would be an improvement on the go-it-alone approach that characterizes much of its foreign policy. Private sector participation by foundations and corporations should be another facet of such partnerships, and could include funding for research into ways to combat water-borne diseases. Developing the concept of water diplomacy requires an essential, but often neglected, element of public diplomacy: imagination. Too much public diplomacy today has become a process of simply going through the motions in overblown public relations campaigns that misjudge the needs and underestimate the sophistication of global publics. **Actually improving people's lives** is given short shrift, and as a result public diplomacy fails to reach its potential as a means of advancing national interests.

**Quick commercialization of SMRs key to displace Russian reactors in Latin America**

Charles D. Ferguson, President, Federation of American Scientists, 5/19/2010, http://www.fas.org/press/\_docs/05192010\_Testimony\_HouseScienceCommHearing%20.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 selling 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 United States has yet to license such reactors for domestic use, it has placed itself at an additional market disadvantage. By the time the United States 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 United States 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.”

**Solves escalatory instability**

Christopher Sabatini, editor-in-chief of Americas Quarterly and senior director of policy at Americas Society/Council of the Americas, and Ryan Berger, policy associate at the Americas Society/Council of the Americas, 6/13/2012, Why the U.S. can't afford to ignore Latin America, globalpublicsquare.blogs.cnn.com/2012/06/13/why-the-u-s-cant-afford-to-ignore-latin-america/

Speaking in Santiago, Chile, in March of last year, President Obama called Latin America “a region on the move,” one that is “more important to the prosperity and security of the United States than ever before.” Somebody forgot to tell the Washington brain trust. The Center for a New American Security, a respected national security think tank a half-mile from the White House, recently released a new series of policy recommendations for the next presidential administration. The 70-page “grand strategy” report only contained a short paragraph on Brazil and made only one passing reference to Latin America. Yes, we get it. The relative calm south of the United States seems to pale in comparison to other developments in the world: China on a seemingly inevitable path to becoming a global economic powerhouse, the potential of political change in the Middle East, the feared dismemberment of the eurozone, and rogue states like Iran and North Korea flaunting international norms and regional stability. But the need to shore up our allies and recognize legitimate threats south of the Rio Grande goes to the heart of the U.S.’ changing role in the world and its strategic interests within it. Here are three reasons why the U.S. must include Latin America in its strategic calculations: 1. Today, pursuing a global foreign policy requires regional allies. Recently, countries with emerging economies have appeared to be taking positions diametrically opposed to the U.S. when it comes to matters of global governance and human rights. Take, for example, Russia and China’s stance on Syria, rejecting calls for intervention. Another one of the BRICS, Brazil, tried to stave off the tightening of U.N. sanctions on Iran two years ago. And last year, Brazil also voiced its official opposition to intervention in Libya, leading political scientist Randall Schweller to refer to Brazil as “a rising spoiler.” At a time of (perceived) declining U.S. influence, it’s important that America deepens its ties with regional allies that might have been once taken for granted. As emerging nations such as Brazil clamor for permanent seats on the U.N. Security Council and more representatives in the higher reaches of the World Bank and the International Monetary Fund, the U.S. will need to integrate them into global decision-making rather than isolate them. If not, they could be a thorn in the side of the U.S. as it tries to implement its foreign policy agenda. Worse, they could threaten to undermine efforts to defend international norms and human rights. 2. Latin America is becoming more international. It’s time to understand that the U.S. isn’t the only country that has clout in Latin America. For far too long, U.S. officials and Latin America experts have tended to treat the region as separate, politically and strategically, from the rest of the world. But as they’ve fought battles over small countries such as Cuba and Honduras and narrow bore issues such as the U.S.-Colombia free-trade agreement, other countries like China and India have increased their economic presence and political influence in the region. It’s also clear that countries such as Brazil and Venezuela present their own challenges to U.S. influence in the region and even on the world forum. The U.S. must embed its Latin America relations in the conceptual framework and strategy that it has for the rest of the world, rather than just focus on human rights and development as it often does toward southern neighbors such as Cuba. 3. There are security and strategic risks in the region. Hugo Chavez’s systematic deconstruction of the Venezuelan state and alleged ties between FARC rebels and some of Chavez’s senior officials have created a volatile cocktail that could explode south of the U.S. border. FARC, a left-wing guerrilla group based in Colombia, has been designated as a “significant foreign narcotics trafficker” by the U.S. government. At the same time, gangs, narcotics traffickers and transnational criminal syndicates are overrunning Central America. In 2006, Mexican President Felipe Calderón launched a controversial “war on drugs” that has since resulted in the loss of over 50,000 lives and increased the levels of violence and corruption south of the Mexican border in Guatemala, El Salvador, Honduras and even once-peaceful Costa Rica. Increasingly, these already-weak states are finding themselves overwhelmed by the corruption and violence that has come with the use of their territory as a transit point for drugs heading north. **Given** their **proximity and close historical and political connections with Washington**, the U.S. will find it increasingly difficult not to be drawn in. Only this case, it won’t be with or against governments — as it was in the 1980s — but in the far more complex, sticky situation of failed states. There are many other reasons why **Latin America is important to U.S. interests**. It is a market for more than 20% of U.S. exports. With the notable exception of Cuba, it is nearly entirely governed by democratically elected governments — a point that gets repeated ad nauseum at every possible regional meeting. The Western Hemisphere is a major source of energy that has the highest potential to seriously reduce dependence on Middle East supply. And through immigration, Latin America has close personal and cultural ties to the United States. These have been boilerplate talking points since the early 1990s. But the demands of the globe today are different, and they warrant a renewed engagement with Latin America — a strategic pivot point for initiatives the U.S. wants to accomplish elsewhere. We need to stop thinking of Latin America as the U.S. “backyard” that is outside broader, global strategic concerns.

# 2ac kritik

**Framework – debate should be about the consequences of the plan were it to be done by the federal government – infinite number of assumptions and possible alt actors guts predictability**

**Key to avoid technocrat fill-in**

**Kuzemko 12** [Caroline Kuzemko, CSGR University of Warwick, Security, the State and Political Agency: Putting ‘Politics’ back into UK Energy, http://www.psa.ac.uk/journals/pdf/5/2012/381\_61.pdf]

Both Hay (2007) and Flinders and Buller (2006) suggest that there are other forms that depoliticisation can take, or in the terminology of Flinders and Buller ‘tactics’ which politicians can pursue in order to move a policy field to a more indirect governing relationship (Flinders and Buller 2006: 296). For the purposes of understanding the depoliticisation of UK energy policy, however, two of Colin Hay’s forms of depoliticisation are most useful: the ‘… offloading of areas of formal political responsibility to the market…’ and the passing of policymaking responsibility to quasipublic, or independent, authorities (Hay 2007: 82-3). 1 What each of these forms of depoliticisation has in common is the degree to which they can serve, over time, to reduce political capacity by removing processes of deliberation and contestation, thereby reducing the ability for informed agency and choice. In that politics can be understood as being inclusive of processes of deliberation, contestation, informed agency and collective choice the lack of deliberation and capacity for informed agency would result in sub-optimal politics (Hay 2007: 67; cf. Gamble 2000; Wood 2011; Jenkins 2011). There seems little doubt that, with regard to energy as a policy area, the principal of establishing a more indirect governing system had become accepted by UK political elites. One of the very few close observers of UK energy policy from the 1980s to early 2000s claims that both Conservative and New Labour politicians had actively sought to remove energy from politics, making it an ‘economic’ subject: From the early 1980s, British energy policy, and its associated regulatory regime, was designed to transform a state-owned and directed sector into a normal commodity market. Competition and 1 "These"forms"are"referred"to"elsewhere"by"the"author"as"‘marketised’"and"‘technocratic’"depoliticisation"(Kuzemko" 2012b:").liberalization would, its architects hoped, take energy out of the political arena… Labour shared this vision and hoped that energy would drop off the political agenda…. (Helm 2003: 386) 2 As already suggested this paper considers the intention to depoliticise energy to have been reasonably successful. By the early 2000s the Energy Ministry had been disbanded, there was little or no formal Parliamentary debate, energy was not represented at Cabinet level, responsibility for the supply of energy had been passed to the markets, it was regulated by an independent body, and the (cf. Kuzemko 2012b). Furthermore, the newly formed Energy Directorate within the Department of Trade and Industry (DTI), which now had responsibility for energy policy, had no specific energy mandates but instead mandates regarding encouraging the right conditions for business with an emphasis on competition (Helm et al 1989: 55; cf. Kuzemko 2012b: 107). As feared by various analysts who write about depoliticisation as a sub-optimal form of politics, these processes of depoliticisation had arguably resulted in a lack of deliberation about energy and its governance outside of narrow technocratic elite circles. Within these circles energy systems were modelled, language was specific and often unintelligible to others, including generalist politicians or wider publics, and this did, indeed, further encourage a high degree of disengagement with the subject (cf. Kern 2010; Kuzemko 2012b; Stern 1987). Technical language and hiring practices that emphasised certain forms of economic education further isolated elite technocratic circles from political contestation and other forms of knowledge about energy. Arguably, by placing those actors who have been elected to represent the national collective interest at one remove from processes of energy governance the result was a lack of formal political capacity in this policy field. It is worth, briefly, at this point reiterating the paradoxical nature of depoliticisation. Whilst decisions to depoliticise are deeply political, political capacity to deliberate, contest and act in an issue area can be reduced through these processes. Depoliticisation has been an ongoing form of governing throughout the 20 th century it may (Burnham 2001: 464), however, be particularly powerful and more difficult to reverse when underpinned by increasingly dominant ideas about how best to govern. For example Hay, in looking for the domestic sources of depoliticisation in the 1980s and 1990s, suggests that these processes were firmly underpinned by neoliberal and public choice ideas not only about the role of the state but also about the ability for political actors to make sound decisions relating, in particular, to economic governance (Hay 2007: 95-99). Given the degree to which such ideas were held increasingly to be legitimate over this time period depoliticisation was, arguably, genuinely understood by many as a process that would result in better governance (Interviews 1, 2, 3, 15 cf. Hay 2007: 94; Kern 2010). This to a certain extent makes decisions to depoliticise appear both less instrumental but also harder to reverse given the degree to which such ideas become further entrenched via processes of depoliticisation (cf. Kuzemko 2012b: 61-66; Wood 2011: 7).

**perm do both**

**perm do the plan and all non-competitive parts of the alt**

**vague alts are a voting issue – makes stable offense impossible**

**Nuclear technocracy’s key to solve**

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

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

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

**SMRs distinct**

**Alt can’t change consumptive practices**

**Jackson**, 20**12** (Tim, Fairly bright guy, *Prosperity Without Growth: Economics for a Finite Planet*, Kindle Locations 2803-2854)

The downshifting movement now has a surprising allegiance across a number of developed economies. A recent survey on downshifting in Australia found that 23 per cent of respondents had engaged in some form of downshifting in the five years prior to the study. A staggering 83 per cent felt that Australians are too materialistic. An earlier study in the US found that 28 per cent had taken some steps to simplify and 62 per cent expressed a willingness to do so. Very similar results have been found in Europe.23 Research on the success of these initiatives is quite limited. But the findings from studies that do exist are interesting. In the first place, the evidence confirms that ‘simplifiers’ appear to be happier. Consuming less, voluntarily, can improve subjective well-being – completely contrary to the conventional model.24 At the same time, intentional communities remain marginal. The spiritual basis for them doesn’t appeal to everyone, and the secular versions seem less resistant to the incursions of consumerism. Some of these initiatives depend heavily on having sufficient personal assets to provide the economic security needed to pursue a simpler lifestyle. More importantly, even those in the vanguard of social change turn out to be haunted by conflict – internal and external.25 These conflicts arise because people find themselves at odds with their own social world. Participation in the life of society becomes a challenge in its own right. People are trying to live, quite literally, in opposition to the structures and values that dominate society. In the normal course of events, these structures and values shape and constrain how people behave. They have a profound influence on how easy or hard it is to behave sustainably.26 The Role of Structural Change Examples of the perverse effect of dominant structures are legion: private transport is incentivized over public transport; motorists are prioritized over pedestrians; energy supply is subsidized and protected, while demand management is often chaotic and expensive; waste disposal is cheap, economically and behaviourally; recycling demands time and effort: ‘bring centres’ are few and far between and often overflowing with waste. Equally important are the subtle but damaging signals sent by government, regulatory frameworks, financial institutions, the media and our education systems: business salaries are higher than those in the public sector, particularly at the top; nurses and those in the caring professions are consistently less well paid; private investment is written down at high discount rates making longterm costs invisible; success is counted in terms of material status (salary, house size and so on); children are brought up as a ‘shopping generation’ – hooked on brand, celebrity and status.27 Policy and media messages about the recession underline this point. Opening a huge new shopping centre at the height of the financial crisis in October 2008, Mayor of London Boris Johnson spoke of persuading people to come out and spend their money, despite the credit crunch. Londoners had made a ‘prudent decision to give Thursday morning a miss and come shopping’, he said of the huge crowds who attended the opening.28 George W. Bush’s infamous call for people to ‘go out shopping’ in the wake of the 9/11 disaster is one of the most staggering examples of the same phenomenon. Little wonder that people trying to live more sustainably find themselves in conflict with the social world around them. These kinds of asymmetry represent a culture of consumption that sends all the wrong signals, penalizing pro-environmental behaviour, and making it all but impossible even for highly motivated people to act sustainably without personal sacrifice. It’s important to take this evidence seriously. As laboratories for social change, intentional households and communities are vital in pointing to the possibilities for flourishing within ecological limits. But they are also critical in highlighting the limits of voluntarism. Simplistic exhortations for people to resist consumerism are destined to failure. Particularly when the messages flowing from government are so painfully inconsistent. People readily identify this inconsistency and perceive it as hypocrisy. Or something worse. Under current conditions, it’s tantamount to asking people to give up key capabilities and freedoms as social beings. Far from being irrational to resist these demands, it would be irrational not to, in our society. Several lessons flow from this. The first is the obvious need for government to get its message straight. **Urging people to Act on CO2**, to insulate their homes, turn down their thermostat, put on a jumper, drive a little less, walk a little more, holiday at home, buy locally produced goods (and so on) **will either go unheard or be rejected as manipulation for as long as all the messages about high-street consumption point in the opposite direction**.29 Equally, **it’s clear that changing the social logic of consumption cannot simply be relegated to the realm of individual choice. In spite of a growing desire for change, it’s almost impossible for people to simply choose sustainable lifestyles, however much they’d like to. Even highly-motivated individuals experience conflict as they attempt to escape consumerism. And the chances of extending this behaviour across society are negligible without changes in the social structure**.

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**Perm do the counterplan**

**ZERO risk of WMD terror – their evidence is alarmist**

Mueller ’12 (John, Senior Research Scientist at the Mershon Center for International Security Studies and Adjunct Professor in the Department of Political Science, both at Ohio State University, and Senior Fellow at the Cato Institute. Mark G. Stewart is Australian Research Council Professorial Fellow and Professor and Director at the Centre for Infrastructure Performance and Reliability at the University of Newcastle in Australia, The Terrorism Delusion, *International Security*, Vol. 37, No. 1 (Summer 2012), pp. 81–110)

Over the course of time, such essentially delusionary thinking has been internalized and institutionalized in a great many ways. For example, an extrapolation of delusionary proportions is evident in the common observation that, because terrorists were able, mostly by thuggish means, to crash airplanes into buildings, they might therefore be able to construct a nuclear bomb. In 2005 an FBI report found that, despite years of well-funded sleuthing, the Bureau had yet to uncover a single true al-Qaida sleeper cell in the United States. The report was secret but managed to be leaked. Brian Ross, “Secret FBI Report Questions Al Qaeda Capabilities: No ‘True’ Al Qaeda Sleeper Agents Have Been Found in U.S.,” ABC News, March 9, 2005. Fox News reported that the FBI, however, observed that “just because there’s no concrete evidence of sleeper cells now, doesn’t mean they don’t exist.” “FBI Can’t Find Sleeper Cells,” Fox News, March 10, 2005. Jenkins has run an internet search to discover how often variants of the term “al-Qaida” appeared within ten words of “nuclear.” There were only seven hits in 1999 and eleven in 2000, but the number soared to 1,742 in 2001 and to 2,931 in 2002. 47 By 2008, Defense Secretary Robert Gates was assuring a congressional committee that what keeps every senior government leader awake at night is “the thought of a terrorist ending up with a weapon of mass destruction, especially nuclear.” 48 Few of the sleepless, it seems, found much solace in the fact that an al-Qaida computer seized in Afghanistan in 2001 indicated that the group’s budget for research on weapons of mass destruction (almost all of it focused on primitive chemical weapons work) was $2,000 to $4,000. 49 In the wake of the killing of Osama bin Laden, officials now have many more al-Qaida computers, and nothing in their content appears to suggest that the group had the time or inclination, let alone the money, to set up and staff a uranium-seizing operation, as well as a fancy, super-high-technology facility to fabricate a bomb. This is a process that requires trusting corrupted foreign collaborators and other criminals, obtaining and transporting highly guarded material, setting up a machine shop staffed with top scientists and technicians, and rolling the heavy, cumbersome, and untested finished product into position to be detonated by a skilled crew—all while attracting no attention from outsiders. 50 If the miscreants in the American cases have been unable to create and set off even the simplest conventional bombs, it stands to reason that none of them were very close to creating, or having anything to do with, nuclear weapons—or for that matter biological, radiological, or chemical ones. In fact, with perhaps one exception, none seems to have even dreamed of the prospect; and the exception is José Padilla (case 2), who apparently mused at one point about creating a dirty bomb—a device that would disperse radiation—or even possibly an atomic one. His idea about isotope separation was to put uranium into a pail and then to make himself into a human centrifuge by swinging the pail around in great arcs. Even if a weapon were made abroad and then brought into the United States, its detonation would require individuals in-country with the capacity to receive and handle the complicated weapons and then to set them off. Thus far, the talent pool appears, to put mildly, very thin. There is delusion, as well, in the legal expansion of the concept of “weapons of mass destruction.” The concept had once been taken as a synonym for nuclear weapons or was meant to include nuclear weapons as well as weapons yet to be developed that might have similar destructive capacity. After the Cold War, it was expanded to embrace chemical, biological, and radiological weapons even though those weapons for the most part are incapable of committing destruction that could reasonably be considered “massive,” particularly in comparison with nuclear ones. 52

**condo**

**SMRs solve Mars colonization**

**O’Neil 11**, Ian, PhD from University of Wales, founder and editor of Astroengine, space producer for Discovery News [“'Suitcase' Nuclear Reactors to Power Mars Colonies,” August 30th, http://news.discovery.com/space/mars-colonies-powered-by-mini-nuclear-reactors-110830.html]

Nuclear power is an emotive subject -- particularly in the wake of the Fukushima power plant disaster after Japan's March earthquake and tsunami -- but in space, it may be an essential component of spreading mankind beyond terrestrial shores. On Monday, at the 242nd National Meeting and Exposition of the American Chemical Society (ACS) in Denver, Colo., the future face of space nuclear power was described. You can forget the huge reactor buildings, cooling towers and hundreds of workers; the first nuclear reactors to be landed on alien worlds to support human settlement will be tiny. Think less "building sized" and more "suitcase sized." "People would never recognize the fission power system as a nuclear power reactor," said James E. Werner, lead of the Department of Energy's (DOE) Idaho National Laboratory. "The reactor itself may be about 1 feet wide by 2 feet high, about the size of a carry-on suitcase. There are no cooling towers. A fission power system is a compact, reliable, safe system that may be critical to the establishment of outposts or habitats on other planets. Fission power technology can be applied on Earth's Moon, on Mars, or wherever NASA sees the need for continuous power." The joint NASA/DOE project is aiming to build a demonstration unit next year. Obviously, this will be welcome news to Mars colonization advocates; to have a dependable power source on the Martian surface will be of paramount importance. The habitats will need to have a constant power supply simply to keep the occupants alive. This will be "climate control" on an unprecedented level. Water extraction, reclamation and recycling; food cultivation and storage; oxygen production and carbon dioxide scrubbing; lighting; hardware, tools and electronics; waste management -- these are a few of the basic systems that will need to be powered from the moment humans set foot on the Red Planet, 24 hours 39 minutes a day (or "sol" -- a Martian day), 669 sols a year. Fission reactors can provide that. However, nuclear fission reactors have had a very limited part to play in space exploration up until now. Russia has launched over 30 fission reactors, whereas the US has launched only one. All have been used to power satellites. Radioisotope thermoelectric generators (RTGs), on the other hand, have played a very important role in the exploration of the solar system since 1961. These are not fission reactors, which split uranium atoms to produce heat that can then be converted into electricity. RTGs depend on small pellets of the radioisotope plutonium-238 to produce a steady heat as they decay. NASA's Pluto New Horizons and Cassini Solstice missions are equipped with RTGs (not solar arrays) for all their power needs. The Mars Science Laboratory (MSL), to be launched in November 2011, is powered by RTGs for Mars roving day or night. RTGs are great, but to power a Mars base, fission reactors would be desirable because they deliver more energy. And although solar arrays will undoubtedly have a role to play, fission reactors will be the premier energy source for the immediate future. "The biggest difference between solar and nuclear reactors is that nuclear reactors can produce power in any environment," said Werner. "Fission power technology doesn't rely on sunlight, making it able to produce large, steady amounts of power at night or in harsh environments like those found on the Moon or Mars. A fission power system on the Moon could generate 40 kilowatts or more of electric power, approximately the same amount of energy needed to power eight houses on Earth." "The main point is that nuclear power has the ability to provide a power-rich environment to the astronauts or science packages anywhere in our solar system and that this technology is mature, affordable and safe to use." Of course, to make these "mini-nuclear reactors" a viable option for the first moon and Mars settlements, they'll need to be compact, lightweight and safe. Werner contends that once the technology is validated, we'll have one of the most versatile and affordable power resources to support manned exploration of the solar system.

**extinction**

**Schulze-Makuch and Davies 2010** (Dirk Schulze-Makuch, Ph.D., School of Earth and Environmental Sciences, Washington State University and Paul Davies, Ph.D., Beyond Center, Arizona State University, “To Boldly Go: A One-Way Human Mission to Mars”, <http://journalofcosmology.com/Mars108.html>)

There are several reasons that motivate the establishment of a permanent Mars colony. We are a vulnerable species living in a part of the galaxy where cosmic events such as major asteroid and comet impacts and supernova explosions pose a significant threat to life on Earth, especially to human life. There are also more immediate threats to our culture, if not our survival as a species. These include global pandemics, nuclear or biological warfare, runaway global warming, sudden ecological collapse and supervolcanoes (Rees 2004). Thus, the colonization of other worlds is a must if the human species is to survive for the long term. The first potential colonization targets would be asteroids, the Moon and Mars. The Moon is the closest object and does provide some shelter (e.g., lava tube caves), but in all other respects falls short compared to the variety of resources available on Mars. The latter is true for asteroids as well. Mars is by far the most promising for sustained colonization and development, because it is similar in many respects to Earth and, crucially, possesses a moderate surface gravity, an atmosphere, abundant water and carbon dioxide, together with a range of essential minerals. Mars is our second closest planetary neighbor (after Venus) and a trip to Mars at the most favorable launch option takes about six months with current chemical rocket technology.

**Plan solves military oil entanglement**

Buis ’12 (Tom Buis, CEO, Growth Energy, Co-written by Buis and Growth Energy Board Co-Chair Gen. Wesley K. Clark (Ret.), “American Families Need American Fuel”, <http://energy.nationaljournal.com/2012/05/powering-our-military-whats-th.php>, May 23, 2012, LEQ)

Our nation is dangerously dependent on foreign oil. We import some 9 million barrels per day, or over 3 billion barrels per year; the U.S. military itself comprises two percent of the nation’s total petroleum use, making it the world’s largest consumer of energy and oil imports. Of U.S. foreign oil imports, one out of five barrels comes from unfriendly nations and volatile areas, including at least 20 percent stemming from the Persian Gulf, including Bahrain, Iraq, Iran, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates. Further, our nation heavily relies on hot-beds of extremism, as Saudi Arabia, Venezuela, Nigeria are our third, fourth, and fifth, respectively, largest exporters of oil. How dangerous is this? Very! Not only does America’s huge appetite for oil entangle us into complicated relationships with nations marred by unstable political, economic, and security situations, it also gravely impacts our military, who risk their lives daily to protect foreign energy supply routes. Because of our addiction to oil, we have been in almost constant military conflict, lost more than 6,500 soldiers and created a whole new class of wounded warriors, thousands of whom will need long-term care funded by our government. One in eight soldiers killed or wounded in Iraq from 2003-2007 were protecting fuel convoys, with a total of 3,000 Army casualties alone. We maintain extra military forces at an annual cost of about $150 billion annually, just to assure access to foreign oil - because we know that if that stream of 9 million barrels per day is seriously interrupted, our economy will crash. That's what I call dangerously dependent. Even worse, according to a new Bloomberg Government analysis, Pentagon spending on fuel is dramatically increasing. This will force the military to dedicate even more funds toward energy costs, at the expense of other priorities, like training and paying soldiers. In fact, every $.25 increase in the cost of jet fuel makes a $1 billion difference in the Department of Defense’s bottom line – a debt that will be passed along to the American taxpayer. And if that's not enough to make you want to avoid foreign oil, then consider this: every dollar hike in the international, politically-rigged price of oil hands Iran about $3 million more per day, that their regime can use to sow mischief, fund terrorism, and develop missiles and nuclear weapons. Enough is enough! We have domestic alternatives that can protect American interests, and promote prosperity and security – including, more domestic oil production, using natural gas and biofuels, like ethanol, as fuel, converting coal to liquid fuel, and moving as rapidly as possible to vehicles powered by green energy. By introducing clean energy and fuel alternatives, this would rapidly reduce both the strain of securing foreign energy supply routes in unstable regions, as well as unnecessary economic and political entanglement with volatile regimes. It is imperative the U.S. military leverage its position as a leader and enact pertinent energy policies to best enhance American energy – and national – security.

**These will risk wars that will escalate**

Collina 5 (Executive Director of 20-20 Vision, Tom Z. Collina, Executive Director of 20-20Vision; testimony in front of Committee on Foreign Relations Subcommittee on Near Eastern and South Asian Affairs United States Senate “Oil Dependence and U.S. Foreign Policy: Real Dangers, Realistic Solutions”. October 19, 2005 <http://www.globalsecurity.org/military/library/congress/2005_hr/051020-collina.pdf>)

More conflicts in the Middle East America imports almost 60% of its oil today and, at this rate, we’ll import 70% by 2025. Where will that oil come from? Two-thirds of the world’s oil is in the Middle East, primarily in Saudi Arabia, Iran and Iraq. The United States has less than 3% of global oil. The Department of Energy predicts that North American oil imports from the Persian Gulf will double from 2001 to 2025.i Other oil suppliers, such as Venezuela, Russia, and West Africa, are also politically unstable and hold no significant long-term oil reserves compared to those in the Middle East. Bottom line: our economy and security are increasingly dependent on one of the most unstable regions on earth. Unless we change our ways, we will find ourselves even more at the mercy of Middle East oil and thus more likely to get involved in future conflicts. The greater our dependence on oil, the greater the pressure to protect and control that oil. The growing American dependence on imported oil is the primary driver of U.S. foreign and military policy today, particularly in the Middle East, and motivates an aggressive military policy now on display in Iraq. To help avoid similar wars in the future and to encourage a more cooperative, responsible, and multilateral foreign policy the United States must significantly reduce its oil use. Before the Iraq war started, Anthony H. Cordesman of the Center for Strategic and International Studies said: “Regardless of whether we say so publicly, we will go to war, because Saddam sits at the center of a region with more than 60 percent of all the world's oil reserves.” Unfortunately, he was right. In fact, the use of military power to protect the flow of oil has been a central tenet of U.S. foreign policy since 1945. That was the year that President Franklin D. Roosevelt promised King Abdul Aziz of Saudi Arabia that the United States would protect the kingdom in return for special access to Saudi oil—a promise that governs U.S. foreign policy today. This policy was formalized by President Jimmy Carter in 1980 when he announced that the secure flow of oil from the Persian Gulf was in “the vital interests of the United States of America” and that America would use “any means necessary, including military force” to protect those interests from outside forces. This doctrine was expanded by President Ronald Reagan in 1981 to cover internal threats, and was used by the first President Bush to justify the Gulf War of 1990-91, and provided a key, if unspoken rationale for the second President Bush’s invasion of Iraq in 2003.ii The Carter/Reagan Doctrine also led to the build up of U.S. forces in the Persian Gulf on a permanent basis and to the establishment of the Rapid Deployment Force and the U.S. Central Command (CENTCOM). The United States now spends over $50 Billion per year (in peacetime) to maintain our readiness to intervene in the Gulf.iii America has tried to address its oil vulnerability by using our military to protect supply routes and to prop up or install friendly regimes. But as Iraq shows the price is astronomical—$200 Billion and counting. Moreover, it doesn’t work—Iraq is now producing less oil than it did before the invasion. While the reasons behind the Bush administration’s decision to invade Iraq may be complex, can anyone doubt that we would not be there today if Iraq exported coffee instead of oil? It is time for a new approach. Americans are no longer willing to support U.S. misadventures in the Persian Gulf. Recent polls show that almost two-thirds of Americans think the Iraq war was not worth the price in terms of blood and treasure. Lt. Gen William Odom, director of the National Security Agency during President Reagan's second term, recently said: "The invasion of Iraq will turn out to be the greatest strategic disaster in U.S. history." The nation is understandably split about what to do now in Iraq, but there appears to be widespread agreement that America should not make the same mistake again—and we can take a giant step toward that goal by reducing our dependence on oil.

**SMRs solve North Korean prolif**

**Goodby and Heiskanen 12**¸ James, former arms control negotiator and a Hoover Institution Fellow, Markku, Associate and Program Director of The Asia Institute at the Kyung Hee University in Seoul [“The Seoul Nuclear Security Summit: New Thinking in Northeast Asia?” March 20th, <http://nautilus.org/napsnet/napsnet-policy-forum/the-seoul-nuclear-security-summit-new-thinking-in-northeast-asia/>]

The nuclear crises in the Middle East and Northeast Asia and the stalled promise of a nuclear renaissance in civil nuclear power could all be solved by a more rational approach to the generation of electric power. Although it will take years before the current, outdated system is replaced, the Seoul meeting could provide a political impetus. The new system would rest on three legs: small modular reactors (“mini-reactors”), internationally managed nuclear fuel services, and increasing reliance on the distributed (local) generation of electricity. After the disaster in Fukushima, there has been an understandable retreat from plans for large-scale reactors, with their inevitable safety issues. A vivid example of this reaction is found in Germany, which has cancelled its plans to increase the generation of electricity from nuclear reactors even though they are cleaner and more dependable than most other sources currently available. Vulnerabilities and inefficiencies of long-distance transmission lines point to a paradigm for generation and distribution of electric power that is more local – connected to national grids, to be sure, but able to operate independently of them. This is an ideal situation for mini-reactors, which are safer and less prone to encourage the spread of nuclear weapons. Internationally managed nuclear fuel services already exist and the security of supply can be assured by policies that foster more fuel service centers in Asia and elsewhere, including in the United States. These factors would enable suppliers of mini-reactors to expand their business to nations like North Korea and Iran under IAEA safeguards. The relevance of this energy paradigm to resolving the issues in North Korea and Iran is evident: both nations could develop civil nuclear programs with assured supplies of nuclear fuel from multiple internationally managed fuel service centers in Russia, China, and Western Europe while avoiding the ambiguity of nationally operated plutonium reprocessing and uranium enrichment. Reliance on distributed generation of electricity would be more efficient and less prone to blackouts. And the presence of a level playing field should be apparent from the fact that similar arrangements would be the 21st-century way of generating electricity from nuclear energy in the developed economies as well as in energy-starved economies such as India and China.

**Nuclear war**

**Hayes & Hamel-Green ’10** [\*Victoria University AND \*\*Executive Director of the Nautilus Institute (Peter and Michael, “-“The Path Not Taken, the Way Still Open: Denuclearizing the Korean Peninsula and Northeast Asia”, 1/5, http://www.nautilus.org/fora/security/10001HayesHamalGreen.pdf]

The consequences of failing to address the proliferation threat posed by the North Korea developments, and related political and economic issues, are serious, not only for the Northeast Asian region but for the whole international community. At worst, there is the possibility of nuclear attack1, whether by intention, miscalculation, or merely accident, leading to the resumption of Korean War hostilities. On the Korean Peninsula itself, key population centres are well within short or medium range missiles. The whole of Japan is likely to come within North Korean missile range. Pyongyang has a population of over 2 million, Seoul (close to the North Korean border) 11 million, and Tokyo over 20 million. Even a limited nuclear exchange would result in a holocaust of unprecedented proportions. But the catastrophe within the region would not be the only outcome. New research indicates that even a limited nuclear war in the region would rearrange our global climate far more quickly than global warming. Westberg draws attention to new studies modelling the effects of even a limited nuclear exchange involving approximately 100 Hiroshima-sized 15 kt bombs2 (by comparison it should be noted that the United States currently deploys warheads in the range 100 to 477 kt, that is, individual warheads equivalent in yield to a range of 6 to 32 Hiroshimas).The studies indicate that the soot from the fires produced would lead to a decrease in global temperature by 1.25 degrees Celsius for a period of 6-8 years.3 In Westberg’s view: That is not global winter, but the nuclear darkness will cause a deeper drop in temperature than at any time during the last 1000 years. The temperature over the continents would decrease substantially more than the global average. A decrease in rainfall over the continents would also follow...The period of nuclear darkness will cause much greater decrease in grain production than 5% and it will continue for many years...hundreds of millions of people will die from hunger...To make matters even worse, such amounts of smoke injected into the stratosphere would cause a huge reduction in the Earth’s protective ozone.4 These, of course, are not the only consequences. Reactors might also be targeted, causing further mayhem and downwind radiation effects, superimposed on a smoking, radiating ruin left by nuclear next-use. Millions of refugees would flee the affected regions. The direct impacts, and the follow-on impacts on the global economy via ecological and food insecurity, could make the present global financial crisis pale by comparison. How the great powers, especially the nuclear weapons states respond to such a crisis, and in particular, whether nuclear weapons are used in response to nuclear first-use, could make or break the global non proliferation and disarmament regimes. There could be many unanticipated impacts on regional and global security relationships5, with subsequent nuclear breakout and geopolitical turbulence, including possible loss-of-control over fissile material or warheads in the chaos of nuclear war, and aftermath chain-reaction affects involving other potential proliferant states. The Korean nuclear proliferation issue is not just a regional threat but a global one that warrants priority consideration from the international community

#### Thorium reactors take 30 years

Tickell 12

Oliver Tickell, As a student of physics at St John's College, Oxford, Tickell holds a masters degree from Oxford University. He is a founding partner of Oxford Climate Associates and a member of the Oxford Geoengineering Institute, April/May 2012, "Thorium: Not ‘green’, not ‘viable’, and not likely", http://www.jonathonporritt.com/sites/default/files/users/Thorium%20briefing%20FINAL%203.7.12.pdf

Despite the resurgence of interest in the MSR / LFTR technology, there are no concrete plans to build even a single such reactor. China currently appears most likely to provide the funding necessary to develop LFTR technology due to that country's relatively large nuclear programme and the government's willingness to invest in new energy generation technologies. But even there any production-scale LFTR is unlikely to materialise for 20-30 years.

#### It still requires uranium

Tickell 12

Oliver Tickell, As a student of physics at St John's College, Oxford, Tickell holds a masters degree from Oxford University. He is a founding partner of Oxford Climate Associates and a member of the Oxford Geoengineering Institute, April/May 2012, "Thorium: Not ‘green’, not ‘viable’, and not likely", http://www.jonathonporritt.com/sites/default/files/users/Thorium%20briefing%20FINAL%203.7.12.pdf

3.1 Abundance of thorium relative to uranium Claim: Thorium is several times more abundant in the Earth's crust than uranium. Response: Thorium (232Th) is indeed more abundant than uranium, by a factor of three to four. But whereas 0.7% of uranium occurs as fissile 235U, none of the thorium is fissile. The world already possesses an estimated 1.2 million tonnes of depleted uranium (mainly 238U), like thorium a fertile but non-fissile material. So the greater abundance of thorium than uranium confers no advantage, other than a very marginal advantage in energy security to those countries in which it is abundant.

#### Commercialization’s’ impossible

Eifion **Rees 11**, The Guardian, “Don't believe the spin on thorium being a greener nuclear option”, June 23, <http://www.guardian.co.uk/environment/2011/jun/23/thorium-nuclear-uranium>

There is a significant sticking point to the promotion of thorium as the 'great green hope' of clean energy production: it remains unproven on a commercial scale. While it has been around since the 1950s (and an experimental 10MW LFTR did run for five years during the 1960s at Oak Ridge National Laboratory in the US, though using uranium and plutonium as fuel) it is still a next generation nuclear technology – theoretical. China did announce this year that it intended to develop a thorium MSR, but nuclear radiologist Peter Karamoskos, of the International Campaign to Abolish Nuclear Weapons (ICAN), says the world shouldn't hold its breath. 'Without exception, [thorium reactors] have never been commercially viable, nor do any of the intended new designs even remotely seem to be viable. Like all nuclear power production they rely on extensive taxpayer subsidies; the only difference is that with thorium and other breeder reactors these are of an order of magnitude greater, which is why no government has ever continued their funding.' China's development will persist until it experiences the ongoing major technical hurdles the rest of the nuclear club have discovered, he says. Others see thorium as a smokescreen to perpetuate the status quo: the world's only operating thorium reactor – India's Kakrapar-1 – is actually a converted PWR, for example. 'This could be seen to excuse the continued use of PWRs until thorium is [widely] available,' points out Peter Rowberry of No Money for Nuclear (NM4N) and Communities Against Nuclear Expansion (CANE). In his reading, thorium is merely a way of deflecting attention and criticism from the dangers of the uranium fuel cycle and excusing the pumping of more money into the industry. And yet the nuclear industry itself is also sceptical, with none of the big players backing what should be – in PR terms and in a post-Fukushima world – its radioactive holy grail: safe reactors producing more energy for less and cheaper fuel. In fact, a 2010 National Nuclear Laboratory (NNL) report (PDF)concluded the thorium fuel cycle 'does not currently have a role to play in the UK context [and] is likely to have only a limited role internationally for some years ahead' – in short, it concluded, the claims for thorium were 'overstated'. Proponents counter that the NNL paper fails to address the question of MSR technology, evidence of its bias towards an industry wedded to PWRs. Reliant on diverse uranium/plutonium revenue streams – fuel packages and fuel reprocessing, for example – the nuclear energy giants will never give thorium a fair hearing, they say. But even were its commercial viability established, given 2010's soaring greenhouse gas levels, thorium is one magic bullet that is years off target. Those who support renewables say they will have come so far in cost and efficiency terms by the time the technology is perfected and upscaled that thorium reactors will already be uneconomic. Indeed, if renewables had a fraction of nuclear's current subsidies they could already be light years ahead. All other issues aside, thorium is still nuclear energy, say environmentalists, its reactors disgorging the same toxic byproducts and fissile waste with the same millennial half-lives. Oliver Tickell, author of Kyoto2, says the fission materials produced from thorium are of a different spectrum to those from uranium-235, but 'include many dangerous-to-health alpha and beta emitters'. Tickell says thorium reactors would not reduce the volume of waste from uranium reactors. 'It will create a whole new volume of radioactive waste from previously radio-inert thorium, on top of the waste from uranium reactors. Looked at in these terms, it's a way of multiplying the volume of radioactive waste humanity can create several times over.' Putative waste benefits – such as the impressive claims made by former Nasa scientist Kirk Sorensen, one of thorium's staunchest advocates – have the potential to be outweighed by a proliferating number of MSRs. There are already 442 traditional reactors already in operation globally, according to the International Atomic Energy Agency. The by-products of thousands of smaller, ostensibly less wasteful reactors would soon add up. Anti-nuclear campaigner Peter Karamoskos goes further, dismissing a 'dishonest fantasy' perpetuated by the pro-nuclear lobby. Thorium cannot in itself power a reactor; unlike natural uranium, it does not contain enough fissile material to initiate a nuclear chain reaction. As a result it must first be bombarded with neutrons to produce the highly radioactive isotope uranium-233 – 'so these are really U-233 reactors,' says Karamoskos. This isotope is more hazardous than the U-235 used in conventional reactors, he adds, because it produces U-232 as a side effect (half life: 160,000 years), on top of familiar fission by-products such as technetium-99 (half life: up to 300,000 years) and iodine-129 (half life: 15.7 million years).Add in actinides such as protactinium-231 (half life: 33,000 years) and it soon becomes apparent that thorium's superficial cleanliness will still depend on digging some pretty deep holes to bury the highly radioactive waste. With billions of pounds already spent on nuclear research, reactor construction and decommissioning costs – dwarfing commitments to renewables – and proposed reform of the UK electricity markets apparently hiding subsidies to the nuclear industry, the thorium dream is considered by many to be a dangerous diversion. Energy consultant and former Friends of the Earth anti-nuclear campaigner Neil Crumpton says the government would be better deferring all decisions about its new nuclear building plans and fuel reprocessing until the early 2020s: 'By that time much more will be known about Generation IV technologies including LFTRs and their waste-consuming capability.' In the meantime, says Jean McSorley, senior consultant for Greenpeace's nuclear campaign, the pressing issue is to reduce energy demand and implement a major renewables programme in the UK and internationally – after all, even conventional nuclear reactors will not deliver what the world needs in terms of safe, affordable electricity, let alone a whole raft of new ones. 'Even if thorium technology does progress to the point where it might be commercially viable, it will face the same problems as conventional nuclear: it is not renewable or sustainable and cannot effectively connect to smart grids. The technology is not tried and tested, and none of the main players is interested. Thorium reactors are no more than a distraction.'

# Politics Impact d

**High skill reform inevitable**

Matthew Yglesias, Slate, 1/15/13, How the GOP Can Roll Obama on Immigration, www.slate.com/blogs/moneybox/2013/01/15/immigration\_reform\_will\_obama\_get\_rolled.html

Of the major policy issues under discussion in Washington, "immigration reform" stands out for having unusually undefined content. For the major immigration-advocacy groups, the goal is clear, a comprehensive bill that includes a path to citizenship for the overwhelming majority of unauthorized migrants already living in the United States. But many other aspects of immigration law are in the mix as part of a proposed deal, and it seems to me that there's a fair chance that a nimble Republican Party could essentially roll the Democratic coalition and pass an "immigration reform" bill that doesn't offer the path Latino advocacy groups are looking for. Elise Foley has the key line from her briefing on the administration's thinking about immigration, namely that a piecemeal approach "could result in passage of the less politically complicated pieces, such as an enforcement mechanism and high-skilled worker visas, while leaving out more contentious items such as a pathway to citizenship for undocumented immigrants." And indeed it could. But how can they stop it? The last House GOP effort to split the high-tech visas question from the path to citizenship question was an absurd partisan ploy. If Republicans want to get serious about it they should be able to make it work. The centerpiece would be something on increased immigration of skilled workers. That's something the tech industry wants very much, it's a great idea on the merits, and few influential people have any real beef with it. High tech visas will easily generate revenue to pay for some stepped-up enforcement. Then instead of adding on a poison pill so Democrats will block the bill, you need to add a sweetener. Not the broad path to citizenship, but something small like the DREAM Act. Now you've got a package that falls massively short of what Latino groups are looking for, but that I think Democrats will have a hard time actually blocking. After all, why would they block it? It packages three things—more skilled immigration, more enforcement, and help for DREAMers—they say they want. Blocking it because it doesn't also do the broad amnesty that liberals want and conservatives hate would require the kind of fanaticism that is the exact opposite of Obama's approach to politics.

Relations inevitable – 8 common interests

**Tellis 07** – senior associate at the Carnegie Endowment for International Peace, specializing in international security, defense, and Asian strategic issues. Former Department of State senior adviser to the Undersecretary of State for Political Affairs. Former senior policy analyst at the RAND corporation (Ashley J. “What should we expect from india as a strategic partner?” <http://www.carnegieendowment.org/2007/03/01/what-should-we-expect-from-india-as-strategic-partner/961>)

These links are only reinforced by the new and dramatic convergence of national interests between the United States and India in a manner never witnessed during the Cold War. Today and for the foreseeable future, both Washington and New Delhi will be bound by a common interest in: • Preventing Asia from being dominated by any single power that has the capacity to crowd out others and which may use aggressive assertion of national self-interest to threaten American presence, American alliances, and American ties with the regional states; • Eliminating the threats posed by state sponsors of terrorism who may seek to use violence against innocents to attain various political objectives, and more generally neutralizing the dangers posed by terrorism and religious extremism to free societies; • Arresting the further spread of weapons of mass destruction (WMD) and related technologies to other countries and subnational entities, including substate actors operating independently or in collusion with states; • Promoting the spread of democracy not only as an end in itself but also as a strategic means of preventing illiberal polities from exporting their internal struggles over power abroad; • Advancing the diffusion of economic development with the intent of spreading peace through prosperity through the expansion of a liberal international economic order that increases trade in goods, services, and technology worldwide; • Protecting the global commons, especially the sea lanes of communications, through which flow not only goods and services critical to the global economy but also undesirable commerce such as drug trading, human smuggling, and WMD technologies; • Preserving energy security by enabling stable access to existing energy sources through efficient and transparent market mechanisms (both internationally and domestically), while collaborating to develop new sources of energy through innovative approaches that exploit science and technology; and, • Safeguarding the global environment by promoting the creation and use of innovative technology to achieve sustainable development; devising permanent, self-sustaining, marketbased institutions and systems that improve environmental protection; developing coordinated strategies for managing climate change; and assisting in the event of natural disasters.

**China unsustainable- collapse inevitable**

Dickson ’12 (Micah Dickson, SeekingAlpha, Investor Trading Online News, “The Cracks In The Great Economic Wall Of China”, November 27, 2012)

China has just gone through their once in a decade power transition. While the transition of power has appeared to have gone smoothly, it does not mean that the challenges facing China have diminished at all. Xi Jinping and his regime face a host of challenges. These challenges vary from economic to societal in nature. The current course China is on is utterly unsustainable. The question is, can the new Chinese leadership make the necessary reforms to keep the country from a political and economic collapse? Investors must consider the size and scope of the challenges facing China as they make decisions on where to allocate their assets for the coming year. Economic Challenges Any true economic growth is based upon investors and consumers acting on information. The accuracy of that information can decide if that economic growth is sustainable or not. Many of the basic economic numbers coming from China have largely been called into question. Li Kepiang, possible future premier of China, said in 2012 that the GDP figures were "man-made". There has also been documented cases of the growth in many Chinese industries being quite different from the overall GDP numbers that are reported. Unfortunately, China's state owned enterprises are becoming a prime example of the failure of accurate information from China itself. State owned enterprises are filled with Communist Party leaders who use them to bolster the Party's power. Included in the list of state owned enterprises are banks that provide loans to businesses. These businesses include other non-financial state owned enterprises. These loans are given at lower interest rates and in unlimited amounts. This incestuous relationship gives state owned enterprises an advantage over other smaller enterprises inside the country. Besides being incredibly corrupt, this system has led to what has been referred to as "zombie companies". These are companies that should be going bankrupt because they are unable to repay their debt. The Chinese government is not allowing these companies to go bankrupt. Instead the state owned banks are being forced to continue to lend money to the enterprises despite their inability to repay the debt. Matthew Boesler from the Business Insider commented on the effects of these practices in this way, "This is causing a deterioration in asset quality on banks' balance sheets, and increases the chances that the government will have to bail them out down the road". Some estimate that the debt to equity ratio of many state owned enterprises exceed 230%. This is a staggering figure. Even with all of these negative developments, the "official" amount of non-performing loans in the Chinese banking sector is only 0.9%. This obvious contradiction is why so many of the numbers out of China are deceptions. The banking sector numbers are not the only numbers that are troubling. The state owned enterprises have been showing weakness for a while. These enterprises make up 40% to 50% of GDP. From 2001 to 2009, these state owned enterprises made 5.8 trillion Renminbi (RMB). This would equal $931.1 billion in the United States. Normally, this would be a tale of their success. But if you remove the government subsidies for that same time period, the real average return on equity for the state owned enterprises would be a negative 6.29%. These problems are compounded by a growing real estate bubble. Part of China's growth has come from the government's investment in the building of infrastructure. Robin Banerji and Patrick Jackson of the BBC describe the expansion like this, "The country is said to have built the equivalent of Rome every two months in the past decade". The problem with this rapid expansion is that supply is beginning to overtake demand. Satellite images are showing entire Chinese cities empty many years after their construction. The World Bank's Holly Krambeck gave a frightening example of this in the city of Chenggong. She says, "In Chenggong, there are more than 100,000 new apartments with no occupants". This is becoming the story all over China as new buildings, office spaces, and other projects are lying empty due to the lack of occupants able to fill these empty structures. These factors should cause investors to be cautious about their positions in China. A red flag to any investor should be the inability for Chinese companies to be audited by firms outside of China. If these large economic challenges are not addressed, China may see anemic economic growth as Japan did in the 1990s or worse, an economic catastrophe that could rock the world markets as investors begin to move their capital to other parts of the world. This could be hastened by the growing perception of many in the United States, China's largest customer, that companies that do business there are hurting American workers. Political Turmoil China is currently finishing their once in a decade transition of political leadership. This however has not come without serious hiccups in the road. There is serious tension inside the Chinese hierarchy which is beginning to reveal itself. As Dean Cheng reported about the 2012 National People's Congress session, "As this year's session came to a close, outgoing Premier Wen Jiabao warned of the potential for chaos and cited the Cultural Revolution of 1966-1976". This statement immediately preceded the ousting of Chongqing Party Secretary Bo Xilai from the Communist Party. Bo, his wife, and many extended family members were also charged with a variety of crimes including corruption, murder, and adultery. His populist tone and rising star in the Communist Party made him an attractive candidate for higher office and many reports say he was campaigning for a position on the CCP Politburo Standing Committee. This committee is the most important and power part of the Chinese leadership. Bo's rising star quickly extinguished after his former police chief tried to defect to the United States. Because of how common corruption is inside the Party, many find it strange that Bo Xilai was ousted and charged so quickly and publicly. Dean Cheng makes this comment regarding the scandal: "Such major developments-occurring in the midst of one of China's most public political events-suggest that Chinese politics are in major turmoil." While the event with Bo Xilai is scandalous, it is an extension of the ongoing concern of many inside the Party of the increasing corruption and the deterioration of the perceived legitimacy of the Party. Premier Wen, who is exited his position during this most recent transition has even publicly called for the power of the Communist Party to be reduced. In the 2011 World Economic Forum in Davos, Switzerland, Premier Wen was quoted as saying: A ruling Party's most important duty is to follow the constitution and the law, and restrict its activities within the constitution and the law…. This requires changes in the use of the Party as a substitute for the government and in the phenomenon of over-concentration of power. For this, we need to reform the leadership system of the Party and the country. But these reforms will be close to impossible to carry out as the 70 wealthiest members of the National People's Congress are ten times wealthier than the top 660 government officials here in the United States. This is due to the fact that state owned enterprises are run by members of the National People's Congress or by a close relative of those members. Any reforms would mean these members would have to give up their sources of wealth and power. As we've seen in many cases, economic troubles can strain political relations even further. If China does not make changes, the corruption and decadence in the ruling Communist Party could become the scapegoat for any "hard landing" China experiences. If China experiences a hard landing, it would lead to the second largest economy in the world falling into political chaos. This would create uncertainty that would trump the uncertainty experienced from the problems in the European Union. Societal Challenges The political problems in China are compounded by the fact that there is growing unrest among the average citizen in China. The largest problem is that of forced evictions by the Chinese government. After the Financial Crisis of 2008, the Chinese government began implementing an extremely large stimulus package. The main thrust of the stimulus package is to build up infrastructure across the country. In order to do this, many Chinese cities are forcibly and violently evicting citizens who live on land that is going to be used for new government building projects. The stories of these forced evictions have caused outrage throughout the Chinese population. An example of how outraged many citizens are is the Chinese fishing village of Wukan. The citizens of the village became fed up with land grabs from the government. In response, they rushed the offices of the local government during a protest. After the protest, one of the protest leaders died while in custody. This led to the village ousting the Communist Party leadership in the village and democratically electing local leaders. While this rebellion is an extreme example, what caused the outrage is still there and is becoming prevalent among the Chinese people. Land grabs are not the only problems, income disparity, working conditions, and many more social ills are beginning to bubble over. In 2010, China experienced 180,000 protests, riots, and mass demonstration. This is staggering. Unfortunately, many of the complaints are too narrow to begin a nationwide movement that will cause sweeping reforms inside China. That will not last for long. More and more of the protest leaders admit that the underlying problem with the country is the one party system that has dominated the government for so long. This growing public anger combined with the political turmoil inside the country could combine to create a deadly chemical reaction. Conclusion The Chinese model is quickly becoming a potential Chinese nightmare. While it has created incredible wealth inside China, it has created a monster that does not seem to be able to make the necessary changes. China has to go back to the path of reforms that Deng began in 1970s in which their economy becomes freer. Unfortunately, the incredible corruption that has sprang up from China's economic growth is beginning to insulate itself. Communist Party leaders have shown hostility toward any change. Investors must consider these factors when looking toward China for the growth that is missing in the United States. While that growth may be advantageous in the short to medium term, it could be an incredibly risky bet in the long term. If China does not address its economic, political, and societal challenges, the Great Wall that is the rising Chinese economy may have a mighty fall.

# 2ac immigration

**Wont pass**

Politico 3-5-13. dyn.politico.com/printstory.cfm?uuid=12207C2F-7F94-479F-959C-F539B631CDF1

“More likely that we deal with one bill at a time, more likely that the Senate slams them all together,” said Oklahoma Rep. James Lankford, chairman of the Republican Policy Committee, who is involved with immigration strategy. “They do so few bills over there, they’re going to do one big giant, we may do a few small [bills] and see what we work on in conference together.”¶ Still, as Washington is a-twitter about immigration reform, and President Barack Obama is corralling support on Capitol Hill, the GOP leadership is staring at a daunting statistic: More than 140 Republicans represent districts with nearly no Hispanics. So many of them look at immigration reform through a parochial lens, not as a national political imperative like the party bigwigs.¶ The uptick in private action tells a more hopeful story for reform than was previously understood. Of course, passing any immigration reform bills is a political risk because if the House is seen even temporarily as moving minor proposals while the Senate moves a massive bill, that action could be seen as insufficient.¶ For instance, the piecemeal approach could risk putting some House Republicans crosswise with national party apparatus — who see comprehensive immigration reform as a pathway toward maintaining power in Washington.¶ “I don’t like how some people on our side who are pushing a comprehensive plan who say, ‘The reason we have to do this if because we’re not getting enough of the Hispanic vote at the presidential level,’” said Rep. Tom Rooney (R-Fla.) . “For me, policy should be driven because of policy, not politics, and I know that’s wishful thinking.”¶ Ryan’s office did not answer an email about the private conversations. Gowdy told reporters he would talk about anything except immigration.¶ The desire to avoid comprehensive movement on immigration is so widespread, so geographically diverse, that it’s hard to ignore and might be impossible for leadership to circumvent.¶ Rep. Reid Ribble (R-Wis.) said he is “hopeful … that rather than trying to do a major comprehensive reform, we will try and do it sequentially.”¶ “Everyone agrees on certain things,” Ribble said.¶ Rooney said Republicans would “lose a group of people right off the bat” if they try to cobble together a comprehensive bill.

**PC theory is wrong- winners win**

Hirsh, 2-7 – National Journal chief correspondent, citing various political scientists

[Michael, former Newsweek senior correspondent, "There’s No Such Thing as Political Capital," National Journal, 2-9-13, www.nationaljournal.com/magazine/there-s-no-such-thing-as-political-capital-20130207, accessed 2-8-13, mss]

The idea of political capital—or mandates, or momentum—is so poorly defined that presidents and pundits often get itwrong. On Tuesday, in his State of the Union address, President Obama will do what every president does this time of year. For about 60 minutes, he will lay out a sprawling and ambitious wish list highlighted by gun control and immigration reform, climate change and debt reduction. In response, the pundits will do what they always do this time of year: They will talk about how unrealistic most of the proposals are, discussions often informed by sagacious reckonings of how much “political capital” Obama possesses to push his program through. Most of **this** talk **will have** no bearing on what actually happens over the next four years. Consider this: Three months ago, just before the November election, if someone had talked seriously about Obama having enough political capital to oversee passage of both immigration reform and gun-control legislation at the beginning of his second term—even after winning the election by 4 percentage points and 5 million votes (the actual final tally)—this person would have been called crazy and stripped of his pundit’s license. (It doesn’t exist, but it ought to.) In his first term, in a starkly polarized country, the president had been so frustrated by GOP resistance that he finally issued a limited executive order last August permitting immigrants who entered the country illegally as children to work without fear of deportation for at least two years. Obama didn’t dare to even bring up gun control, a Democratic “third rail” that has cost the party elections and that actually might have been even less popular on the right than the president’s health care law. And yet, for reasons that have very little to do with Obama’s personal prestige or popularity—variously put in terms of a “mandate” or “political capital”—chances are fair that both will now happen. What changed? In the case of gun control, of course, it wasn’t the election. It was the horror of the 20 first-graders who were slaughtered in Newtown, Conn., in mid-December. The sickening reality of little girls and boys riddled with bullets from a high-capacity assault weapon seemed to precipitate a sudden tipping point in the national conscience. One thing changed after another. Wayne LaPierre of the National Rifle Association marginalized himself with poorly chosen comments soon after the massacre. The pro-gun lobby, once a phalanx of opposition, began to fissure into reasonables and crazies. Former Rep. Gabrielle Giffords, D-Ariz., who was shot in the head two years ago and is still struggling to speak and walk, started a PAC with her husband to appeal to the moderate middle of gun owners. Then she gave riveting and poignant testimony to the Senate, challenging lawmakers: “Be bold.” As a result, momentum has appeared to build around some kind of a plan to curtail sales of the most dangerous weapons and ammunition and the way people are permitted to buy them. It’s impossible to say now whether such a bill will pass and, if it does, whether it will make anything more than cosmetic changes to gun laws. But one thing is clear: The **political tectonics** have **shift**ed **dramatically** in very little time. Whole new possibilities exist now that didn’t a few weeks ago. Meanwhile, the Republican members of the Senate’s so-called Gang of Eight are pushing hard for a new spirit of compromise on immigration reform, a sharp change after an election year in which the GOP standard-bearer declared he would make life so miserable for the 11 million illegal immigrants in the U.S. that they would “self-deport.” But this turnaround has very little to do with Obama’s personal influence—his political mandate, as it were. It has almost entirely to do with just two numbers: 71 and 27. That’s 71 percent for Obama, 27 percent for Mitt Romney, the breakdown of the Hispanic vote in the 2012 presidential election. Obama drove home his advantage by giving a speech on immigration reform on Jan. 29 at a Hispanic-dominated high school in Nevada, a swing state he won by a surprising 8 percentage points in November. But the movement on immigration has mainly come out of the Republican Party’s recent introspection, and the realization by its more thoughtful members, such as Sen. Marco Rubio of Florida and Gov. Bobby Jindal of Louisiana, that without such a shift the party may be facing demographic death in a country where the 2010 census showed, for the first time, that white births have fallen into the minority. It’s got nothing to do with Obama’s political capital or, indeed, Obama at all. The point is not that “political capital” is a meaningless term. Often it is a synonym for “mandate” or “momentum” in the aftermath of a decisive election—and just about every politician ever elected has tried to claim more of a mandate than he actually has. Certainly, Obama can say that because he was elected and Romney wasn’t, he has a better claim on the country’s mood and direction. Many pundits still defend political capital as a useful metaphor at least. “It’s an unquantifiable but meaningful concept,” says Norman Ornstein of the American Enterprise Institute. “You can’t really look at a president and say he’s got 37 ounces of political capital. But the fact is, it’s a concept that matters, if you have popularity and some momentum on your side.” The real problem is that the idea of political capital—or mandates, or momentum—is so poorly defined that presidents and pundits often get it wrong. “Presidents usually over-estimate it,” says George Edwards, a presidential scholar at Texas A&M University. “The best kind of political capital—some sense of an electoral mandate to do something—is very rare. It almost never happens. In 1964, maybe. And to some degree in 1980.” For that reason, **political capital** is a concept that **misleads** far more than it enlightens. **It is** **distortionary**. It conveys the idea that we know more than we really do about the ever-elusive concept of political power, and it discounts the way unforeseen events can suddenly change everything. Instead, it suggests, erroneously, that a political figure has a concrete amount of political capital to invest, just as someone might have real investment capital—that a particular leader can bank his gains, and the size of his account determines what he can do at any given moment in history. Naturally, any president has practical and electoral limits. Does he have a majority in both chambers of Congress and a cohesive coalition behind him? Obama has neither at present. And unless a surge in the economy—at the moment, still stuck—or some other great victory gives him more momentum, it is inevitable that the closer Obama gets to the 2014 election, the less he will be able to get done. Going into the midterms, Republicans will increasingly avoid any concessions that make him (and the Democrats) stronger. But the abrupt emergence of the immigration and gun-control issues illustrates how suddenly shifts in mood can occur and how political interests can align in new ways just as suddenly. Indeed, the pseudo-concept of political capital masks a larger truth about Washington that is kindergarten simple: You just don’t know what you can do until you try. Or as Ornstein himself once wrote years ago, “**Winning wins.”** In theory, and in practice, depending on Obama’s handling of any particular issue, even in a polarized time, he could still deliver on a lot of his second-term goals, depending on his skill and the breaks. Unforeseen catalysts can appear, like Newtown. Epiphanies can dawn, such as when many Republican Party leaders suddenly woke up in panic to the huge disparity in the Hispanic vote. Some **political scientists** **who study** the elusive calculus of **how to pass legislation** and run successful presidencies **say** that **political capital is**, at best, **an empty concept**, and that **almost nothing in** the **academic literature** successfully quantifies or even defines it. “It can refer to a very abstract thing, like a president’s popularity, but there’s no mechanism there. That makes it kind of useless,” says Richard Bensel, a government professor at Cornell University. Even Ornstein concedes that the calculus is far more complex than the term suggests. **Winning** on one issue often **changes the** **calculation** for the next issue; there is never any known amount of capital. “The idea here is, if an issue comes up where **the conventional wisdom is that president is not going to get what he wants**, and [they]he gets it, then each time that happens, it changes the calculus of the other actors” Ornstein says. “If they think he’s going to win, they may change positions to get on the winning side. **It’s a bandwagon effect**.” ALL THE WAY WITH LBJ Sometimes, a clever practitioner of power can get more done just because [they’re]he’s aggressive and knows the hallways of Congress well. Texas A&M’s Edwards is right to say that the outcome of the 1964 election, Lyndon Johnson’s landslide victory over Barry Goldwater, was one of the few that conveyed a mandate. But one of the main reasons for that mandate (in addition to Goldwater’s ineptitude as a candidate) was President Johnson’s masterful use of power leading up to that election, and his ability to get far more done than anyone thought possible, given his limited political capital. In the newest volume in his exhaustive study of LBJ, The Passage of Power, historian Robert Caro recalls Johnson getting cautionary advice after he assumed the presidency from the assassinated John F. Kennedy in late 1963. Don’t focus on a long-stalled civil-rights bill, advisers told him, because it might jeopardize Southern lawmakers’ support for a tax cut and appropriations bills the president needed. “One of the wise, practical people around the table [said that] the presidency has only a certain amount of coinage to expend, and you oughtn’t to expend it on this,” Caro writes. (Coinage, of course, was what political capital was called in those days.) Johnson replied, “Well, what the hell’s the presidency for?” Johnson didn’t worry about coinage, and he got the Civil Rights Act enacted, along with much else: Medicare, a tax cut, antipoverty programs. He appeared to understand not just the ways of Congress but also the way to maximize the momentum he possessed in the lingering mood of national grief and determination by picking the right issues, as Caro records. “Momentum is not a mysterious mistress,” LBJ said. “It is a controllable fact of political life.” Johnson had the skill and wherewithal to realize that, at that moment of history, he could have unlimited coinage if he handled the politics right. He did. (At least until Vietnam, that is.)

**Plan’s popular**

Press Action ’12 (3/12/12 (“US Nuclear Industry Operates as if Fukushima Never Happened”) <http://www.pressaction.com/news/weblog/full_article/nuclearsubsidies03122012/>

**Both Democrats and Republicans have had a** long love affair **with commercial nuclear power**, and **the relationship is** showing no signs of losing steam. Since the 1950s, members of both parties have enthusiastically lavished electric utility companies with expensive gifts, ranging from subsidies to protection from liability for disasters to loan guarantees, all underwritten by U.S. taxpayers. The political calculus is simple: nuclear power enjoys unanimous support in Washington. Try to name one member of the U.S. Senate or House of Representatives who favors shutting down the nation’s 104 commercial nuclear reactors. Federal agencies, from the Atomic Energy Commission to the Department of Energy to the Nuclear Regulatory, have worked diligently through the years to promote nuclear power. At the state level, support for nuclear power also is extremely strong, although there are some politicians—albeit a tiny number—who have publicly called for the closure of certain nuclear plants. On the one-year anniversary of the start of the nuclear disaster at the Fukushima Dai-ichi nuclear power plant in Japan, one would assume a voice in official Washington would have emerged calling for an end to the nation’s experiment with nuclear power. In Germany, government officials made the decision to phase out nuclear power by 2022 in response to Fukushima. There’s no such sentiment among the ruling elite in the United States. **Locating a member of Congress opposed to** the continued operation of **nuclear** power plants **is as hard as finding a lawmaker who favors breaking ties with Israel** over its mistreatment of Palestinians for the last 60 years. In fact, it’s more than hard, it’s impossible. It’s very rare to find an issue where there is a noteworthy difference between Democrats and Republicans. When there are differences, they tend to be subtle, although party officials and the corporate media will attempt to sensationalize a slight difference to create an impression that the U.S. political system permits honest and real debate.

**Military shields**

Davenport ’12 (Coral Davenport is the energy and environment correspondent for National Journal. Prior to joining National Journal in 2010, Davenport covered energy and environment for Politico, and before that, for Congressional Quarterly, “Pentagon's Clean-Energy Initiatives Could Help Troops—and President Obama”, <http://www.nationaljournal.com/pentagon-s-clean-energy-initiatives-could-help-troops-and-president-obama-20120411?mrefid=site_search>, April 11, 2012, LEQ)

The Pentagon plans to roll out a new slate of clean- and renewable-energy initiatives on Wednesday as part of its long-term “Operational Energy Strategy” aimed at reducing the military’s dependence on fossil fuels while increasing its front-line fighting power. The moves are in keeping with a sustained push by the military in recent years to cut its dependence on oil, which costs the Pentagon up to $20 billion annually and has led to the deaths of thousands of troops and contractors, killed while guarding fuel convoys in Iraq and Afghanistan. Some renewable-energy projects at the Defense Department are already paying big dividends. Pentagon efforts to research and deploy products like hybrid batteries for tanks have enabled combat vehicles to travel farther without refueling, while advances in portable solar generation have allowed troops on the front lines in Afghanistan to power housing and electronic facilities without requiring fuel convoys to make dangerous drives through hostile territory to deliver the diesel required for traditional generators. It doesn’t hurt that the initiatives also tie in politically with President Obama’s unwavering support for clean energy on the campaign trail—even as Republicans continue to attack him almost daily on energy issues. GOP and conservative “super PACs” have no problem hitting Obama for his support of renewable-energy programs in the wake of the bankruptcy of Solyndra, the solar panel company that cost the federal government $535 million in loan guarantees from the economic stimulus law. But politically, it’s a lot harder for traditionally hawkish Republicans to criticize the Pentagon’s embrace of renewable power, which Defense officials have repeatedly made clear is not being done in the interest of an environmental agenda, but rather to increase security and fighting capability on the front lines. Defense officials have also emphasized that much of the funding for the Pentagon’s renewable-energy initiatives won’t come from taxpayer dollars. On Tuesday, a Defense official said that the construction of renewable-electricity plants for Army and Air Force bases–which the official said could cost up to $7 billion—will be privately financed.

# Round 4

# 1ac

#### Plan: The Department of Defense should initiate power-purchase agreements of Small Modular Reactors in the United States.

Contention [ ]: Hegemony {2:30}

#### First is the grid-

#### SMR’s “island” military bases from the grid- blackouts inevitable- this independently jacks space systems

Loudermilk ‘11 (Micah J. Loudermilk, Micah J. Loudermilk is a 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”, March 27, 2011, LEQ)

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 warfighting 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.

#### Second is oil-

#### SMR’s solve in-theatre military oil dependency

Andres and Breetz ‘11 (Richard B. Andres is 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 is a doctoral candidate in the Department of Political Science at the Massachusetts Institute of Technology, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications”, February 16, 2011, LEQ)

Operational Vulnerability. Operational energy use represents a second serious vulnerability for the U.S. military. In recent years, the military has become significantly more effective by making greater use of technology in the field. The price of this improvement has been a vast increase in energy use. Over the last 10 years, for instance, the Marine Corps has more than tripled its operational use of energy. Energy and water now make up 70 percent of the logistics burden for troops operating in forward locations in the wars in Afghanistan and Iraq. This burden represents a severe vulnerability and is costing lives. In 2006, troop losses from logistics convoys became so serious that Marine Corps Major General Rich- ard Zilmer sent the Pentagon a “Priority 1” request for renewable energy backup.11 This unprecedented request put fuel convoy issues on the national security agenda, triggering several high-level studies and leading to the establishment of the Power Surety Task Force, which fast-tracked energy innovations such as mobile power stations and super-insulating spray foam. Currently, the Marine Corps is considering a goal of producing all non- vehicle energy used at forward bases organically and substantially increasing the fuel efficiency of vehicles used in forward areas. Nevertheless, attempts to solve the current energy use problem with efficiency measures and renewable sources are unlikely to fully address this vulnerability. Wind, solar, and hydro generation along with tailored cuts of energy use in the field can reduce the number of convoys needed to supply troops, but these measures will quickly reach limits and have their own challenges, such as visibility, open exposure, and intermittency. Deploying vehicles with greater fuel efficiency will further reduce convoy vulnerability but will not solve the problem. A strong consensus has been building within planning circles that small reactors have the potential to significantly reduce liquid fuel use and, consequently, the need for convoys to supply power at forward locations. Just over 30 percent of operational fuel used in Afghanistan today goes to generating electricity. Small reactors could easily generate all electricity needed to run large forward operating bases. This innovation would, for in- stance, allow the Marine Corps to meet its goal of self- sufficient bases. Mobile reactors also have the potential to make the Corps significantly lighter and more mobile by reducing its logistics tail. Another way that small reactors could potentially be used in the field is to power hydrogen electrolysis units to generate hydrogen for vehicles.12 At forward locations, ground vehicles currently use around 22 percent imported fuel. Many ground transport vehicles can be converted to run on hydrogen, considerably reducing the need for fuel convoys. If the wars in Iraq and Afghanistan are indicative of future operations, and fuel convoys remain a target for enemy action, using small reactors at forward locations has the potential to save hundreds or thousands of U.S. lives.

#### Dependency on oil collapses the military

Voth ‘12 (Jeffrey M. Voth is the president of Herren Associates leading a team of consultants advising the federal government on issues of national security, energy and environment, health care and critical information technology infrastructure, George Washing University Homeland Security Policy Institute, “In Defense of Energy – A Call to Action”, <http://securitydebrief.com/2012/04/11/in-defense-of-energy-a-call-to-action/>, April 11, 2012, LEQ)

Last month, the Pentagon released its widely anticipated roadmap to transform operational energy security. As published in a World Politics Review briefing, energy security has become a strategic as well as an operational imperative for U.S. national security. As tensions continue to escalate with Iran in the Strait of Hormuz, it has become clear that the U.S. military urgently requires new approaches and innovative technologies to improve fuel efficiency, increase endurance, enhance operational flexibility and support a forward presence for allied forces while reducing the vulnerability inherent in a long supply-line tether. Assured access to reliable and sustainable supplies of energy is central to the military’s ability to meet operational requirements globally, whether keeping the seas safe of pirates operating off the coast of Africa, providing humanitarian assistance in the wake of natural disasters in the Pacific or supporting counterterrorism missions in the Middle East. From both a strategic and an operational perspective, the call to action is clear. Rapid employment of energy-efficient technologies and smarter systems will be required to transform the military’s energy-security posture while meeting the increasing electric-power demands required for enhanced combat capability. As recently outlined by Chairman of the Joint Chiefs of Staff Gen. Martin Dempsey, “Without improving our energy security, we are not merely standing still as a military or as a nation, we are falling behind.”

#### Independently- fuel cost wrecks the DOD’s budget - spills over

Freed ‘12 (Josh Freed, Vice President for Clean Energy, Third Way, “Improving capability, protecting 'budget”, <http://energy.nationaljournal.com/2012/05/powering-our-military-whats-th.php>, May 21, 2012, LEQ)

As Third Way explains in a digest being released this week by our National Security Program, the Pentagon’s efforts to reduce energy demand and find alternative energy sources could keep rising fuel costs from encroaching on the budgets of other important defense programs. And the payoff could be massive. The Air Force has already been able to implement behavioral and technology changes that will reduce its fuel costs by $500 million over the next five years. The Army has invested in better energy distribution systems at several bases in Afghanistan, which will save roughly $100 million each year. And, using less than 10% of its energy improvement funds, the Department has begun testing advanced biofuels for ships and planes. This relatively small investment could eventually provide the services with a cost-effective alternative to the increasingly expensive and volatile oil markets. These actions are critical to the Pentagon’s ability to focus on its defense priorities. As Secretary Panetta recently pointed out, he’s facing a $3 billion budget shortfall caused by “higher-than-expected fuel costs.” The Department’s energy costs could rise even further if action isn’t taken. DOD expects to spend $16 billion on fuel next year. The Energy Information Administration predicts the price of oil will rise 23% by 2016, without a major disruption in oil supplies, like the natural disasters, wars, and political upheaval the oil producing states have seen during the last dozen years. Meanwhile, the Pentagon’s planned budget, which will remain flat for the foreseeable future, will require significant adjustment to the Department’s pay-any-price mindset, even if sequestration does not go into effect. Unless energy costs are curbed, they could begin to eat into other budget priorities for DOD. In addition, the Pentagon’s own Defense Science Board acknowledges that using energy more efficiently makes our forces more flexible and resilient in military operations, and can provide them with greater endurance during missions. Also, by reducing energy demand in the field, DOD can minimize the number of fuel convoys that must travel through active combat zones, reducing the chances of attack to avoiding casualties and destruction of material. At our domestic bases, DOD is employing energy conservation, on-site clean energy generation, and smart grid technology to prevent disruptions to vital activities in case the civilian grid is damaged by an attack or natural disaster. The bottom line is, developing methods and technologies to reduce our Armed Forces’ use of fossil fuels and increase the availability of alternative energy makes our military stronger. That’s why the Pentagon has decided to invest in these efforts. End of story.

#### Now the impacts-

#### Boom goes security- new hotness

Brooks, Ikenberry, and Wohlforth ’13 (Stephen, Associate Professor of Government at Dartmouth College, John Ikenberry is the Albert G. Milbank Professor of Politics and International Affairs at Princeton University in the Department of Politics and the Woodrow Wilson School of Public and International Affairs, William C. Wohlforth is the Daniel Webster Professor in the Department of Government at Dartmouth College “Don’t Come Home America: The Case Against Retrenchment,” International Security, Vol. 37, No. 3 (Winter 2012/13), pp. 7–51)

A core premise of deep engagement is that it prevents the emergence of a far more dangerous global security environment. For one thing, as noted above, the United States’ overseas presence gives it the leverage to restrain partners from taking provocative action. Perhaps more important, its core alliance commitments also deter states with aspirations to regional hegemony from contemplating expansion and make its partners more secure, reducing their incentive to adopt solutions to their security problems that threaten others and thus stoke security dilemmas. The contention that engaged U.S. power dampens thebalefuleffects of anarchy is consistent with influential variants of realist theory. Indeed, arguably the scariest portrayal of the war-prone world that would emerge absent the “American Pacifier” is provided in the works of John Mearsheimer, who forecasts dangerous multipolar regions replete with security competition, arms races, nuclear proliferation and associated preventive war temptations, regional rivalries, and even runs at regional hegemony and full-scale great power war. 72 How do retrenchment advocates, the bulk of whom are realists, discount this benefit? Their arguments are complicated, but two capture most of the variation: (1) U.S. security guarantees are not necessary to prevent dangerous rivalries and conflict in Eurasia; or (2) prevention of rivalry and conflict in Eurasia is not a U.S. interest. Each response is connected to a different theory or set of theories, which makes sense given that the whole debate hinges on a complex future counterfactual (what would happen to Eurasia’s security setting if the United States truly disengaged?). Although a certain answer is impossible, each of these responses is nonetheless a weaker argument for retrenchment than advocates acknowledge. The first response flows from defensive realism as well as other international relations theories that discount the conflict-generating potential of anarchy under contemporary conditions. 73 Defensive realists maintain that the high expected costs of territorial conquest, defense dominance, and an array of policies and practices that can be used credibly to signal benign intent, mean that Eurasia’s major states could manage regional multipolarity peacefully without the American pacifier. Retrenchment would be a bet on this scholarship, particularly in regions where the kinds of stabilizers that nonrealist theories point to—such as democratic governance or dense institutional linkages—are either absent or weakly present. There are three other major bodies of scholarship, however, that might give decisionmakers pause before making this bet. First is regional expertise. Needless to say, there is no consensus on the net security effects of U.S. withdrawal. Regarding each region, there are optimists and pessimists. Few experts expect a return of intense great power competition in a post-American Europe, but many doubt European governments will pay the political costs of increased EU defense cooperation and the budgetary costs of increasing military outlays. 74 The result might be a Europe that is incapable of securing itself from various threats that could be destabilizing within the region and beyond (e.g., a regional conflict akin to the 1990s Balkan wars), lacks capacity for global security missions in which U.S. leaders might want European participation, and is vulnerable to the influence of outside rising powers. What about the other parts of Eurasia where the United States has a substantial military presence? Regarding the Middle East, the balance begins to swing toward pessimists concerned that states currently backed by Washington— notably Israel, Egypt, and Saudi Arabia—might take actions upon U.S. retrenchment that would intensify security dilemmas. And concerning East Asia, pessimism regarding the region’s prospects without the American pacifier is pronounced. Arguably the principal concern expressed by area experts is that Japan and South Korea are likely to obtain a nuclear capacity and increase their military commitments, which could stoke a destabilizing reaction from China. It is notable that during the Cold War, both South Korea and Taiwan moved to obtain a nuclear weapons capacity and were only constrained from doing so by a still-engaged United States. 75 The second body of scholarship casting doubt on the bet on defensive realism’s sanguine portrayal is all of the research that undermines its conception of state preferences. Defensive realism’s optimism about what would happen if the United States retrenched is very much dependent on its particular—and highly restrictive—assumption about state preferences; once we relax this assumption, then much of its basis for optimism vanishes. Specifically, the prediction of post-American tranquility throughout Eurasia rests on the assumption that security is the only relevant state preference, with security defined narrowly in terms of protection from violent external attacks on the homeland. Under that assumption, the security problem is largely solved as soon as offense and defense are clearly distinguishable, and offense is extremely expensive relative to defense. Burgeoning research across the social and other sciences, however, undermines that core assumption: states have preferences not only for security but also for prestige, status, and other aims, and they engage in trade-offs among the various objectives. 76 In addition, they define security not just in terms of territorial protection but in view of many and varied milieu goals. It follows that even states that are relatively secure may nevertheless engage in highly competitive behavior. Empirical studies show that this is indeed sometimes the case. 77 In sum, a bet on a benign postretrenchment Eurasia is a bet that leaders of major countries will never allow these nonsecurity preferences to influence their strategic choices. To the degree that these bodies of scholarly knowledge have predictive leverage, U.S. retrenchment would result in a significant deterioration in the security environment in at least some of the world’s key regions. We have already mentioned the third, even more alarming body of scholarship. Offensive realism predicts that the withdrawal of the American pacifier will yield either a competitive regionalmultipolarity complete with associated insecurity, arms racing, crisis instability, nuclear proliferation, and the like, or bids for regional hegemony, which may be beyond the capacity of local great powers to contain (and which in any case would generate intensely competitive behavior, possibly including regional great power war). Hence it is unsurprising that retrenchment advocates are prone to focus on the second argument noted above: that avoiding wars and security dilemmas in the world’s core regions is not a U.S. national interest. Few doubt that the United States could survive the return of insecurity and conflict among Eurasian powers, but at what cost? Much of the work in this area has focused on the economic externalities of a renewed threat of insecurity and war, which we discuss below. Focusing on the pure security ramifications, there are two main reasons why decisionmakers may be rationally reluctant to run the retrenchment experiment. First, overall higher levels of conflict make the world a more dangerous place. Were Eurasia to return to higher levels of interstate military competition, one would see overall higher levels of military spending and innovation and a higher likelihood of competitive regionalproxy wars and arming of client states—all of which would be concerning, in part because it would promote a faster diffusion of military power away from the United States. Greater regional insecurity could well feed proliferation cascades, as states such as Egypt, Japan, South Korea, Taiwan, and Saudi Arabia all might choose to create nuclear forces. 78 It is unlikely that proliferation decisions by any of these actors would be the end of the game: they would likely generate pressure locally for more proliferation. Following Kenneth Waltz, many retrenchment advocates are proliferation optimists, assuming that nuclear deterrence solves the security problem. 79 Usually carried out in dyadic terms, the debate over the stability of proliferation changes as the numbers go up. Proliferation optimism rests on assumptions of rationality and narrow security preferences. In social science, however, such assumptions are inevitably probabilistic. Optimists assume that most states are led by rational leaders, most will overcome organizational problems and resist the temptation to preempt before feared neighbors nuclearize, and most pursue only security and are risk averse. Confidence in such probabilistic assumptions declines if the world were to move from nine to twenty, thirty, or forty nuclear states. In addition, many of the other dangers noted by analysts who are concerned about the destabilizing effects of nuclear proliferation—including the risk of accidents and the prospects that some new nuclear powers will not have truly survivable forces—seem prone to go up as the number of nuclear powers grows. 80 Moreover, the risk of “unforeseen crisis dynamics” that couldspin out of control is also higher as the number of nuclear powers increases. Finally, add to these concerns the enhanced danger of nuclear leakage, and a world with overall higher levels of security competition becomes yet more worrisome. The argument that maintaining Eurasian peace is not a U.S. interest faces a second problem. On widely accepted realist assumptions, acknowledging that U.S. engagement preserves peace dramatically narrows the difference between retrenchment and deep engagement. For many supporters of retrenchment, the optimal strategy for a power such as the United States, which has attained regional hegemony and is separated from other great powers by oceans, is offshore balancing: stay over the horizon and “pass the buck” to local powers to do the dangerous work of counterbalancing any local rising power. The United States should commit to onshore balancing only when local balancing is likely to fail and a great power appears to be a credible contender for regional hegemony, as in the cases of Germany, Japan, and the Soviet Union in the midtwentieth century. The problem is that China’s rise puts the possibility of its attaining regional hegemony on the table, at least in the medium to long term. As Mearsheimer notes, “The United States will have to play a key role in countering China, because its Asian neighbors are not strong enough to do it by themselves.” 81 Therefore, unless China’s rise stalls, “the United States is likely to act toward China similar to the way it behaved toward the Soviet Union during the Cold War.” 82 It follows that the United States should take no action that would compromise its capacity to move to onshore balancing in the future. It will need to maintain key alliance relationships in Asia as well as the formidably expensive military capacity to intervene there. The implication is to get out of Iraq and Afghanistan, reduce the presence in Europe, and pivot to Asia— just what the United States is doing. 83 In sum, the argument that U.S. **security** commitments are unnecessary **for peace** is countered by a lot of scholarship, including highly influential realist scholarship. In addition, the argument that Eurasian peace is unnecessary for U.S. security is weakened by the potential for a large number of nasty security consequences as well as the need to retain a latent onshore balancing capacity that dramatically reduces the savings retrenchment might bring. Moreover, switching between offshore and onshore balancing could well be difªcult. Bringing together the thrust of many of the arguments discussed so far underlines the degree to which the case for retrenchment misses the underlyinglogic ofthedeep engagementstrategy. By supplying reassurance, deterrence, and active management, the United States lowers security competition in the world’s key regions, thereby preventing the emergence of a hothouse atmosphere for growing new military capabilities. Alliance ties dissuade partners from ramping up and also provide leverage to prevent military transfers to potential rivals. On top of all this, the United States’ formidable military machine may deter entry by potential rivals. Current great power military expenditures as a percentage of GDP are at historical lows, and thus far other major powers have shied away from seeking to match top-end U.S. military capabilities. In addition, they have so far been careful to avoid attracting the “focused enmity” of the United States. 84 All of the world’s most modern militaries are U.S. allies (America’s alliance system of more than sixty countries now accounts for some 80 percent of global military spending), and the gap between the U.S. military capability and that of potential rivals is by many measures growing rather than shrinking. 85

#### Nations aren’t nice

Kagan ‘12 (Robert, senior fellow in foreign policy at the Brookings Institution, “Why the World Needs America,” February 11th, <http://online.wsj.com/article/SB10001424052970203646004577213262856669448.html>)

With the outbreak of World War I, the age of settled peace and advancing liberalism—of European civilization approaching its pinnacle—collapsed into an age of hyper-nationalism, despotism and economic calamity. The once-promising spread of democracy and liberalism halted and then reversed course, leaving a handful of outnumbered and besieged democracies living nervously in the shadow of fascist and totalitarian neighbors. The collapse of the British and European orders in the 20th century did not produce a new dark age—though if Nazi Germany and imperial Japan had prevailed, it might have—but the horrific conflict that it produced was, in its own way, just as devastating. Would the end of the present American-dominated order have less dire consequences? A surprising number of American intellectuals, politicians and policy makers greet the prospect with equanimity. There is a general sense that the end of the era of American pre-eminence, if and when it comes, need not mean the end of the present international order, with its widespread freedom, unprecedented global prosperity (even amid the current economic crisis) and absence of war among the great powers. American power may diminish, the political scientist G. John Ikenberry argues, but "the underlying foundations of the liberal international order will survive and thrive." The commentator Fareed Zakaria believes that even as the balance shifts against the U.S., rising powers like China "will continue to live within the framework of the current international system." And there are elements across the political spectrum—Republicans who call for retrenchment, Democrats who put their faith in international law and institutions—who don't imagine that a "post-American world" would look very different from the American world. If all of this sounds too good to be true, it is. The present world order was largely shaped by American power and reflects American interests and preferences. If the balance of power shifts in the direction of other nations, the world order will change to suit their interests and preferences. Nor can we assume that all the great powers in a post-American world would agree on the benefits of preserving the present order, or have the capacity to preserve it, even if they wanted to. Take the issue of democracy. For several decades, the balance of power in the world has favored democratic governments. In a genuinely post-American world, the balance would shift toward the great-power autocracies. Both Beijing and Moscow already protect dictators like Syria's Bashar al-Assad. If they gain greater relative influence in the future, we will see fewer democratic transitions and more autocrats hanging on to power. The balance in a new, multipolar world might be more favorable to democracy if some of the rising democracies—Brazil, India, Turkey, South Africa—picked up the slack from a declining U.S. Yet not all of them have the desire or the capacity to do it. What about the economic order of free markets and free trade? People assume that China and other rising powers that have benefited so much from the present system would have a stake in preserving it. They wouldn't kill the goose that lays the golden eggs. Unfortunately, they might not be able to help themselves. The creation and survival of a liberal economic order has depended, historically, on great powers that are both willing and able to support open trade and free markets, often with naval power. If a declining America is unable to maintain its long-standing hegemony on the high seas, would other nations take on the burdens and the expense of sustaining navies to fill in the gaps? Even if they did, would this produce an open global commons—or rising tension? China and India are building bigger navies, but the result so far has been greater competition, not greater security. As Mohan Malik has noted in this newspaper, their "maritime rivalry could spill into the open in a decade or two," when India deploys an aircraft carrier in the Pacific Ocean and China deploys one in the Indian Ocean. The move from American-dominated oceans to collective policing by several great powers could be a recipe for competition and conflict rather than for a liberal economic order. And do the Chinese really value an open economic system? The Chinese economy soon may become the largest in the world, but it will be far from the richest. Its size is a product of the country's enormous population, but in per capita terms, China remains relatively poor. The U.S., Germany and Japan have a per capita GDP of over $40,000. China's is a little over $4,000, putting it at the same level as Angola, Algeria and Belize. Even if optimistic forecasts are correct, China's per capita GDP by 2030 would still only be half that of the U.S., putting it roughly where Slovenia and Greece are today. Although the Chinese have been beneficiaries of an open international economic order, they could end up undermining it simply because, as an autocratic society, their priority is to preserve the state's control of wealth and the power that it brings. They might kill the goose that lays the golden eggs because they can't figure out how to keep both it and themselves alive. Finally, what about the long peace that has held among the great powers for the better part of six decades? Would it survive in a post-American world? Most commentators who welcome this scenario imagine that American predominance would be replaced by some kind of multipolar harmony. But multipolar systems have historically been neither particularly stable nor particularly peaceful. Rough parity among powerful nations is a source of uncertainty that leads to miscalculation. Conflicts erupt as a result of fluctuations in the delicate power equation. War among the great powers was a common, if not constant, occurrence in the long periods of multipolarity from the 16th to the 18th centuries, culminating in the series of enormously destructive Europe-wide wars that followed the French Revolution and ended with Napoleon's defeat in 1815. The 19th century was notable for two stretches of great-power peace of roughly four decades each, punctuated by major conflicts. The Crimean War (1853-1856) was a mini-world war involving well over a million Russian, French, British and Turkish troops, as well as forces from nine other nations; it produced almost a half-million dead combatants and many more wounded. In the Franco-Prussian War (1870-1871), the two nations together fielded close to two million troops, of whom nearly a half-million were killed or wounded. The peace that followed these conflicts was characterized by increasing tension and competition, numerous war scares and massive increases in armaments on both land and sea. Its climax was World War I, the most destructive and deadly conflict that mankind had known up to that point. As the political scientist Robert W. Tucker has observed, "Such stability and moderation as the balance brought rested ultimately on the threat or use of force. War remained the essential means for maintaining the balance of power." There is little reason to believe that a return to multipolarity in the 21st century would bring greater peace and stability than it has in the past. The era of American predominance has shown that there is no better recipe for great-power peace than certainty about who holds the upper hand. President Bill Clinton left office believing that the key task for America was to "create the world we would like to live in when we are no longer the world's only superpower," to prepare for "a time when we would have to share the stage." It is an eminently sensible-sounding proposal. But can it be done? For particularly in matters of security, the rules and institutions of international order rarely survive the decline of the nations that erected them. They are like scaffolding around a building: They don't hold the building up; the building holds them up. Many foreign-policy experts see the present international order as the inevitable result of human progress, a combination of advancing science and technology, an increasingly global economy, strengthening international institutions, evolving "norms" of international behavior and the gradual but inevitable triumph of liberal democracy over other forms of government—forces of change that transcend the actions of men and nations. Americans certainly like to believe that our preferred order survives because it is right and just—not only for us but for everyone. We assume that the triumph of democracy is the triumph of a better idea, and the victory of market capitalism is the victory of a better system, and that both are irreversible. That is why Francis Fukuyama's thesis about "the end of history" was so attractive at the end of the Cold War and retains its appeal even now, after it has been discredited by events. The idea of inevitable evolution means that there is no requirement to impose a decent order. It will merely happen. But international order is not an evolution; it is an imposition. It is the domination of one vision over others—in America's case, the domination of free-market and democratic principles, together with an international system that supports them. The present order will last only as long as those who favor it and benefit from it retain the will and capacity to defend it. There was nothing inevitable about the world that was created after World War II. No divine providence or unfolding Hegelian dialectic required the triumph of democracy and capitalism, and there is no guarantee that their success will outlast the powerful nations that have fought for them. Democratic progress and liberal economics have been and can be reversed and undone. The ancient democracies of Greece and the republics of Rome and Venice all fell to more powerful forces or through their own failings. The evolving liberal economic order of Europe collapsed in the 1920s and 1930s. The better idea doesn't have to win just because it is a better idea. It requires great powers to champion it. If and when American power declines, the institutions and norms that American power has supported will decline, too. Or more likely, if history is a guide, they may collapse altogether as we make a transition to another kind of world order, or to disorder. We may discover then that the U.S. was essential to keeping the present world order together and that the alternative to American power was not peace and harmony but chaos and catastrophe—which is what the world looked like right before the American order came into being.

#### Engagement is inevitable

Dorfman ‘12 (Zach Dorfman, Zach Dorfman is assistant editor of Ethics & International Affairs, the journal of the Carnegie Council, and co-editor of the Montreal Review, an online magazine of books, art, and culture, “What We Talk About When We Talk About Isolationism”, <http://dissentmagazine.org/online.php?id=605>, May 18, 2012, LEQ)

The idea that global military dominance and political hegemony is in the U.S. national interest—and the world’s interest—is generally taken for granted domestically. Opposition to it is limited to the libertarian Right and anti-imperialist Left, both groups on the margins of mainstream political discourse. Today, American supremacy is assumed rather than argued for: in an age of tremendous political division, it is a bipartisan first principle of foreign policy, a presupposition. In this area at least, one wishes for a little less agreement. In Promise and Peril: America at the Dawn of a Global Age, Christopher McKnight Nichols provides an erudite account of a period before such a consensus existed, when ideas about America’s role on the world stage were fundamentally contested. As this year’s presidential election approaches, each side will portray the difference between the candidates’ positions on foreign policy as immense. Revisiting Promise and Peril shows us just how narrow the American worldview has become, and how our public discourse has become narrower still. Nichols focuses on the years between 1890 and 1940, during America’s initial ascent as a global power. He gives special attention to the formative debates surrounding the Spanish-American War, U.S. entry into the First World War, and potential U.S. membership in the League of Nations—debates that were constitutive of larger battles over the nature of American society and its fragile political institutions and freedoms. During this period, foreign and domestic policy were often linked as part of a cohesive political vision for the country. Nichols illustrates this through intellectual profiles of some of the period’s most influential figures, including senators Henry Cabot Lodge and William Borah, socialist leader Eugene Debs, philosopher and psychologist William James, journalist Randolph Bourne, and the peace activist Emily Balch. Each of them interpreted isolationism and internationalism in distinct ways, sometimes deploying the concepts more for rhetorical purposes than as cornerstones of a particular worldview. Today, isolationism is often portrayed as intellectually bankrupt, a redoubt for idealists, nationalists, xenophobes, and fools. Yet the term now used as a political epithet has deep roots in American political culture. Isolationist principles can be traced back to George Washington’s farewell address, during which he urged his countrymen to steer clear of “foreign entanglements” while actively seeking nonbinding commercial ties. (Whether economic commitments do in fact entail political commitments is another matter.) Thomas Jefferson echoed this sentiment when he urged for “commerce with all nations, [and] alliance with none.” Even the Monroe Doctrine, in which the United States declared itself the regional hegemon and demanded noninterference from European states in the Western hemisphere, was often viewed as a means of isolating the United States from Europe and its messy alliance system. In Nichols’s telling, however, modern isolationism was born from the debates surrounding the Spanish-American War and the U.S. annexation of the Philippines. Here isolationism began to take on a much more explicitly anti-imperialist bent. Progressive isolationists such as William James found U.S. policy in the Philippines—which it had “liberated” from Spanish rule just to fight a bloody counterinsurgency against Philippine nationalists—anathema to American democratic traditions and ideas about national self-determination. As Promise and Peril shows, however, “cosmopolitan isolationists” like James never called for “cultural, economic, or complete political separation from the rest of the world.” Rather, they wanted the United States to engage with other nations peacefully and without pretensions of domination. They saw the United States as a potential force for good in the world, but they also placed great value on neutrality and non-entanglement, and wanted America to focus on creating a more just domestic order. James’s anti-imperialism was directly related to his fear of the effects of “bigness.” He argued forcefully against all concentrations of power, especially those between business, political, and military interests. He knew that such vested interests would grow larger and more difficult to control if America became an overseas empire. Others, such as “isolationist imperialist” Henry Cabot Lodge, the powerful senator from Massachusetts, argued that fighting the Spanish-American War and annexing the Philippines were isolationist actions to their core. First, banishing the Spanish from the Caribbean comported with the Monroe Doctrine; second, adding colonies such as the Philippines would lead to greater economic growth without exposing the United States to the vicissitudes of outside trade. Prior to the Spanish-American War, many feared that the American economy’s rapid growth would lead to a surplus of domestic goods and cause an economic disaster. New markets needed to be opened, and the best way to do so was to dominate a given market—that is, a country—politically. Lodge’s defense of this “large policy” was public and, by today’s standards, quite bald. Other proponents of this policy included Teddy Roosevelt (who also believed that war was good for the national character) and a significant portion of the business class. For Lodge and Roosevelt, “isolationism” meant what is commonly referred to today as “unilateralism”: the ability for the United States to do what it wants, when it wants. Other “isolationists” espoused principles that we would today call internationalist. Randolph Bourne, a precocious journalist working for the New Republic, passionately opposed American entry into the First World War, much to the detriment of his writing career. He argued that hypernationalism would cause lasting damage to the American social fabric. He was especially repulsed by wartime campaigns to Americanize immigrants. Bourne instead envisioned a “transnational America”: a place that, because of its distinct cultural and political traditions and ethnic diversity, could become an example to the rest of the world. Its respect for plurality at home could influence other countries by example, but also by allowing it to mediate international disputes without becoming a party to them. Bourne wanted an America fully engaged with the world, but not embroiled in military conflicts or alliances. This was also the case for William Borah, the progressive Republican senator from Idaho. Borah was an agrarian populist and something of a Jeffersonian: he believed axiomatically in local democracy and rejected many forms of federal encroachment. He was opposed to extensive immigration, but not “anti-immigrant.” Borah thought that America was strengthened by its complex ethnic makeup and that an imbalance tilted toward one group or another would have deleterious effects. But it is his famously isolationist foreign policy views for which Borah is best known. As Nichols writes: He was consistent in an anti-imperialist stance against U.S. domination abroad; yet he was ambivalent in cases involving what he saw as involving obvious national interest….He also without fail argued that any open-ended military alliances were to be avoided at all costs, while arguing that to minimize war abroad as well as conflict at home should always be a top priority for American politicians. Borah thus cautiously supported entry into the First World War on national interest grounds, but also led a group of senators known as “the irreconcilables” in their successful effort to prevent U.S. entry into the League of Nations. His paramount concern was the collective security agreement in the organization’s charter: he would not assent to a treaty that stipulated that the United States would be obligated to intervene in wars between distant powers where the country had no serious interest at stake. Borah possessed an alternative vision for a more just and pacific international order. Less than a decade after he helped scuttle American accession to the League, he helped pass the Kellogg-Briand Pact (1928) in a nearly unanimous Senate vote. More than sixty states eventually became party to the pact, which outlawed war between its signatories and required them to settle their disputes through peaceful means. Today, realists sneer at the idealism of Kellogg-Briand, but the Senate was aware of the pact’s limitations and carved out clear exceptions for cases of national defense. Some supporters believed that, if nothing else, the law would help strengthen an emerging international norm against war. (Given what followed, this seems like a sad exercise in wish-fulfillment.) Unlike the League of Nations charter, the treaty faced almost no opposition from the isolationist bloc in the Senate, since it did not require the United States to enter into a collective security agreement or abrogate its sovereignty. This was a kind of internationalism Borah and his irreconcilables could proudly support. The United States today looks very different from the country in which Borah, let alone William James, lived, both domestically (where political and civil freedoms have been extended to women, African Americans, and gays and lesbians) and internationally (with its leading role in many global institutions). But different strains of isolationism persist. Newt Gingrich has argued for a policy of total “energy independence” (in other words, domestic drilling) while fulminating against President Obama for “bowing” to the Saudi king. While recently driving through an agricultural region of rural Colorado, I saw a giant roadside billboard calling for American withdrawal from the UN. Yet in the last decade, the Republican Party, with the partial exception of its Ron Paul/libertarian faction, has veered into such a belligerent unilateralism that its graybeards—one of whom, Senator Richard Lugar of Indiana, just lost a primary to a far-right challenger partly because of his reasonableness on foreign affairs—were barely able to ensure Senate ratification of a key nuclear arms reduction treaty with Russia. Many of these same people desire a unilateral war with Iran. And it isn’t just Republicans. Drone attacks have intensified in Yemen, Pakistan, and elsewhere under the Obama administration. Massive troop deployments continue unabated. We spend over $600 billion dollars a year on our military budget; the next largest is China’s, at “only” around $100 billion. Administrations come and go, but the national security state appears here to stay.

Advantage 2 is warming

#### Coal is increasing globally now- only nuclear solves warming

Tat ‘12 (Chee Hong Tat, Chief Executive, Energy Market Authority of Singapore, “Singapore International Market Week Publication”, “SECURING OUR ENERGY FUTURE APRIL 2012”, LEQ)

Nuclear Faces The Long Road Back For the nuclear industry, recovery will depend on turning around public opinion u For the nuclear industry, Fukushima will stand as the fault line dividing two eras. Before the catastrophic events of March 2011, nuclear energy had been reborn as the clean energy of choice, having emerged from decades as the pariah of the energy family. But the earthquake and tsunami that ripped through the Fukushima Daiichi nuclear power plant changed all of that, radically altering the energy landscape. For the atomic energy sector, it will be a long, hard and expensive road back. "Since the Fukushima disaster in Japan, the EU has begun to carry out comprehensive stress tests at its nuclear power plants," European Commissioner for Energy Mr GÜnther Oettinger said in a video pre- recorded for the Singapore International Energy Week (SIEW) 2011. "It [also] aims to put in place the most advanced legal framework for the sustainable use of nuclear energy." If anything, the Fukushima disaster has shown that nuclear power cannot operate in isolation, requiring instead a comprehensive and global approach to safety. "To strengthen nuclear safety world- wide, we would welcome other countries operating nuclear power plants to carry out similar assessments as soon as pos- sible," Mr Oettinger added. The International Energy Agency (IEA) has painted a gloomy picture of a world with what it calls a "low nuclear case". A reduced nuclear output will lead to "increased import bills, heightened energy security concerns, and make it harder and more expensive to combat climate change." In the immediate aftermath of the Fukushima disaster, Germany, Europe's biggest economy, closed eight of its 17 reactors permanently. It later formally announced plans to shut down its nuclear programme within 11 years. While nuclear has made a muted comeback since Fukushima – the US recently reaffirmed its commitment to nuclear by opening two new nuclear units, the first in 15 years, experts see continuing challenges that will make it very difficult for the nuclear power industry to expand beyond a small handful of reactor projects. China promises that nuclear can be made safer. In particular, its research into safer thorium fuel cycle technology has been applauded by the nuclear lobby. Despite this, experts say nuclear programmes worldwide are set to contract rather than expand. The low nuclear case foresees the total amount of nuclear power capacity fall- ing from 393GW at the end of 2010 to 335GW in 2035, a little more than half the levels previously set out in IEA's New Policies Scenario. New Policies Scenario The share of nuclear power in total gen- eration will drop from 13 per cent in 2010 to just seven per cent in 2035, with implications for energy security, diversity of the fuel mix, spending on energy imports, and energy-related CO2 emissions. "It is clear now that without nuclear, we cannot meet CO2 reduction targets," said IEA's former Executive Director, Mr Nobuo Tanaka, when he opened SIEW 2011 with his keynote lecture. Or, as the agency’s Chief Economist, Dr Fatih Birol, posits – make power in general "viciously more expensive" and close the door to 2°C forever. A shift away from nuclear power "would definitely be bad news for energy security, for climate change and also for the eco- A shift away from nuclear power would definitely be bad news for energy security, for climate change, and also for the economics of the electricity price nomics of the electricity price," he added. Research into small modular reactors (SMR) is still in its infancy although the reduced cost of a 10MW modular unit that could power about 7,000 homes, compared with the one million homes from a conven- tional reactor, is receiving attention. ThE EvEr- ShriNkiNG piE The drastically-altered landscape can be seen in IEA projections for nuclear. Under its 2010 outlook, there was to be a 90 per cent increase in nuclear capacity. This compares with its latest projection of 60 per cent for the same period from 2011. While there will now be heavy reliance on the lighter emissions of gas to meet green house targets, the nuclear disaster has been an unexpected fillip for the renewables and alternative energy sector. The rise was driven by the solar power industry, where the value of transac- tions jumped by 56 per cent to $15.8 billion, to account for almost one-third of take-overs, according to advisory firm PricewaterhouseCoopers. Nevertheless, analysts say any surge in renewable energy is likely to be eclipsed by a return to coal, with a powerfully negative effect on CO2 emissions. Even before the Japanese earthquake, the nuclear industry was struggling. Weak power demand due to the reces-sion and cheaper alternatives such as gas and coal made it difficult to justify the hefty investment in reactors. Only those plants with strong government backing were going ahead. With nuclear-agnostic countries dropping plans for civil nuclear indus- tries, China remains the last hope of the beleaguered sector. While China froze approvals of new nuclear plants follow- ing Fukushima, it has already restarted its programme and the country is set to dominate the nuclear landscape. The PRC's 2020 target of reaching 80,000MW of nuclear capacity, from 10,000MW last year, may have been reduced due to delays caused by Fukush- ima. Nevertheless, its ambitious projects are putting most of the other countries' nuclear plans in the shade. Meanwhile, other emerging econo- mies, including India and the United Arab Emirates, are also planning signifi- cant investments in new reactors. Nuclear’s share of electricity generation is also likely to slip as other forms of generation grow more quickly. In the developed world, the emphasis is on finding alternatives to nuclear power. In Japan, which derived some 30 per cent of its electricity from nuclear power plants prior to Fukushima, efforts to regain public support for restarting the re- actors have made little headway. Since the tsunami, 52 out of the nation's 54 reactors have been offline as of March 2012. One important litmus of the industry's health has been companies that service the nuclear energy marketplace. They, too, have been repositioning themselves in an increasingly unattractive market. Shaw, the US civil engineering com- pany, has sold its 20 per cent stake in nuclear engineering group Westinghouse Electric Company to Toshiba of Japan. Toshiba, for its part, plans to sell the holding to another investor. General Electric, the US industrial group that is one of the world's lead- ing nuclear engineers through its joint venture with Hitachi of Japan, has said it does not hold out much hope for market growth in the immediate future. It now expects nuclear power to decline in importance as other parts of the business grow more rapidly.

#### SMR’s jump-start the US nuclear industry- DOD key

Loudermilk and Andres ‘10 (Richard B. Andres is a Senior Fellow at the Institute for National Strategic Studies at National Defense University and a Professor of National Security Strategy at the National War College, Micah J. Loudermilk is a researcher at the Institute for National Strategic Studies at National Defense University, “Small Reactors and the Military's Role in Securing America's Nuclear Industry”, <http://sitrep.globalsecurity.org/articles/100823646-small-reactors-and-the-militar.htm>, April 23, 2010, LEQ)

Faced with the dual-obstacles of growing worldwide energy demand and a renewed push for clean energy, the stage is set for a vibrant revival of the nuclear power industry in the United States. During his 2008 campaign, President Barack Obama committed to setting the country on the road to a clean, secure, and independent energy future - and nuclear power can play a vital role in that. With abundant energy resources available and near-zero emission levels, nuclear power offers a domestically-generated, clean, and long-term solution to America's energy dilemma. While countries around the world are building new reactors though, the U.S. nuclear power industry has remained dormant - and even borders on extinction - as no new plants have been approved for construction in the more than three decades following the Three Mile Island accident in 1979. Although Congress and the Executive Branch have passed laws and issued proclamations over the years, little actual progress has been made in the nuclear energy realm. A number of severe obstacles face any potential entrant into the reactor market - namely the Nuclear Regulatory Commission (NRC), which lacks the budget and manpower necessary to seriously address nuclear power expansion. Additionally, public skepticism over the safety of nuclear power plants has impeded serious attempts at new plant construction. However, despite the hurdles facing private industry, the U.S. military is in a position to take a leading role in the advancement of nuclear reactor technology through the integration of small reactors on its domestic bases. While the Obama Administration has pledged $8 billion in federal loan guarantees to the construction of two new reactors in Georgia and an additional $36 billion in new guarantees to the nuclear industry, this comes on top of $18.5 billion budgeted, but unspent, dollars. Despite this aid, it is still improbable that the U.S. will see any new large reactors now or in the foreseeable future as enormous cost, licensing, construction, and regulatory hurdles must be overcome. In recent years though, attention in the nuclear energy sphere has turned in a new direction: small-scale reactors. These next-generation reactors seek to revolutionize the nuclear power industry and carry a host of benefits that both separate them from their larger cousins and provide a legitimate opportunity to successfully reinvigorate the American nuclear industry. When compared to conventional reactors, small reactors have a number of advantages. First, the reactors are both small and often scalable - meaning that sites can be configured to house one to multiple units based on power needs. Although they only exist on paper and the military has yet to embrace a size or design, the companies investing in these technologies are examining a range of possibilities. Hyperion, for example, is working on a so-called "nuclear battery" - a 25 MWe sealed and transportable unit the size of a hot tub. Similarly, Babcock & Wilcox - the company which built many of the Navy's reactors - is seeking licensing for its mPower reactor, which is scalable and produces 125 MWe of power per unit. Other designs, such as Westinghouse's International Reactor Innovative and Secure (IRIS) model, have a generating capacity of up to 335 MWe. Second, large reactors come with enormous price tags - often approaching $10 billion in projected costs. The costs associated with building new reactors are so astronomical that few companies can afford the capital outlay to finance them. Additionally, the risks classically associated with the construction of nuclear reactors serve as an additional deterrent to interested utilities. As a result, companies must be willing to accept significant financial risks since ventures could potentially sink them or result in credit downgrades - as evidenced by the fact that 40 of 48 utilities issuing debt to nuclear projects suffered downgrades following the accident at Three Mile Island. All of this adds up to an environment that is not conducive to the sponsorship of new reactor plants. On the other hand, small reactors are able to mostly circumvent the cost hurdles facing large reactors. During the construction of large reactors, utilities face "single-shaft risk" - forced to invest and tie up billions of dollars in a single plant. However, small reactors present the opportunity for utilities to buy and add reactor capacity as needed or in a step-by-step process, as opposed to an all-or-nothing approach. Small reactors are also factory-constructed and shipped, not custom-designed projects, and can be built and installed in half the time - all of which are cost-saving measures. Additionally, despite concerns from critics over the proliferation and safety risks that a cadre of small reactors would potentially pose, the reality is considerably different. On the safety side, the new designs boast a number of features - including passive safety measures and simpler designs, thus reducing the number of systems to monitor and potential for system failure, enhancing the safety of the reactors. Small reactors can often be buried underground, are frequently fully contained and sealed (complete with a supply of fuel inside), can run longer between refueling cycles, and feature on-site waste storage - all of which serve to further insulate and secure the units. Finally, due to their small size, the reactors do not require the vast water resources needed by large reactors and in the event of an emergency, are far easier to isolate, shut off, and cool down if necessary. Notwithstanding all of these benefits, with a difficult regulation environment, anti-nuclear lobbying groups, and skeptical public opinion, the nuclear energy industry faces an uphill - and potentially unwinnable - battle in the quest for new reactors in the United States. Left to its own devices it is unlikely, at best, that private industry will succeed in bringing new reactors to the U.S. on its own. However, a route exists by which small reactors could potentially become a viable energy option: the U.S. military. Since 1948, the U.S. Navy has deployed over 500 reactors and possesses a perfect safety record in managing them. At the same time, grave concern exists over the fact that U.S. military bases are tied to and entirely dependent upon the civilian electric grid - from which they receive 99% of their power. Recently, attention has turned to the fact that the civilian grid, in addition to accidents, is vulnerable to cyber or terrorist attacks. In the event of a deliberate attack on the United States that knocks out all or part of the electric grid, the assets housed at the affected bases would be unavailable and U.S. global military operations potentially jeopardized. The presence of small-scale nuclear reactors on U.S. military bases would enable these facilities to effectively become "islands" - insulating them from the civilian grid and even potentially deterring attacks if the opponent knows that the military network would be unaffected. Unlike private industry, the military does not face the same regulatory and congressional hurdles to constructing reactors and would have an easier time in adopting them for use. By integrating small nuclear reactors as power sources for domestic U.S. military bases, three potential energy dilemmas are solved at the same time. First, by incorporating small reactors at its bases, the military addresses its own energy security quandary. The military has recently sought to "island" its bases in the U.S. -protecting them from grid outages, be they accidental or intentional. The Department of Defense has promoted this endeavor through lowering energy consumption on bases and searching for renewable power alternatives, but these measures alone will prove insufficient. Small reactors provide sufficient energy output to power military installations and in some cases surrounding civilian population centers. Secondly, as the reactors become integrated on military facilities, the stigma on the nuclear power industry will ease and inroads will be created for the adoption of small-scale reactors as a viable source of energy. Private industry and the public will see that nuclear reactors can indeed be utilized safely and effectively, resulting in a renewed push toward the expansion of nuclear power. Although many of the same hurdles will still be in place, a shift in public opinion and a stronger effort by utilities, coupled with the demonstrated success of small reactors on military bases, could prove the catalysts necessary for the federal government and the NRC to take more aggressive action.

#### Other countries model our technology- global demonstration

**Traub 12/14** (James, fellow of the Centre on International Cooperation. He writes Terms of Engagement for Foreign Policy,” “Transforming the future lies in our hands,” <http://gulfnews.com/opinions/columnists/transforming-the-future-lies-in-our-hands-1.1118704>, December 14, 2012)

Despite President Barack Obama’s vow, in his first post-reelection press conference, to take decisive action on climate change, the global climate talks in Doha dragged to a close with the US, as usual, a target of activists’ wrath. The Obama administration has shown no interest in submitting to a binding treaty on carbon emissions and refuses to increase funding to help developing countries reduce their own emissions, even as the US continues to behave as a global scofflaw on climate change. Actually, that is not true — the last part, anyway. According to the International Energy Agency, US emissions have dropped 7.7 per cent since 2006 — “the largest reduction of all countries or regions”. Yes, you read that correctly. The US, which has refused to sign the Kyoto Accords establishing binding targets for emissions, has reduced its carbon footprint faster than the greener-than-thou European countries. The reasons for this have something to do with climate change itself (warm winters mean less heating oil — something to do with market forces — the shift from coal to natural gas in power plants) and something to do with policy at the state and regional levels. And in the coming years, as both new gas-mileage standards and new power-plant regulations, championed by the Obama administration kick in, policy will drive the numbers further downwards. US emissions are expected to fall 23 per cent between 2002 and 2020. Apparently, Obama’s record on climate change is not quite as calamitous as reputation would have it. The West has largely succeeded in bending downwards the curve of carbon emissions. However, the developing world has not. Last year, China’s emissions rose 9.3 per cent; India’s, 8.7 per cent. China is now the world’s No 1 source of carbon emissions, followed by the US, the European Union (EU) and India. The emerging powers have every reason to want to emulate the energy-intensive economic success of the West — even those, like China, who have taken steps to increase energy efficiency, are not prepared to do anything to harm economic growth. The real failure of US policy has been, first, that it is still much too timid; and second, that it has not acted in such a way as to persuade developing nations to take the truly difficult decisions which would put the world on a sustainable path. There is a useful analogy with the nuclear nonproliferation regime. In an earlier generation, the nuclear stockpiles of the US and the Soviet Union posed the greatest threat to global security. Now, the threat comes from the proliferation of weapons to weak or rogue states or to non-state actors. However, the only way that Washington can persuade other governments to join in a tough nonproliferation regime is by taking the lead in reducing its own nuclear stockpile — which the Obama administration has sought to do, albeit with very imperfect success. In other words, where power is more widely distributed, US action matters less in itself, but carries great weight as a demonstration model — or anti-demonstration model. Logic would thus dictate that the US bind itself in a global compact to reduce emissions, as through the Nuclear Nonproliferation Treaty (NPT) it has bound itself to reduce nuclear weapons. However, the Senate would never ratify such a treaty. And even if it did, would China and India similarly bind themselves? Here the nuclear analogy begins to break down because the NPT mostly requires that states submit to inspections of their nuclear facilities, while a climate change treaty poses what looks very much like a threat to states’ economic growth. Fossil fuels are even closer to home than nukes. Is it any wonder that only EU countries and a few others have signed the Kyoto Accords? A global version of Kyoto is supposed to be readied by 2015, but a growing number of climate change activists — still very much a minority — accept that this may not happen and need not happen. So what can Obama do? It is possible that much tougher action on emissions will help persuade China, India and others that energy efficiency need not hinder economic growth. As Michael Levi, a climate expert at the Council on Foreign Relations points out, the US gets little credit abroad for reducing emissions largely — thanks to “serendipitous” events. Levi argues, as do virtually all policy thinkers and advocates, that the US must increase the cost of fossil fuels, whether through a “carbon tax” or cap-and-trade system, so that both energy efficiency and alternative fuels become more attractive and also to free-up money to be invested in new technologies. This is what Obama’s disappointed supporters thought he would do in the first term and urge him to do now. Obama is probably not going to do that. In his post-election news conference, he insisted that he would find “bipartisan” solutions to climate change and congressional Republicans are only slightly more likely to accept a sweeping change in carbon pricing than they are to ratify a climate-change treaty. The president also said that any reform would have to create jobs and growth, which sounds very much like a signal that he will avoid new taxes or penalties (even though advocates of such plans insist that they would spur economic growth). All these prudent political calculations are fine when you can afford to fail. But we cannot afford to fail. Global temperatureshave alreadyincreased 0.7 degrees Celsius. Disasterreallystrikes ata2 degree Celsius increase, which leads to large-scale drought, wildfires, decreased food production and coastal flooding. However, the current global trajectory of coal, oil and gas consumption means that, according to Fatih Birol, the International Energy Agency’s chief economist, “the door to a 2 degreeCelsius trajectory is about to close.” That is how dire things are. What, then, can Obama do that is equal to the problem? He can invest. Once the fiscal cliff negotiations are behind him, and after he has held his planned conversation with “scientists, engineers and elected officials,” he can tell the American people that they have a once-in-a-lifetime opportunity to transform the future — for themselves and for people everywhere. He can propose — as he hoped to do as part of the stimulus package of 2009 — that the US build a “smart grid” to radically improve the efficiency of electricity distribution. He can argue for large-scale investments in research and development of new sources of energy and energy-efficient construction technologies and lots of other whiz-bang things. This, too, was part of the stimulus spending; it must become bigger and permanent. The reason Obama should do this is, first, because the American people will (or could) rally behind a visionary programme in a way that they never will get behind the dour mechanics of carbon pricing. Second, because the way to get to a carbon tax is to use it as a financing mechanism for such a plan. Third, because oil and gas are in America’s bloodstream; as Steven Cohen, executive director of the Earth Institute, puts it: “The only thing that’s going to drive fossil fuels off the market is cheaper renewable energy.” Fourth, the US cannot afford to miss out on the gigantic market for green technology. Finally, there’s leverage. China and India may not do something sensible but painful, like adopting carbon pricing, because the US does so, but they will adopt new technologies if the US can prove that they work without harming economic growth. Developing countries have already made major investments in reducing air pollution, halting deforestation and practising sustainable agriculture. They are just too modest. It is here, above all, that the US can serve as a demonstration model — the world’s most egregious carbon consumer showing the way to a low-carbon future. Global warming-denial is finally on the way out. Three-quarters of Americans now say they believe in global warming and more than half believe that humans are causing it and want to see a US president take action. President Obama does not have to do the impossible. He must, however, do the possible.

#### The status quo is NOT solving- domestic action spills over to climate negations that solve the worst impacts of warming

Eilperin 2/6 (Juliety Eilperin, McGraw Professor of Journalism at Princeton University, magna cum laude from Princeton University, where she received a bachelor's in Politics, Reporter for the Washington Times, “U.S. could fall short of 2020 climate goal, new study says, but target remains in reach”, <http://www.washingtonpost.com/national/health-science/us-could-fall-short-of-2020-climate-goal-new-study-says-but-target-remains-in-reach/2013/02/06/128f8f82-6f08-11e2-ac36-3d8d9dcaa2e2_story_1.html>, February 6, 2013)

The United States is not on track to meet its international commitment to cut greenhouse gas emissions by 2020, according to an analysis released Wednesday by the World Resources Institute. The new findings examine the impact of the U.S. energy and transportation sectors as well as sources such as methane releases from landfills. The economic recession and a turn to natural gas for electricity production have caused a dip in greenhouse gas emissions, but the temporary decline isn’t enough for the United States to meet its pledged reduction of 17 percent by 2020, according to the World Resources Institute, which recommends an ambitious approach to tackling emissions. The economic recession and a turn to natural gas for electricity production have caused a dip in greenhouse gas emissions, but the temporary decline isn’t enough for the United States to meet its pledged reduction of 17 percent by 2020, according to the World Resources Institute, which recommends an ambitious approach to tackling emissions. The study gives a pessimistic view of the future even though carbon emissions have fallen in recent years because of the economic downturn and increased use of natural gas to produce electricity. While the Obama administration has taken several steps to curb greenhouse gas emissions, such as imposing the first carbon limits on vehicles and new power plants, the analysis suggests that non-carbon emissions from the U.S. natural gas boom and from chemicals used as refrigerants are on the rise. The U.S. target is to cut greenhouse gas emissions 17 percent by 2020 compared with 2005 levels. Energy-related carbon dioxide emissions have fallen 8.7 percent compared with 2005 levels and are projected to stay near that level through 2035. But greenhouse gas emissions from other sources are expected to increase 18 percent by 2020 compared with the 2005 baseline and 36 percent by 2035. Imposing greenhouse gas emission limits on existing power plants — a policy the White House is considering — could halve the gap between the current trajectory and the country’s 2020 climate target. Phasing out hydrofluorocarbons (HFCs), used in cooling equipment from soda machines to many car air conditioners, would make up 23 percent of the gap, according to the report, while stricter federal rules for natural-gas methane emissions and energy efficiency standards would make up 11 percent and 8 percent, respectively, of the difference. “The U.S. is not yet on track to hit its 17 percent target, but we have the tools to get there,” said Nicholas Bianco, a senior associate at World Resources Institute and the report’s lead author. Michael A. Levi, a senior fellow for energy and the environment at the Council on Foreign Relations, praised the report as “the first serious attempt to show what it would take to slash emissions over the next two decades without new legislation.” Facing stiff congressional opposition, President Obama has made clear that he plans to undertake more ambitious action on climate change in his second term by using existing regulatory authority. Durwood Zaelke, president of the Institute for Governance and Sustainable Development, noted that the car sector accounts for roughly half of U.S. HFC use, “making this the biggest opportunity for getting rid of this super greenhouse gas.” “The last time we changed the coolant in our cars, it only took three years to change the fleet in the U.S. and most of the world,” he added. Without setting these and other climate polices in motion, the WRI analysts warn, the United States will find itself falling short of the pledge it made in 2009 as part of U.N. climate negotiations. While the commitment is more modest than many scientists and other world leaders have called for, the United States’ ability to meet it could influence whether more than 190 nations can broker a new climate pact over the next three years that would take effect in 2020. Neil Morisetti, Britain’s climate and energy security envoy, said in a phone interview that the United States and other industrialized nations need to fulfill their climate pledges both to build trust among negotiators and to ensure that any global warming agreement delivers results. “It is important, having made that commitment, that you deliver against it,” Morisetti said of the current U.S. climate pledge. He added that when it comes to any future treaty, “it’s important not only that we sign bits of paper, but we have a plan to get there. It is that action by national governments that is the wind beneath the sails.” Jake Schmidt, international climate policy director for the Natural Resources Defense Council, an advocacy group, said that the rest of the world “will be looking to see what the U.S. does in the next few months,” given the signal that Obama has sent about tackling global warming. “It will show the U.S. can follow through, even after the climate bill demise” of 2010, Schmidt added. Still, Levi warned, the report “also emphasizes how unlikely we are to achieve deep emissions cuts without meaningful congressional action, particularly beyond 2020.” Ultimately, Levi said, the critical climate question is how the United States and the rest of the world will cut greenhouse gas emissions through 2030 and 2050, since that will have a much bigger impact on future warming. “Steps between now and 2020 should be evaluated primarily based on how they set the U.S. up for the longer term, not on the exact number of tons that get cut in the next eight years,” he said.

#### Warming causes extinction- tipping point

Dyer ‘12 (London-based independent journalist, PhD from King's College London, citing UC Berkeley scientists (Gwynne, "Tick, tock to mass extinction date," The Press, 6-19-12, l/n, accessed 8-15-12, mss)

Meanwhile, a team of respected scientists warn that life on Earth may be on the way to an irreversible "**tipping point"**. Sure. Heard that one before, too. Last month one of the world's two leading scientific journals, Nature, published a paper, "Approaching a state shift in Earth's biosphere," pointing out that more than 40 per cent of the Earth's land is already used for human needs. With the human population set to grow by a further two billion by 2050, that figure could soon exceed 50 per cent. "It really will be a new world, biologically, at that point," said the paper's lead author, Professor Anthony Barnofsky of the University of California, Berkeley. But Barnofsky doesn't go into the details of what kind of new world it might be. Scientists hardly ever do in public, for fear of being seen as panic-mongers. Besides, it's a relatively new hypothesis, but it's a pretty convincing one, and it should be more widely understood. Here's how bad it could get. The scientific consensus is that we are still on track for 3 degrees C of warming by 2100, but that's just warming caused by human greenhouse- gas emissions. The problem is that +3 degrees is well past the point where the major feedbacks kick in: natural phenomena triggered by our warming, like melting permafrost and the loss of Arctic sea-ice cover, that will add to the heating and that we cannot turn off. The trigger is actually around 2C (3.5 degrees F) higher average global temperature. After that we lose control of the process: ending our own carbon- dioxide emissions would no longer be enough to stop the warming. We may end up trapped on an escalator heading up to +6C (+10.5F), with no way of getting off. And +6C gives you the **mass extinction**. There have been five mass extinctions in the past 500 million years, when 50 per cent or more of the species then existing on the Earth vanished, but until recently the only people taking any interest in this were paleontologists, not climate scientists. They did wonder what had caused the extinctions, but the best answer they could come up was "climate change". It wasn't a very good answer. Why would a warmer or colder planet kill off all those species? The warming was caused by massive volcanic eruptions dumping huge quantities of carbon dioxide in the atmosphere for tens of thousands of years. But it was very gradual and the animals and plants had plenty of time to migrate to climatic zones that still suited them. (That's exactly what happened more recently in the Ice Age, as the glaciers repeatedly covered whole continents and then retreated again.) There had to be a more convincing kill mechanism than that. The paleontologists found one when they discovered that a giant asteroid struck the planet 65 million years ago, just at the time when the dinosaurs died out in the most recent of the great extinctions. So they went looking for evidence of huge asteroid strikes at the time of the other extinction events. They found none. What they discovered was that there was indeed major warming at the time of all the other extinctions - and that the warming had radically changed the oceans. The currents that carry oxygen- rich cold water down to the depths shifted so that they were bringing down oxygen- poor warm water instead, and gradually the depths of the oceans became anoxic: the deep waters no longer had any oxygen. When that happens, the sulfur bacteria that normally live in the silt (because oxygen is poison to them) come out of hiding and begin to multiply. Eventually they rise all the way to the surface over the whole ocean, killing all the oxygen-breathing life. The ocean also starts emitting enormous amounts of lethal hydrogen sulfide gas that destroy the ozone layer and directly poison land- dwelling species. This has happened many times in the Earth's history.

#### It will be rapid

**Light ‘12** (Malcolm, PhD, University of London – Earth science and climate consultant, “Global Extinction within one Human Lifetime as a Result of a Spreading Atmospheric Arctic Methane Heat wave and Surface Firestorm,” <http://arctic-news.blogspot.com/p/global-extinction-within-one-human.html>)

Although the sudden high rate Arctic methane increase at Svalbard in late 2010 data set applies to only a short time interval, similar sudden methane concentration peaks also occur at Barrow point and the effects of a major methane build-up has been observed using all the major scientific observation systems. Giant fountains/torches/plumes of methane entering the atmosphere up to 1 km across have been seen on the East Siberian Shelf. This methane eruption data is so consistent and aerially extensive that when combined with methane gas warming potentials, Permian extinction event temperatures and methane lifetime data it paints a frightening picture of the beginning of the now uncontrollable global warming induced destabilization of the subsea Arctic methane hydrates on the shelf and slope which started in late 2010. This process of methane release will **accelerate exponentially**, release huge quantities of methane into the atmosphere and lead to the demise of all life on earth before the middle of this century. Introduction The 1990 global atmospheric mean temperature is assumed to be 14.49 oC (Shakil, 2005; NASA, 2002; DATAWeb, 2012) which sets the 2 oC anomaly above which humanity will lose control of her ability to limit the effects of global warming on major climatic and environmental systems at 16.49 oC (IPCC, 2007). The major Permian extinction event temperature is 80 oF (26.66 oC) which is a temperature anomaly of 12.1766 oC above the 1990 global mean temperature of 14.49 oC (Wignall, 2009; Shakil, 2005). Results of Investigation Figure 1 shows a huge sudden atmospheric spike like increase in the concentration of atmospheric methane at Svalbard north of Norway in the Arctic reaching 2040 ppb (2.04 ppm)(ESRL/GMO, 2010 - Arctic - Methane - Emergency - Group.org). The cause of this sudden anomalous increase in the concentration of atmospheric methane at Svalbard has been seen on the East Siberian Arctic Shelf where a recent Russian - U.S. expedition has found widespread, continuous powerful methane seepages into the atmosphere from the subsea methane hydrates with the methane plumes (fountains or torches) up to 1 km across producing an atmospheric methane concentration 100 times higher than normal (Connor, 2011). Such high methane concentrations could produce local temperature anomalies of more than 50 oC at a conservative methane warming potential of 25. Figure 2 is derived from the Svalbard data in Figure 1 and the methane concentration data has been used to generate a Svalbard atmospheric temperature anomaly trend using a methane warming potential of 43.5 as an example. The huge sudden anomalous spike in atmospheric methane concentration in mid August, 2010 at Svalbard is clearly evident and the methane concentrations within this spike have been used to construct a series of radiating methane global warming temperature trends for the entire range of methane global warming potentials in Figure 3 from an assumed mean start temperature of -3.575 degrees Centigrade for Svalbard (see Figure 2) (Norwegian Polar Institute; 2011). Figure 3 shows a set of radiating Arctic atmospheric methane global warming temperature trends calculated from the steep methane atmospheric concentration gradient at Svalbard in 2010 (ESRL/GMO, 2010 - Arctic-Methane-Emergency-Group.org). The range of extinction temperature anomalies above the assumed 1990 mean atmospheric temperature of 14.49 oC (Shakil, 2005) are also shown on this diagram as well as the 80 oF (26.66 oC) major Permian extinction event temperature (Wignall, 2009). Sam Carana (pers. com. 7 Jan, 2012) has described large December 2011 (ESRL-NOAA data) warming anomalies which exceed 10 to 20 degrees centigrade and cover vast areas of the Arctic at times. In the centres of these regions, which appear to overlap the Gakkel Ridge and its bounding basins, the temperature anomalies may exceed 20 degrees centigrade. See this site:<http://www.esrl.noaa.gov/psd/map/images/fnl/sfctmpmero1a30frames.fnl.anim.html> The temperature anomalies in this region of the Arctic for the period from September 8 2011 to October 7, 2011 were only about 4 degrees Centigrade above normal (Carana, pers. com. 2012) and this data set can be seen on this site: <http://arctic-newsblogspot.com/p/arctic-temperatures.html> Because the Svalbard methane concentration data suggests that the major spike in methane emissions began in late 2010 it has been assumed for calculation purposes that the 2010 temperature anomalies peaked at 4 degrees Centigrade and the 2011 anomalies at 20 degrees Centigrade in the Gakkel Ridge region. The assumed 20 degree Centigrade temperature anomaly trend from 2010 to 2011 in the Gakkel Ridge region requires a methane gas warming potential of about 1000 to generate it from the Svalbard methane atmospheric concentration spike data in 2010. Such high methane warming potentials could only be active over a very short time interval (less than 5.7 months) as shown when the long methane global warming potential lifetimes data from the IPCC (2007; 1992) and Dessus, Laponte and Treut (2008 ) are used to generate a global warming potential growth curve with a methane global warming potential of 100 with a lifespan of 5 years. Because of the high methane global warming potential (1000) of the 2011, 20 oC temperature anomalies in the Gakkel Ridge region, the entire methane global warming potential range from 5 to 1000 has been used to construct the radiating set of temperature trends shown in Figure 3. The 50, 100, 500 and 1000 methane global warming potential (GWP) trends are red and in bold. The choice of a high temperature methane peak with a global warming potential near 1000 is in fact very conservative because the 16 oC increase is assumed to occur over a year. The observed ESRL-NOAA Arctic temperature anomalies varied from 4 to 20 degrees over less than a month in 2011 (Sam Carana, pers. comm. 2012). […] . This very narrow temperature range includes all the mathematically and visually determined extinction times and their means for the northern and southern hemispheres which were calculated quite separately (Figure 7; Table 1). Once the world's ice caps have completely melted away at temperatures above 22.49 oC and times later than 2051.3, the Earth's atmosphere will heat up at an extremely fast rate to reach the Permian extinction event temperature of 80oF (26.66 oC)(Wignall, 2009) by which time all life on Earth will have been completely extinguished. The position where the latent heat of ice melting curve intersects the 8 oC extinction line (22.49 oC) at 2051.3 represents the time when 100 percent of all the ice on the surface of the Earth will have melted. If we make this point on the latent heat of ice melting curve equal to 1 we can determine the time of melting of any fraction of the Earth's icecaps by using the time\*temperature function at each time from 2051.3 back to 2015, the time the average Arctic atmospheric temperature curve is predicted to exceed 0 oC. The process of melting 1 kg of ice and heating the produced water up to a certain temperature is a function of the sum of the latent heat of melting of ice is 334 kilo Joules/kg and the final water temperature times the 4.18 kilo Joules/Kg.K (Wikipedia, 2012). This however represents the energy required over a period of one second to melt 1 kg of ice to water and raise it to the ambient temperature. Therefore the total energy per mass of ice over a certain time period is equal to (334 +(4.18\*Ambient Temperature)\*time in seconds that the melted water took to reach the ambient temperature. From the fractional time\*temperature values at each ambient temperature the fractional amounts of melting of the total global icecaps have been calculated and are shown on Figure 9. The earliest calculated fractional volume of melting of the global ice caps in 2016 is 1.85\*10^-3 of the total volume of global ice with an average yearly rate of ice melting of 2.557\*10^-3 of the total volume of global ice. This value is remarkably similar to, but slightly less than the average rate of melting of the Arctic sea ice measured over an 18 year period of 2.7\*10^-3 (1978 to 1995; 2.7% per decade - IPCC 2007).This close correlation between observed rates of Arctic ice cap and predicted rates of global ice cap melting indicates that average rates of Arctic ice cap melting between 1979 and 2015 (which represents the projected time the Arctic will lose its ice cover - Masters, 2009) will be continued during the first few years of melting of the global ice caps after the Arctic ice cover has gone in 2015 as the mean Arctic atmospheric temperature starts to climb above 0 oC. However from 2017 the rate of melting of the global ice will start to accelerate as will the atmospheric temperature until by 2049 it will be more than 9 times as fast as it was around 2015 (Table 2). The mean rate of melting of the global icecap between 2017 and 2049 is some 2\*10^-2, some 7.4 times the mean rate of melting of the Arctic ice cap (Table 2). In concert with the increase in rate of global ice cap melting between 2017 and 2049, the acceleration in the rate of melting also increases from 7\*10^-4 to 9.9\*10^-4 with a mean value close to 8.6\*10^-4 (Table 2). The ratio of the acceleration in the rate of global ice cap melting to the Arctic ice cap melting increases from 3.4 in 2017 to 4.8 by 2049 with a mean near 4.2. This fast acceleration in the rate of global ice cap melting after 2015 compared to the Arctic sea ice cap melting before 2015 is because the mean Arctic atmospheric temperature after 2017 is spiraling upward in temperature above 0 oC adding large amounts of additional energy to the ice and causing it to melt back more quickly. The melt back of the Arctic ice cap is a symptom of the Earth's disease but not its cause and it is the cause that has to be dealt with if we hope to bring about a cure. Therefore a massive cut back in carbon dioxide emissions should be mandatory for all developed nations (and some developing nations as well). Total destruction of the methane in the Arctic atmosphere is also mandatory if we are to survive the effects of its now catastrophic rate of build up in the atmospheric methane concentration However cooling of the Arctic using geoengineering methods is also vitally important to reduce the effects of the ice cap melting further enhancing the already out of control destabilization of the methane hydrates on the Arctic shelf and slope. · Developed (and some developing) countries must cut back their carbon dioxide emissions by a very large percentage (50% to 90%) by 2020 to immediately precipitate a cooling of the Earth and its crust. If this is not done the earthquake frequency and methane emissions in the Arctic will continue to grow exponentially leading to our inexorable demise between 2031 to 2051. · Geoenginering must be used immediately as a cooling method in the Arctic to counteract the effects of the methane buildup in the short term. However these methods will lead to further pollution of the atmosphere in the long term and will not solve the earthquake induced Arctic methane buildup which is going to lead to our annihilation. · The United States and Russia must immediately develop a net of powerful radio beat frequency transmission stations around the Arctic using the critical 13.56 MHZ beat frequency to break down the methane in the stratosphere and troposphere to nanodiamonds and hydrogen (Light 2011a) . Besides the elimination of the high global warming potential methane, the nanodiamonds may form seeds for light reflecting noctilucent clouds in the stratosphere and a light coloured energy reflecting layer when brought down to the Earth by snow and rain (Light 2011a). HAARP transmission systems are able to electronically vibrate the strong ionospheric electric current that feeds down into the polar areas and are thus the least evasive method of directly eliminating the buildup of methane in those critical regions (Light 2011a). The warning about extinction is stark. It is remarkable that global scientists had not anticipated a giant buildup of methane in the atmosphere when it had been so clearly predicted 10 to 20 years ago and has been shown to be critically linked to extinction events in the geological record (Kennett et al. 2003). Furthermore all the experiments should have already been done to determine which geoengineering methods were the most effective in oxidising/destroying the methane in the atmosphere in case it should ever build up to a concentration where it posed a threat to humanity. Those methods need to be applied immediately if there is any faint hope of reducing the catastrophic heating effects of the fast building atmospheric methane concentration.

#### Its anthro- 500 studies go aff

Romm ‘10 (Jon, Editor of Climate Progress, Senior Fellow at the American Progress, former Acting Assistant Secretary of Energy for Energy Efficiency and Renewable Energy, Fellow of the American Association for the Advancement of Science, “Disputing the “consensus” on global warming,” <http://climateprogress.org/2010/06/16/scientific-consensus-on-global-warming-climate-science/>,)

A good example of how scientific evidence drives our understanding concerns how we know that humans are the dominant cause of global warming. This is, of course, the deniers’ favorite topic. Since it is increasingly obvious that the climate is changing and the planet is warming, the remaining deniers have coalesced to defend their Alamo — that human emissions aren’t the cause of recent climate change and therefore that reducing those emissions is pointless. Last year, longtime Nation columnist [Alexander Cockburn wrote](http://www.counterpunch.org/cockburn04282007.html), “There is still zero empirical evidence that anthropogenic production of CO2 is making any measurable contribution to the world’s present warming trend. The greenhouse fearmongers rely entirely on unverified, crudely oversimplified computer models to finger mankind’s sinful contribution.” In fact, the evidence is amazingly strong. Moreover, if the relatively complex climate models are oversimplified in any respect, it is by omitting amplifying feedbacks and other factors that suggest human-caused climate change will be worse than is widely realized. The [IPCC concluded](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Ch09.pdf) last year: “Greenhouse gas forcing has very likely (>90 percent) caused most of the observed global warming over the last 50 years. This conclusion takes into account … the possibility that the response to solar forcing could be underestimated by climate models.” Scientists have come to understand that “forcings” (natural and human-made) explain most of the changes in our climate and temperature both in recent decades and over the past millions of years. The primary human-made forcings are the heat-trapping greenhouse gases we generate, particularly carbon dioxide from burning coal, oil and natural gas. The natural forcings include fluctuations in the intensity of sunlight (which can increase or decrease warming), and major volcanoes that inject huge volumes of gases and aerosol particles into the stratosphere (which tend to block sunlight and cause cooling)…. Over and over again, scientists have demonstrated that observed changes in the climate in recent decades can only be explained by taking into account the observed combination of human and natural forcings. Natural forcings alone just don’t explain what is happening to this planet. For instance, in April 2005, one of the nation’s top climate scientists, NASA’s James Hansen, led a team of scientists that made “precise measurements of increasing ocean heat content over the past 10 years,” which revealed that the Earth is absorbing far more heat than it is emitting to space, confirming what earlier computer models had shown about warming. [Hansen called](http://www.columbia.edu/~jeh1/imbalance_release.pdf) this energy imbalance the “smoking gun” of climate change, and said, “There can no longer be genuine doubt that human-made gases are the dominant cause of observed warming.” Another 2005 study, led by the Scripps Institution of Oceanography, compared actual ocean temperature data from the surface down to hundreds of meters (in the Atlantic, Pacific and Indian oceans) with climate models and [concluded](http://www.sciencemag.org/cgi/content/abstract/1112418): A warming signal has penetrated into the world’s oceans over the past 40 years. The signal is complex, with a vertical structure that varies widely by ocean; it cannot be explained by natural internal climate variability or solar and volcanic forcing, but is well simulated by two anthropogenically [human-caused] forced climate models. We conclude that it is of human origin, a conclusion robust to observational sampling and model differences. Such studies are also done for many other observations: land-based temperature rise, atmospheric temperature rise, sea level rise, arctic ice melt, inland glacier melt, Greeland and Antarctic ice sheet melt, expansion of the tropics (desertification) and changes in precipitation. Studies compare every testable prediction from climate change theory and models (and suggested by paleoclimate research) to actual observations. How many studies? Well, the IPCC’s definitive treatment of the subject, “Understanding and Attributing Climate Change,” has 11 full pages of references, some 500 peer-reviewed studies. This is not a consensus of opinion. It is what scientific research and actual observations reveal. And the science behind human attribution has gotten much stronger in the past 2 years (see a recent literature review by the Met Office [here](http://www.metoffice.gov.uk/corporate/pressoffice/2010/pr20100305.html)). That brings us to another problem with the word “consensus.” It can mean “unanimity” or “the judgment arrived at by most of those concerned.” Many, if not most, people hear the second meaning: “consensus” as majority opinion. The scientific consensus most people are familiar with is the IPCC’s “Summary for Policymakers” reports. But those aren’t a majority opinion. Government representatives participate in a line-by-line review and revision of these summaries. So China, Saudi Arabia and that hotbed of denialism — the Bush administration — get to veto anything they don’t like. The deniers call this “politicized science,” suggesting the process turns the IPCC summaries into some sort of unscientific exaggeration. In fact, the reverse is true. The net result is unanimous agreement on a conservative or watered-down document. You could argue that rather than majority rules, this is “minority rules.” Last April, in an article titled “Conservative Climate,” [Scientific American](http://www.sciam.com/article.cfm?chanID=sa006&articleID=5B9E73AD-E7F2-99DF-3F71280BCE41ED77&colID=5) noted that objections by Saudi Arabia and China led the IPCC to remove a sentence stating that the impact of human greenhouse gas emissions on the Earth’s recent warming is five times greater than that of the sun. In fact, lead author Piers Forster of the University of Leeds in England said, “The difference is really a factor of 10.” Then I discuss the evidence we had even back in 2008 that the IPCC was underestimating key climate impacts, a point I [update here](http://climateprogress.org/2010/02/18/ipcc-lowballs-impacts-pachauri-disband/). The bottom line is that recent observations and research make clear the planet almost certainly faces a greater and more imminent threat than is laid out in the IPCC reports. That’s why climate scientists are so desperate. That’s why they keep begging for immediate action. And that’s why the “consensus on global warming” is a phrase that should be forever retired from the climate debate. The leading scientific organizations in this country and around the world, including all the major national academies of science, aren’t buying into some sort of consensus of opinion. They have analyzed the science and observations and expressed their understanding of climate science and the likely impacts we face on our current emissions path — an understanding that has grown increasingly dire in recent years (see “[An illustrated guide to the latest climate science](http://climateprogress.org/2010/02/17/an-illustrated-guide-to-the-latest-climate-science/)” and “[An introduction to global warming impacts: Hell and High Water](http://climateprogress.org/2009/03/22/an-introduction-to-global-warming-impacts-hell-and-high-water/)“).

solvency

#### First is Small Modular Nuclear Reactor solves-

#### SMR’s are an energy game changer- but purchasing agreements are key to jump-start the industry

Madia (Chairman of the Board of Overseers and Vice President for the NAL at Stanford and was the Laboratory Director at the Oak Ridge National Laboratory and the Pacific Northwest National Laboratory) ‘12 (William Madia, Stanford Energy Journal, Dr. Madia serves as Chairman of the Board of Overseers and Vice President for the SLAC National Accelerator Laboratory at Stanford University. Previously, he was the Laboratory Director at the Oak Ridge National Laboratory from 2000-2004 and the Pacific Northwest National Laboratory from 1994-1999., “SMALL MODULAR REACTORS: A POTENTIAL GAME-CHANGING TECHNOLOGY”, <http://energyclub.stanford.edu/index.php/Journal/Small_Modular_Reactors_by_William_Madia>, Spring 2012, LEQ)

There is a new type of nuclear power plant (NPP) under development that has the potential to be a game changer in the power generation market: the small modular reactor (SMR). Examples of these reactors that are in the 50-225 megawatt electric (MW) range can be found in the designs being developed and advanced by Generation mPower (http://generationmpower.com/), NuScale (http://nuscale.com/), the South Korean SMART reactor (http://smart.kaeri.re.kr/) and Westinghouse (http://www.westinghousenuclear.com/smr/index.htm/). Some SMR concepts are up to 20 times smaller than traditional nuclear plants Today’s reactor designers are looking at concepts that are 5 to 20 times smaller than more traditional gigawatt-scale (GW) plants. The reasons are straightforward; the question is, “Are their assumptions correct?” The first assumption is enhanced safety. GW-scale NPPs require sophisticated designs and cooling systems in case of a total loss of station power, as happened at Fukushima due to the earthquake and tsunami. These ensure the power plant will be able to cool down rapidly enough, so that the nuclear fuel does not melt and release dangerous radioactive fission products and hydrogen gas. SMRs are sized and designed to be able to cool down without any external power or human actions for quite some time without causing damage to the nuclear fuel. The second assumption is economics. GW-scale NPPs cost $6 billion to $10 billion to build. Very few utilities can afford to put this much debt on their balance sheets. SMRs offer the possibility of installing 50-225 MW of power per module at a total cost that is manageable for most utilities. Furthermore, modular configurations allow the utilities to deploy a more tailored power generation capacity, and that capacity can be expanded incrementally. In principle, early modules could be brought on line and begin producing revenues, which could then be used to fund the addition of more modules, if power needs arise. The third assumption is based on market need and fit. Utilities are retiring old fossil fuel plants. Many of them are in the few hundred MW range and are located near load centers and where transmission capacity currently exists. SMRs might be able to compete in the fossil re-power markets where operators don’t need a GW of power to serve their needs. This kind of “plug and play” modality for NPPs is not feasible with many of the current large-scale designs, thus giving carbon-free nuclear power an entry into many of the smaller markets, currently not served by these technologies. There are numerous reasons why SMRs might be viable today. Throughout the history of NPP development, plants grew in size based on classic “economies of scale” considerations. Bigger was cheaper when viewed on a cost per installed kilowatt basis. The drivers that caused the industry to build bigger and bigger NPPs are being offset today by various considerations that make this new breed of SMRs viable. Factory manufacturing is one of these considerations. Most SMRs are small enough to allow them to be factory built and shipped by rail or barge to the power plant sites. Numerous industry “rules of thumb” for factory manufacturing show dramatic savings as compared to “on-site” outdoor building methods.

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Significant schedule advantages are also available because weather delay considerations are reduced. Of course, from a total cost perspective, some of these savings will be offset by the capital costs associated with building multiple modules to get the same total power output. Based on analyses I have seen, overnight costs in the range of $5000 to $8000 per installed kilowatt are achievable. If these analyses are correct, it means that the economies of scale arguments that drove current designs to GW scales could be countered by the simplicity and factory-build possibilities of SMRs. No one has yet obtained a design certification from the Nuclear Regulatory Commission (NRC) for an SMR, so we must consider licensing to be one of the largest unknowns facing these new designs. Nevertheless, since the most developed of the SMRs are mostly based on proven and licensed components and are configured at power levels that are passively safe, we should not expect many new significant licensing issues to be raised for this class of reactor. Still, the NRC will need to address issues uniquely associated with SMRs, such as the number of reactor modules any one reactor operator can safely operate and the size of the emergency planning zone for SMRs. To determine if SMRs hold the potential for changing the game in carbon-free power generation, it is imperative that we test the design, engineering, licensing, and economic assumptions with some sort of public-private development and demonstration program. Instead of having government simply invest in research and development to “buy down” the risks associated with SMRs, I propose a more novel approach. Since the federal government is a major power consumer, it should commit to being the “first mover” of SMRs. This means purchasing the first few hundred MWs of SMR generation capacity and dedicating it to federal use. The advantages of this approach are straightforward. The government would both reduce licensing and economic risks to the point where utilities might invest in subsequent units, thus jumpstarting the SMR industry. It would then also be the recipient of additional carbon-free energy generation capacity. This seems like a very sensible role for government to play without getting into the heavy politics of nuclear waste, corporate welfare, or carbon taxes. If we want to deploy power generation technologies that can realize near-term impact on carbon emissions safely, reliably, economically, at scale, and at total costs that are manageable on the balance sheets of most utilities, we must consider SMRs as a key component of our national energy strategy.

#### And a purchase-power agreement solves best- generates learning benefits - the most qualified studies go aff- this comes from a 140 page U of Chicago economic study with over 100 authors that took 6 years

Rosner, Goldberg, and Hezir et. al. ‘11 (Robert Rosner, Robert Rosner is an astrophysicist and founding director of the Energy Policy Institute at Chicago. He was the director of Argonne National Laboratory from 2005 to 2009, and Stephen Goldberg, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, Joseph S. Hezir, Principal, EOP Foundation, Inc., Many people have made generous and valuable contributions to this study. Professor Geoff Rothwell, Stanford University, provided the study team with the core and supplemental analyses and very timely and pragmatic advice. Dr. J’Tia Taylor, Argonne National Laboratory, supported Dr. Rothwell in these analyses. Deserving special mention is Allen Sanderson of the Economics Department at the University of Chicago, who provided insightful comments and suggested improvements to the study. Constructive suggestions have been received from Dr. Pete Lyons, DOE Assistant Secretary of Nuclear Energy; Dr. Pete Miller, former DOE Assistant Secretary of Nuclear Energy; John Kelly, DOE Deputy Assistant Secretary for Nuclear Reactor Technologies; Matt Crozat, DOE Special Assistant to the Assistant Secretary for Nuclear Energy; Vic Reis, DOE Senior Advisor to the Under Secretary for Science; and Craig Welling, DOE Deputy Office Director, Advanced Reactor Concepts Office, as well as Tim Beville and the staff of DOE’s Advanced Reactor Concepts Office. The study team also would like to acknowledge the comments and useful suggestions the study team received during the peer review process from the nuclear industry, the utility sector, and the financial sector. Reviewers included the following: Rich Singer, VP Fuels, Emissions, and Transportation, MidAmerican Energy Co.; Jeff Kaman, Energy Manager, John Deere; Dorothy R. Davidson, VP Strategic Programs, AREVA; T. J. Kim, Director—Regulatory Affairs & Licensing, Generation mPower, Babcock & Wilcox; Amir Shahkarami, Senior Vice President, Generation, Exelon Corp.; Michael G. Anness, Small Modular Reactor Product Manager, Research & Technology, Westinghouse Electric Co.; Matthew H. Kelley and Clark Mykoff, Decision Analysis, Research & Technology, Westinghouse Electric Co.; George A. Davis, Manager, New Plant Government Programs, Westinghouse Electric Co.; Christofer Mowry, President, Babcock & Wilcox Nuclear Energy, Inc.; Ellen Lapson, Managing Director, Fitch Ratings; Stephen A. Byrne, Executive Vice President, Generation & Transmission Chief Operating Officer, South Carolina Electric & Gas Company; Paul Longsworth, Vice President, New Ventures, Fluor; Ted Feigenbaum, Project Director, Bechtel Corp.; Kennette Benedict, Executive Director, Bulletin of the Atomic Scientist; Bruce Landrey, CMO, NuScale; Dick Sandvik, NuScale; and Andrea Sterdis, Senior Manager of Strategic Nuclear Expansion, Tennessee Valley Authority. The authors especially would like to acknowledge the discerning comments from Marilyn Kray, Vice-President at Exelon, throughout the course of the study, “Small Modular Reactors – Key to Future Nuclear Power”, <http://epic.uchicago.edu/sites/epic.uchicago.edu/files/uploads/SMRWhite_Paper_Dec.14.2011copy.pdf>, November 2011, LEQ)

6.2 GOVERNMENT SPONSORSHIP OF MARKET TRANSFORMATION INCENTIVES Similar to other important energy technologies, such as energy storage and renewables, “market pull” activities coupled with the traditional “technology push” activities would significantly increase the likelihood of timely and successful commercialization. Market transformation incentives serve two important objectives. They facilitate demand for the off-take of SMR plants, thus reducing market risk and helping to attract private investment without high risk premiums. In addition, if such market transformation opportunities could be targeted to higher price electricity markets or higher value electricity applications, they would significantly reduce the cost of any companion production incentives. There are three special market opportunities that may provide the additional market pull needed to successfully commercialize SMRs: the federal government, international applications, and the need for replacement of existing coal generation plants. 6.2.1 Purchase Power Agreements with Federal Agency Facilities Federal facilities could be the initial customer for the output of the LEAD or FOAK SMR plants. The federal government is the largest single consumer of electricity in the U.S., but its use of electricity is widely dispersed geographically and highly fragmented institutionally (i.e., many suppliers and customers). Current federal electricity procurement policies do not encourage aggregation of demand, nor do they allow for agencies to enter into long-term contracts that are “bankable” by suppliers. President Obama has sought to place federal agencies in the vanguard of efforts to adopt clean energy technologies and reduce greenhouse gas emissions. Executive Order 13514, issued on October 5, 2009, calls for reductions in greenhouse gases by all federal agencies, with DOE establishing a target of a 28% reduction by 2020, including greenhouse gases associated with purchased electricity. SMRs provide one potential option to meet the President’s Executive Order. One or more federal agency facilities that can be cost effectively connected to an SMR plant could agree to contract to purchase the bulk of the power output from a privately developed and financed LEAD plant. 46 A LEAD plant, even without the benefits of learning, could offer electricity to federal facilities at prices competitive with the unsubsidized significant cost of other clean energy technologies. Table 4 shows that the LCOE estimates for the LEAD and FOAK-1plants are in the range of the unsubsidized national LCOE estimates for other clean electricity generation technologies (based on the current state of maturity of the other technologies). All of these technologies should experience additional learning improvements over time. However, as presented earlier in the learning model analysis, the study team anticipates significantly greater learning improvements in SMR technology that would improve the competitive position of SMRs over time. Additional competitive market opportunities can be identified on a region-specific, technology-specific basis. For example, the Southeast U.S. has limited wind resources. While the region has abundant biomass resources, the estimated unsubsidized cost of biomass electricity is in the range of $90-130 per MWh (9-13¢/kWh), making LEAD and FOAK plants very competitive (prior to consideration of subsidies). 47

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Competitive pricing is an important, but not the sole, element to successful SMR deployment. A bankable contractual arrangement also is required, and this provides an important opportunity for federal facilities to enter into the necessary purchase power arrangements. However, to provide a “bankable” arrangement to enable the SMR project sponsor to obtain private sector financing, the federal agency purchase agreement may need to provide a guaranteed payment for aggregate output, regardless of actual generation output. 48 Another challenge is to establish a mechanism to aggregate demand among federal electricity consumers if no single federal facility customer has a large enough demand for the output of an SMR module. The study team believes that highlevel federal leadership, such as that exemplified in E.O. 13514, can surmount these challenges and provide critical initial markets for SMR plants.

#### And United States creates a massive export market for SMR’s – latent nuclear capability ensures speed- significant reduction of emissions

Rosner, Goldberg, and Hezir et. al. ‘11 (Robert Rosner, Robert Rosner is an astrophysicist and founding director of the Energy Policy Institute at Chicago. He was the director of Argonne National Laboratory from 2005 to 2009, and Stephen Goldberg, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, Joseph S. Hezir, Principal, EOP Foundation, Inc., Many people have made generous and valuable contributions to this study. Professor Geoff Rothwell, Stanford University, provided the study team with the core and supplemental analyses and very timely and pragmatic advice. Dr. J’Tia Taylor, Argonne National Laboratory, supported Dr. Rothwell in these analyses. Deserving special mention is Allen Sanderson of the Economics Department at the University of Chicago, who provided insightful comments and suggested improvements to the study. Constructive suggestions have been received from Dr. Pete Lyons, DOE Assistant Secretary of Nuclear Energy; Dr. Pete Miller, former DOE Assistant Secretary of Nuclear Energy; John Kelly, DOE Deputy Assistant Secretary for Nuclear Reactor Technologies; Matt Crozat, DOE Special Assistant to the Assistant Secretary for Nuclear Energy; Vic Reis, DOE Senior Advisor to the Under Secretary for Science; and Craig Welling, DOE Deputy Office Director, Advanced Reactor Concepts Office, as well as Tim Beville and the staff of DOE’s Advanced Reactor Concepts Office. The study team also would like to acknowledge the comments and useful suggestions the study team received during the peer review process from the nuclear industry, the utility sector, and the financial sector. Reviewers included the following: Rich Singer, VP Fuels, Emissions, and Transportation, MidAmerican Energy Co.; Jeff Kaman, Energy Manager, John Deere; Dorothy R. Davidson, VP Strategic Programs, AREVA; T. J. Kim, Director—Regulatory Affairs & Licensing, Generation mPower, Babcock & Wilcox; Amir Shahkarami, Senior Vice President, Generation, Exelon Corp.; Michael G. Anness, Small Modular Reactor Product Manager, Research & Technology, Westinghouse Electric Co.; Matthew H. Kelley and Clark Mykoff, Decision Analysis, Research & Technology, Westinghouse Electric Co.; George A. Davis, Manager, New Plant Government Programs, Westinghouse Electric Co.; Christofer Mowry, President, Babcock & Wilcox Nuclear Energy, Inc.; Ellen Lapson, Managing Director, Fitch Ratings; Stephen A. Byrne, Executive Vice President, Generation & Transmission Chief Operating Officer, South Carolina Electric & Gas Company; Paul Longsworth, Vice President, New Ventures, Fluor; Ted Feigenbaum, Project Director, Bechtel Corp.; Kennette Benedict, Executive Director, Bulletin of the Atomic Scientist; Bruce Landrey, CMO, NuScale; Dick Sandvik, NuScale; and Andrea Sterdis, Senior Manager of Strategic Nuclear Expansion, Tennessee Valley Authority. The authors especially would like to acknowledge the discerning comments from Marilyn Kray, Vice-President at Exelon, throughout the course of the study, “Small Modular Reactors – Key to Future Nuclear Power”, <http://epic.uchicago.edu/sites/epic.uchicago.edu/files/uploads/SMRWhite_Paper_Dec.14.2011copy.pdf>, November 2011, LEQ)

As stated earlier, SMRs have the potential to achieve significant greenhouse gas emission reductions. They could provide alternative base load 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.

#### Second- the Department of Defense is key - a demonstration project coupled with purchasing is best

Andres and Breetz ‘11 (Richard B. Andres is 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 is a doctoral candidate in the Department of Political Science at the Massachusetts Institute of Technology, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications”, February 16, 2011, LEQ)

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 mar- ketplace.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 nuclear 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 pre- vailing fear of first-of-a-kind designs.”31 In addition, Massachusetts Institute of Technology 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 nuclear 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.

#### DOD implementation is vital to get optimal capabilities- key to solvency- this takes out any free market or States counterplans

Andres and Breetz ‘11 (Richard B. Andres is 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 is a doctoral candidate in the Department of Political Science at the Massachusetts Institute of Technology, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications”, February 16, 2011, LEQ)

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 demonstration 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 market. 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 designs. On one hand, Matthew Bunn and Martin Malin 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 settings in which they can be used, and it is quite possible 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.

#### Third is the licensing process-

#### A DOD Power-Purchase Agreement is key to resolve NRC’s lack of licensing experience- this shapes the global future for nuclear power

Cunningham 10/16 (Nick, Policy Analyst for Energy and Climate at the American Security Project, “Small Modular Reactors: A Possible Path Forward for Nuclear Power,” October 16th, <http://americansecurityproject.org/ASP%20Reports/Ref%200087%20-%20Small%20Modular%20Reactors.pdf>)

The most difficult challenge currently facing SMRs is the institutional barriers. Currently, the Nuclear Regulatory Commission has not certified a single SMR design. Despite the variety of SMR designs from several nuclear vendors, the NRC has lacked sufficient human and technical capacity to license small modular reactors in the past. 33 Even as policymakers have expressed greater interest in SMRs in recent years, the licensing process for a new design takes several years at a cost of hundreds of millions of dollars. 34 Also, many regulations create a difficult environment for small reactors and favor large reactors. For example, the NRC requires 10 mile emergency planning zones around nuclear power plants, making it difficult to site a small reactor near urban centers where it could be used for energy applications other than centralized electricity generation. 35 SMRs will need to overcome this long history of institutional bias towards large reactors. As the most prominent licensing body for the nuclear industry worldwide, the NRC to a certain degree, shapes the global future for nuclear power. If the NRC does not lead on small modular reactors, it may be an uphill battle for the SMR industry No Performance History The nuclear industry has maintained a high performance standard with its fleet of large light water reactors, and SMRs would need to demonstrate the same high performance. However, as with any new technology, SMRs have no track record to prove their performance. The industry lacks a credible demonstration project that would inform future projects and inspire confidence. 36 SMRS need to demonstrate advantages over conventional plants, including advantages in cost, safety and flexibility. Looking forward, this creates a “chicken and egg” problem. In order to bring costs down, nuclear vendors will need a high-tech manufacturing facility to mass produce small reactors. However, in order to justify the construction of such a facility, the industry estimates it will need to book dozens of orders upfront. It cannot book these orders without proof of cost, safety and performance. Industry leaders are hesitant to be the “first-mover” in an uncertain market, and governments are reluctant to provide incentives or invest in unproven products. Safety Concerns While there are real safety benefits of SMRs, critics site new safety concerns with SMRs that are not associated with conventional nuclear plants. The owner of small modular reactors would need to manage, inspect, and maintain more reactors for the same amount of power output as a single large reactor. 37 The industry needs to prove that the inherent safety benefits of SMRs over large reactors outweigh the downsides. Nuclear Waste Disposal of spent nuclear fuel has confounded the nuclear industry for decades and the problem of waste disposal will still need to be dealt with for SMRs. While large reactors suffer from the same problem, expanding the use of SMRs would mean waste from more reactor sites would need to be coordinated. 38 The quantity of waste may not change, but a given amount of waste is easier to manage from one site, rather than multiple. The problem of disposing nuclear waste is a serious one, and the lack of a solution despite 30 years of debate is troubling. In January 2010, President Obama setup a Blue Ribbon Commission (BRC) to study the problem and to recommend actions to finally address the nuclear waste problem. The BRC recommended the establishment of a consent-based approach to siting a waste facility, the development of interim storage facilities, the creation of a separate government entity tasked only with addressing nuclear waste, as well as several other recommendations. 39 The recommendations will be difficult to pass through Congress, but until resolved, the nuclear waste problem will bedevil the entire nuclear industry, including SMRs. Low Natural Gas Prices Another problem that is not unique to SMRs, but plagues the nuclear industry as a whole, is the current low prices of natural gas. Due to major advances in hydraulic fracturing and horizontal drilling, the U.S. is awash in natural gas. Prices have plummeted, and the Energy Information Administration (EIA) estimates that prices will rise very slowly over the next two decades. For example, in their 2012 Annual Energy Outlook, the EIA predicts that natural gas prices will not rise back above $6 per million Btu until around 2030. 40 SMRs may need natural gas prices to reach $7 or $8 per million Btu to be competitive. 41 This makes any new nuclear power plant, including an SMR, uneconomical compared to natural gas. Unless natural gas prices rise more quickly than expected, or Congress implements a price on carbon, nuclear power may struggle to compete. Progress in Rolling Out SMRs In recent years, the government has tried to provide incentives to kick-start the moribund nuclear industry. As part of the Energy Policy Act of 2005, loan guarantees and risk insurance were extended to new nuclear power plants. 42 However, although loan guarantees have provided enough support to help four new reactors move forward, these have proven to be the exception. Looking foward, it will be exceedingly difficult to build additional large nuclear power plants. Policymakers have become increasingly interested in making SMRs a reality as an alternative to large plants. In January 2012, the Department of Energy announced a new initiative to support SMR development. DOE plans on spending $452 million over the next five years (subject to congressional appropriations) to help nuclear vendors through the design and licensing process. 43 The program will provide 50% of the cost in the form of a grant while the industry would need to pay for the other half. DOE stated that it is looking for designs that can be licensed and up and running by 2022. Several companies have applied for the funding. More Needs To Be Done Several of the issues discussed above – difficult in licensing, unproven projects, and a “first-mover” problem – present a role for the government. The NRC can work with nuclear vendors through the licensing process to reduce the time required for licenses to be issued. Reducing the time and cost for design licensing will accelerate the development of SMRs. Also, the NRC and other agencies can devise ways to support the first wave of demonstration projects. For example, the Department of Defense, with its large procurement budget, can purchase SMRs for its military installations. Government entities can establish long-term power purchasing agreements (PPAs) to provide a minimum level of demand for SMRs. This will allow the industry to book early orders, prove the concept and bring down costs.

#### Fourth is waste-

#### Small modular reactors are built underground- solves waste, cost, and safety

**Giraud et. al. ‘10** (Kellen M. Giraud is a nuclear engineer for Babcock and Wilcox and a Ph.D. student at Idaho State University. Jay F. Kunze, a licensed professional engineer and an ASME Fellow, is professor and chair of nuclear engineering at Idaho State University. James M. Mahar is a geotechnical engineer and licensed geologist, and professor of civil engineering at Idaho State University. Carl W. Myers is an affiliate at Los Alamos National Laboratory, where he was the director of the Earth and Environmental Sciences Division“Below the Horizon,” Mechanical Engineering 132. 12 (Dec 2010): 30-34.)

There is an innovative solution to both the perception and safety problems—a solution that offers many other technical advantages. The concept is to place new nuclear reactors in integrated underground facilities. In addition to bringing substantial increases in safety and security, underground nuclear complexes would also greatly reduce the capital and operating costs and essentially eliminate the concerns of the public with high—level nuclear waste transportation. Co—locating reactors with reprocessing and fuel manufacturing fàcilities—all underground—would reduce proliferation risks associated with transportation of nuclear materials over long distances. Changing the industry’s conception of what a power plant should look like won’t be easy. And the biggest practical hurdle to building underground nuclear parks is the common perception that it would be excessively complicated and prohibitively expensive to construct something as complex as a nuclear power plant deep underground. We have looked into those objections, and have discovered that they are not as formidable as first thought. A nuclear power plant can be thought of as three domains: the reactor area, the electricity generation area, and auxiliary areas. For example, assuming a Genlil light water reactor design, the reactor area includes all the equipment for generating steam, from the heat exchangers or moisture separa tors (depending on whether the water is pressurized or boiled) to the reactor vessels to the containment struc ture. This is an area that is unique to a nuclear power plant. It’s also the domain that is under the most strict requirements for the arrangement of its components. The electricity generation equipment includes high and low pressure turbines, condensers, a moisture separator heater, and the generator. The turbines and generator are typically aligned in a ro’ with other equipment located in the surrounding space. The entire electricity generation equipment could prob ably he placed in a volume approximately 35 tèet high by 35 feet wide by 200 fet long, with the exception of condensers, which take up significant space beneath low—pressure turbines. Auxiliary areas of a nuclear power plant include such facilities as control rooms, emergency power systems. fuel storage, chemical and volume control systems, and waste heat removal systems. In general. the auxiliary facilities can be laid out in the manner that’s most convenient, with the exception of the spent fuel pool, which must be accessible from the reactor room. With nuclear power plants typically being sited on large parcels of land, designers have not had to concern themselves to a great extent with the volume of the var ious components. But to propose placing such facilities deep underground changes the C21CLIIUS. Underground spaces are, by their very nature, limited in volume that can be economically excavated. As excavation volumes increase, the costs of construction and of support for the excavation increases rapidly. It’s important, then, to get a sense for the minimun volume a functional nuclear power plant could occupy. The pressure vessel for a boiling water reactor is typically around 80 feet tall and 24 feet in dianieter; comparable dimensions for a pressurized water reactor are around 40 feet tall and 18 feet in diameter. The interior volumes of sorne containment structures can be more than 3 million cubic fiet. Sonic of this volume is “empty space” that would not need to be incorporated into an underground nuclear plant. There are designs for very small, modular reactors that cut this volume down considerably: the NuS— cale reactor calls for a containment inner volume of just 11,000 cubic feet, about the size of an apartment. ‘ We have estimated that the volume needed for a single full—size (1,000 MWe) nuclear reactor together with all the generating and auxiliary equiprneiit is approximate ly 2 million cubic feet. While that seems large—it’s the volume of a 12-story cube—tunneling technology has advanced to make such spaces relatively routine to construct, especially when innovative excavation methods are employed. Specialized construction companies use large tunnel boring machines that are capable of driving under ground openings up to 47 feet in diameter through granite-like rock at rates of between 50 and lOO feet per day. (Tunnel lengths should be at least 2,000 feet to take full advantage of tunnel boring machines.) Costs for excavation by tunnel boring machines vary widely based on ground type, lining requirements, and project specifications. Boring through good ground that requires minimal support can cost about $2 per cubic foot, while more challenging conditions may cost upwards of $3.50 per cubic foot. Such costs represent excavation and support alone, and do not include costs for tunnel lining, finishing, or contingency. These additional requirements may be expected to multiply the total cost of excavation by about a factor of three. It would be expected that an underground nuclear plant would be constructed in only the most favorable areas, so excavation may he accomplished for around $6 per cubic foot. So it would be expected that excavation for underground nuclear plants would add millions of dollars to the up-front cost of a nuclear power plant. Do the advantages outweigh those costs? Siting nuclear reactors underground is not a new idea. It can be argued that the first nuclear reactor—the sustained chain reaction devised by a team of scientists and engineers led by Enrico Fermi at the University of Chicago—was effectively underground: the bottom of the pile tinder the bleachers at Stagg Field was a few feet below grade. During the 1950s and 1960s special-purpose and small research reactors were built into excavated sites in Russia. Norway, Sweden, France, and Switzerland, and thus proved by demon stration the overall feasibility of underground reactor placement. However, studies in the 1970s that evaluated underground placement of a large power reactor suggested that the increase in safety and security would not compensate for the additional time and money needed to construct the required chambers, tunnels, and other openings. Instead of installing a single nuclear reactor and its attendant equipment underground, we propose something larger that can make the investment in excavation cost-effective. We propose building several reactors on one site, creating what we call an underground nuclear park that’s analogous to a research or office park. Several reactors would be built into the bedrock some 300 to l,000 feet below the surface. These reactors would share heat rejection systems and storage areas for spent fuel as well as long—term repositories for radioactive waste, which could be built on site. The co—location of so much infrastructure would more than compensate for the costs of excavation. Underground nuclear parks have many advantages over conventional nuclear power plant designs. Locating the reactors a few hundred feet underground in bedrock at a suitable site eliminates the need for containment structures, and the site would be largely impervious to physical attack from terrorists. (Indeed, it would be far easier to secure the few access points to an underground nuclear park than it is to protect the large perimeter of an isolated nuclear power plant.) A properly constructed underground facility would also be less subject to weather—related construction delays or the eflicts of hurricanes, tornadoes, flooding, or heat waves. Also, if designers were careful in the site selection. an underground nuclear park could virtually eliminate the transportation of hazardous nuclear waste material. Spent nuclear fuel could be moved via tunnel from the reactors to an array of storage tunnels; high—level vaste could he permanently stored in another set of tunnels. What’s more, when the reactors reach the end of their productive life, they can be decommissioned in place— essentially buried in their chamber along with the low—level waste produced by those reactors during their decades of operation. That solution would be safer and more cost—effective than conventional decontamination and decommissioning ola surface-sited reactor. There are many differentt ways an underground nuclear park could be built. Perhaps tue most efficient method from an excavation and support standpoint would be to make a single pass with a tunnel horing machine, creating a circular passageway 50 feet wide and a few thousand feet long. Into this tunnel, several reactors and gen erator sets could be constructed, each one occupying one segment along one side of the rectangle. We expect that almost all the components of a nuclear power plant can travel through a tunnel of this diameter. To create more headroom for the reactors themselves, the bottom of the excavation could be lowered by drill and blast methods. Because drill and blast methods are more expensive and time—consuming per unit of rock volume than are tunnel boring machine methods, excavation beyond the initial tunnel should be kept to a minimum. A second smaller diameter tunnel is bored parallel to the nuclear chambers and connected to it with adits to provide independent access to the nuclear facilities. After excavation and the removal of the tunnel bor ing machines, the tunnel opening is further excavated by drill and blast methods to the required dimensions. Each straight-line section would then be subdivided into a minimum of three nuclear reactor chambers that would contain all the elements needed to generate electric power except for waste heat rejection. Removal otcondenser waste heat would be accomplished at the surface by cooling towers or a surface water body SUCh as a lake or river displaced laterally from the under ground facility. At least 10 nuclear generating units could be built within the initial rectangular area. Tunnel segments could be used along with subsequently excavated spaces to install fuel reprocessing and manufacturing ficiIities, and for storage and disposal of low-level and high—level radioactive wastes. Using the expected cost for tunnels excavated by a tunnel boring machine, the main 1.6—mile tunnel for an underground nuclear park would cost approximately $100 million. The excavation of shafts and construction of systems for facility access and ventilation would add roughly an additional $l00 million to the total excavation Cost. Excavation of additional access tunnels and openings for auxiliary areas and power plant components that could not fit within the main tunnel would also cost roughly $100 million. The total cost—$300 million—must be compared to the costs of constructing a dozen conventional nuclear plants on the surface. Nuclear power plant construction is estimated to cost $4,000 per kilowatt of electric capacity, so an underground nuclear park with 12 plants, each with a capacity of about 1,000 MWe, would cost about $48 billion in power plants alone. The excavation of an underground facility would account for less than 1 percent of the total construction cost of the nuclear facilities. The cost of siting a large nuclear complex underground is negligible compared to the overall cost of the facility. Couple that to the significant political, safety, and security advantages, and the case for underground nuclear parks is strong. To be sure, there are sorne issues left to be resolved—such as designing ventilation systems, allowing for access and egress under emergency conditions, and resolving electricity transmission issues for such a large generating facility—but it seems certain that those matters can be settled satisfactorily. Perhaps the best opportunity for demonstrating the advantages of this concept will come with the introduction of the so-called Generation IV reactors. These designs. which are being researched by an international collaboration of nuclear engineers, mark a break with the types of reactors that have dominated nuclear power’s first 50 years. The fresh approach for reactor design easily could be coupled with a new concept in power plant infrastructure, Such as the underground nuclear park.

# Solvency

**concedes – federal non-military land solves**

**King 11** Marcus King, Ph.D., Center for Naval Analyses Project Director and Research Analyst for the Environment and Energy TeamLaVar Huntzinger, Thoi Nguyen, March 2011, Feasibility of Nuclear Power on U.S.Military Installations, www.cna.org/sites/default/files/research/Nuclear Power on Military Installations D0023932 A5.pdf

There are liabilities to having a nuclear power plant located on a military installation. First, the military installation must find and give up all other use of a small area where the site is to be built. The site would need to be “not too near” to certain types of facilities. For example, not too near a hospital and not too near a facility that stores and handles explosives. Finding a specific site on an installation that is appropriate and suitable may be difficult. In addition, having a nuclear power plant on a military installation would almost certainly impose some restrictions on how land and airspace in the immediate vicinity of the nuclear plant could be used thereafter**.**

A small nuclear plant providing power to a DoD installation could be located on non-military government controlled land or on private land near the military installation. This may make site security more complicated and would probably make the approval process more challenging. This doesn't mean that siting on non-military government controlled land or private land shouldn't be considered; it means that such siting would need to be supported by clear and persuasive reasons.

**Military expertise not a problem**

Robitaille 12

(George, Department of Army Civilian, United States Army War College, “Small Modular Reactors: The Army’s Secure Source of Energy?” 21-03-2012, Strategy Research Project)

Section 332 of the FY2010 National Defense Authorization Act (NDAA), “Extension and Expansion of Reporting Requirements Regarding Department of Defense Energy Efficiency Programs,” requires the Secretary of Defense to evaluate the cost and feasibility of a policy that would require new power generation projects established on installations to be able to provide power for military operations in the event of a commercial grid outage.28 A potential solution to meet this national security requirement, as well as the critical needs of nearby towns, is for DoD to evaluate SMRs as a possible source for safe and secure electricity. Military facilities depend on reliable sources of energy to operate, train, and support national security missions. The power demand for most military facilities is not very high, and could easily be met by a SMR. Table 1 provides the itemized description of the annual energy requirements in megawatt of electricity (MWe) required for the three hundred seventy four DoD installations.29 DoD History with SMRs The concept of small reactors for electrical power generation is not new. In fact, the DoD built and operated small reactors for applications on land and at sea. The U.S. Army operated eight nuclear power plants from 1954 to 1977. Six out of the eight reactors built by the Army produced operationally useful power for an extended period, including the first nuclear reactor to be connected and provide electricity to the commercial grid. 30 The Army program that built and operated compact nuclear reactors was ended after 1966, not because of any safety issues, but strictly as a result of funding cuts in military long range research and development programs. In essence, it was determined that the program costs could only be justified if there was a unique DoD specific requirement. At the time there were none.31 Although it has been many years since these Army reactors were operational, the independent source of energy they provided at the time is exactly what is needed again to serve as a secure source of energy today. Many of the nuclear power plant designs used by the Army were based on United States Naval reactors. Although the Army stopped developing SMRs, the Navy as well as the private sector has continued to research, develop, and implement improved designs to improve the safety and efficiency of these alternative energy sources. The U.S. Navy nuclear program developed twenty seven different power plant systems and almost all of them have been based on a light water reactor design.32 This design focus can be attributed to the inherent safety and the ability of this design to handle the pitch and roll climate expected on a ship at sea. To date, the U. S Navy operated five hundred twenty six reactor cores in two hundred nineteen nuclear powered ships, accumulated the equivalent of over six thousand two hundred reactor years of operation and safely steamed one hundred forty nine million miles. The U.S. Navy has never experienced a reactor accident.33 All of the modern Navy reactors are design to use fuel that is enriched to ninety three percent Uranium 235 (U235) versus the approximate three percent U235 used in commercial light water reactors. The use of highly enriched U235 in Navy vessels has two primary benefits, long core lives and small reactor cores.34 The power generation capability for naval reactors ranges from two hundred MWe (megawatts of electricity) for submarines to five hundred MWe for an aircraft carrier. A Naval reactor can expect to operate for at least ten years before refueling and the core has a fifty year operational life for a carrier or thirty to forty years for a submarine.35 As an example, the world’s first nuclear carrier, the USS Enterprise, which is still operating, celebrated fifty years of operations in 2011.36 The Navy nuclear program has set a precedent for safely harnessing the energy associated with the nuclear fission reaction. In addition, the Navy collaborates with the private sector to build their reactors and then uses government trained personnel to serve as operators. Implementing the use of SMRs as a secure source of energy for our critical military facilities will leverage this knowledge and experience.

# heg

a/t: montiero’s statistics

**wrong**

**Wohlforth 12**, William, Daniel Webster Professor in the Department of Government at Dartmouth College “Nuno Monteiro. “’Unrest Assured: Why Unipolarity is not Peaceful.’ Reviewed by William Wohlforth” October 31st, http://www.h-net.org/~diplo/ISSF/PDF/ISSF-AR17.pdf

Third, setting up the article as a claim that unipolarity is not peaceful runs into a problem: **Unipolarity is peaceful. The Most Peaceful. Ever. Period**. No one expects any imaginable anarchic inter-state system to be perfectly peaceful, with no war at all. In my 1999 paper, I stressed that “unipolarity does not imply the end of all conflict... It simply means the absence of two big problems” — hegemonic rivalry and counter-hegemonic balancing—that were present in all earlier systems. As a result “unipolarity favors the absence of war among the great powers.” Like any statement about the war-proneness of any international system, this is a relative claim. International relations scholarship does not have theories that make anything other than relative predictions about the war-proneness of systems. Monteiro tries but fails to escape this reality. He writes: “Rather than assess the relative peacefulness of unipolarity vis-à-vis bipolar or multipolar systems, I identify causal pathways to war that are characteristic of a unipolar system and that have not been developed in the extant literature (12). The latter portion of this sentence is exactly right, but the former bit is contradicted just a few pages later when Monteiro presents evidence that “Unipolarity is the most conflict prone of all systems .. .“ (18). While **conflict researchers** debate the causes, they **are nearly united** in agreeing that the post-1990 international system is the least afflicted by war.5 There are many ways to measure war: the overall number that occur, the number of people killed, the probability that any state will be at war in any year, the size or cost of military forces compared to economic output or population, or, perhaps best, the probability that any individual will die as a result of organized inter-group violence. By all those measures, we are living in the most peaceful period since the modern inter-state system took shape in the seventeenth century. Indeed, Stephen Pinker assembles masses of evidence to suggest that there has never been a less violent time in all of human history.6 It is hard to think of any way to measure war that does not show the unipolar period as remarkably peaceful— except for the ones Monteiro uses: “the percentage of years that great powers spend at war, and the incidence of war involving great powers,” (18) with the United States defined as the only great power after 1990. That is a very convoluted way to say ‘Iraq and Afghanistan.’ The fact that the United States ended up in two grinding counter-insurgency operations in no way contradicts the claim that unipolarity is unprecedentedly peaceful.

**Monteiro’s wrong**

**Busby 12**, Josh, assistant professor of public affairs at the Lyndon B. Johnson School of Public Affairs [“Josh Busby on Unipolarity and International Relations,” January 6th, http://www.strausscenter.org/strauss-news/josh-busby-on-unipolarity-and-international-relations.html]

Strauss Scholar, Joshua Busby, wrote a three-part piece on the blog The Duck of Minerva, responding to two articles published by University of Chicago scholars Nuno Monteiro, and Sebastian Rosato and John Schuessler. The articles, and Busby’s response, focus on international relations, unipolarity and the realist approach to foreign policy. Busby’s first post critiques Nuno Monteiro’s article, “Unrest Assured: Why Unipolarity Is Not Peaceful” published in International Security. Monteiro argued that unipolarity has been less peaceful than other time periods. Busby disagrees with this argument, citing the contemporary era may create a “presentist bias” due to the overemphasis of our own lived experience and the omnipresence of the news media. Finally Busby addressed Moneiro’s argument that unipolarity drives conflict. Busby argues that **domestic-level factors in** both the United States and **potential adversaries, rather than U.S. power** alone, help explain recent conflicts.

**Monteiro agrees the alt doesn’t solve**

**Cambanis 12**, Thanassis, journalist, expert on Mideast policy[“The lonely superpower,” January 22nd, <http://articles.boston.com/2012-01-22/ideas/30646076_1_cold-war-nuclear-war-arms-race/5>]

Not everyone agrees that the United States would benefit from having a major rival. The best-known academic authority on American unipolarity, Dartmouth College political scientist William C. Wohlforth, argues that it’s still far better to be alone at the top. Overall, Wohlforth says, America spends less of its budget on defense than during the Cold War, and fewer Americans are killed in the conflicts in which it does engage. “Those who wish to have a peer competitor back are mistaken,” he said. “They forget the huge interventions of the Cold War.” Between 1945 and 1989, Wohlforth says, proxy wars between America and the Soviet Union killed hundreds of thousands of people, against the backdrop of a very real and terrifying threat of nuclear annihilation. Today, he says, the world is still dangerous, but it’s much less deadly and frightening than it was in the time of the nuclear arms race. For his part, Monteiro agrees that the Cold War was nasty and scary; he just wants to debunk the notion that what came next was any better. **According to Monteiro, bipolarity and unipolarity** pose different kinds of dangers, but **are equally problematic**.

**Concedes heg is key to solve great power war**

**Monteiro 11** \*Nuno P. Monteiro is Assistant Professor of Political Science at Yale University [<http://www.mitpressjournals.org/doi/pdf/10.1162/ISEC_a_00064>, “Unrest Assured: Why Unipolarity is not Peaceful”]

In addition, Wohlforth claims that wars among major powers are unlikely, because the unipole will prevent conflict from erupting among important states. He writes, “The sole pole’s power advantages matter only to the degree that it is engaged, and it is most likely to be engaged in politics among the other major powers. 44 **I agree** that if the unipole were to pursue a strategy of defensive dominance, major power wars would be unlikely. Yet, there is no compelling reason to expect that it will always follow such a course. Should the unipole decide to disengage, as Wohlforth implies, **major power wars would be possible**

**Err heavily aff – Monteiro concedes that if we’re even a little bit right about cling to heg all of their offense is inevitable**

**Monteiro 11** \*Nuno P. Monteiro is Assistant Professor of Political Science at Yale University [<http://www.mitpressjournals.org/doi/pdf/10.1162/ISEC_a_00064>, “Unrest Assured: Why Unipolarity is not Peaceful”]

Besides facilitating conflict among major and minor powers in other regions, disengagement will yield peace for the unipole only if two requirements are fulfilled. First, the unipole must disengage from all regions beyond its own. Second, it must disengage completely from each of these regions. Disengagement must be global because dominance in one region leads to the emergence of recalcitrant minor powers. In addition, this would alert minor powers in other regions to the dangers of extreme self-help. In the absence of a pure disengagement strategy at the global level, therefore, potential recalcitrant minor powers everywhere are likely to act as if the unipole were engaged in their region, and will thus take actions that bolster their chances of survival vis-à-vis a potentially threatening unipole. Disengagement must also be complete because even defensive dominance places recalcitrant minor powers in a situation of extreme self-help. Disengagement thus requires the unipole to extract itself completely from military alliances, withdraw its security guarantees to others, recall forward-deployed forces, and so on. Limited, or selective, engagement is likely to trigger the same type of conflict (though through different causal mechanisms) as complete offensive dominance. 105 Failure to meet these two conditions effectively turns the unipole’s strategy into a form of defensive dominance, albeit a selective one. Incomplete disengagement decreases the predictability of the unipole’s future behavior, leading recalcitrant minor powers to behave as if the unipole remained engaged and, therefore, threatening to their survival. Disengagement, then, while always producing regional wars, staves off wars involving the unipole only if it is implemented as a pure strategy. A mixed strategy—a form of dominance limited either in its regional scope or in the means involved—is likely to compound the problems of disengagement with those of dominance. In sum, **disengagement opens the door to regional competition, leading to wars involving both minor and major powers**. If incomplete, disengagement will also result in wars involving the unipole, similar to the ones described in the previous two sections.

**Hegemony is key to prevent terror**

**Schmitt ‘6** (Gary, Scholar @ The American Enterprise Institute, “Pax Americana,” <http://www.eng.gees.org/articulo/6/>)

The core argument itself is not new: The United States and the West face a new threat--weapons of mass destruction in the hands of terrorists--and, whether we like it or not, no power other than the United States has the capacity, or can provide the decisive leadership, required to handle this and other critical global security issues. Certainly not the United Nations or, anytime soon, the European Union. In the absence of American primacy, the international order would quickly return to disorder. Indeed, whatever legitimate concerns people may have about the fact of America's primacy, the downsides of not asserting that primacy are, according to The American Era, potentially far more serious. The critics "tend to dwell disproportionately on problems in the exercise of [American] power rather than on the dire consequences of retreat from an activist foreign policy," Lieber writes. They forget "what can happen in the absence of such power."

**No Risk of nuclear terror – 4 reasons**

* States won’t give
* No chance they can be stolen
* If they are stolen we can stop it
* Cant successfully attack

**Mearsheimer 11,** January, John J., Wendell Harrison Distinguished Service Professor of Political Science at the University of Chicago. He is on the Advisory Council of The National Interest, “Imperial by Design,”http://nationalinterest.org/article/imperial-by-design-4576?page=3,

The fact is that states have strong incentives to distrust terrorist groups, in part because they might turn on them someday, but also because countries cannot control what terrorist organizations do, and they may do something that gets their patrons into serious trouble. This is why there is hardly any chance that a rogue state will give a nuclear weapon to terrorists. That regime’s leaders could never be sure that they would not be blamed and punished for a terrorist group’s actions. Nor could they be certain that the United States or Israel would not incinerate them if either country merely suspected that they had provided terrorists with the ability to carry out a WMD attack. A nuclear handoff, therefore, is not a serious threat. When you get down to it, there is only a remote possibility that terrorists will get hold of an atomic bomb. The most likely way it would happen is if there were political chaos in a nuclear-armed state, and terrorists or their friends were able to take advantage of the ensuing confusion to snatch a loose nuclear weapon. But even then, there are additional obstacles to overcome: some countries keep their weapons disassembled, detonating one is not easy and it would be difficult to transport the device without being detected. Moreover, other countries would have powerful incentives to work with Washington to find the weapon before it could be used. The obvious implication is that we should work with other states to improve nuclear security, so as to make this slim possibility even more unlikely. Finally, the ability of terrorists to strike the American homeland has been blown out of all proportion. In the nine years since 9/11, government officials and terrorist experts have issued countless warnings that another major attack on American soil is probable—even imminent. But this is simply not the case.3 The only attempts we have seen are a few failed solo attacks by individuals with links to al-Qaeda like the “shoe bomber,” who attempted to blow up an American Airlines flight from Paris to Miami in December 2001, and the “underwear bomber,” who tried to blow up a Northwest Airlines flight from Amsterdam to Detroit in December 2009. So, we do have a terrorism problem, but it is hardly an existential threat. In fact, it is a minor threat. Perhaps the scope of the challenge is best captured by Ohio State political scientist John Mueller’s telling comment that “the number of Americans killed by international terrorism since the late 1960s . . . is about the same as the number killed over the same period by lightning, or by accident-causing deer, or by severe allergic reactions to peanuts.”

# 2ac incentive

**we meet – we give the industry money and tax credits**

**Epa.gov 12** [“Solar Power Purchase Agreements,” May 24th, <http://www.epa.gov/greenpower/buygp/solarpower.htm>]

A Solar Power Purchase Agreement (SPPA) is a financial arrangement in which a third-party developer owns, operates, and maintains the photovoltaic (PV) system, and a host customer agrees to site the system on its roof or elsewhere on its property and purchases the system’s electric output from the solar services provider for a predetermined period. This financial arrangement allows the host customer to receive stable, and sometimes lower cost electricity, while the solar services provider or another party acquires valuable financial benefits such as tax credits and income generated from the sale of electricity to the host customer.

**DoE says we’re T**

**Waxman 98 –** Solicitor General of the US (Seth, Brief for the United States in Opposition for the US Supreme Court case HARBERT/LUMMUS AGRIFUELS PROJECTS, ET AL., PETITIONERS v. UNITED STATES OF AMERICA, http://www.justice.gov/osg/briefs/1998/0responses/98-0697.resp.opp.pdf)

2 On November 15, 1986, Keefe was delegated “the authority, with respect to actions valued at $50 million or less, to approve, execute, enter into, modify, administer, closeout, terminate and take any other necessary and appropriate action (collectively, ‘Actions’) with respect to Financial Incentive awards.” Pet. App. 68, 111-112. Citing DOE Order No. 5700.5 (Jan. 12, 1981), the delegation defines “Financial Incentives” as the authorized financial incentive programs of DOE, “including direct loans, loan guarantees, purchase agreements, price supports, guaranteed market agreements and any others which may evolve.” The delegation proceeds to state, “[h]owever, a separate prior written approval of any such action must be given by or concurred in by Keefe to accompany the action.” The delegation also states that its exercise “shall be governed by the rules and regulations of [DOE] and policies and procedures prescribed by the Secretary or his delegate(s).” Pet. App. 111-113.

**Interpretation – incentives are the disbursement of public funds**

**Gielecki 1**, Mark, economist with the Energy Information Administration, Fred Mayes, Senior Technical Advisor for the coal, nuclear, and renewables program within the EIA, Lawrence Prete, retired from the EIA, [“Incentives, Mandates, and Government Programs for Promoting Renewable Energy,” February, <http://lobby.la.psu.edu/_107th/128_PURPA/Agency_Activities/EIA/Incentive_Mandates_and_Government.htm>]

Over the years, incentives and mandates for renewable energy have been used to advance different energy policies, such as ensuring energy security or promoting environmentally benign energy sources. Renewable energy has beneficial attributes, such as low emissions and replenishable energy supply, that are not fully reflected in the market price. Accordingly, governments have used a variety of programs to promote renewable energy resources, technologies, and renewable-based transportation fuels. (1) This paper discusses: (1) financial incentives and regulatory mandates used by Federal and State governments and Federal research and development (R&D), (2), (3) and (2) their effectiveness in promoting renewables. A financial incentive is defined in this report as providing one or more of the following benefits: A transfer of economic resources by the Government to the buyer or seller of a good or service that has the effect of reducing the price paid, or, increasing the price received, respectively; Reducing the cost of production of the good or service; or, Creating or expanding a market for producers. The intended effect of a financial incentive is to increase the production or consumption of the good or service over what it otherwise would have been without the incentive. Examples of financial incentives are: tax credits, production payments, trust funds, and low-cost loans. Research and development is included as a support program because its effect is to decrease cost, thus enhancing the commercial viability of the good(s) provided. (4)

**aff ground – We are the topic - money for energy! Arbitrarily excluding one mechanism is unpredictable – last year proves weak mechanisms stink and only purchasing can defeat states**

**Good is good enough – competing interpretations forces a race to the bottom and judge intervention – this is no less arbitrary than deciding limits are key**

# 2ac cp

**Perm do both**

**Perm do the counterplan – it still obtains the electricity**

**Links to the net benefit – doesn’t change the price of electricity**

**Plan = rfp**

Cory, Canavan, and Koenig, No Date (Karlynn Cory, Brendan Canavan, and Ronald Koenig of NREL, National Renewable Energy Laboratory, a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, “Power Purchase Agreement Checklist for State and Local Governments”, No Date, LEQ)

This fact sheet provides information and guidance on the solar photovoltaic (PV) power purchase agreement (PPA), which is a financing mechanism that state and local government entities can use to acquire clean, renewable energy. We address the financial, logistical, and legal questions relevant to implementing a PPA, but we do not examine the technical details—those can be discussed later with the developer/con- tractor. This fact sheet is written to support decision makers in U.S. state and local governments who are aware of solar PPAs and may have a cursory knowledge of their structure but they still require further information before committing to a particular project. Overview of PPA Financing The PPA financing model is a “third-party” ownership model, which requires a separate, taxable entity (“system owner”) to procure, install, and operate the solar PV system on a consumer’s premises (i.e., the government agency). The government agency enters into a long-term contract (typically referred to as the PPA) to purchase 100% of the electricity generated by the system from the system owner. Figure 1 illustrates the financial and power flows among the consumer, system owner, and the utility. Renewable energy certificates (RECs), interconnection, and net metering are dis- cussed later. Basic terms for three example PPAs are included at the end of this fact sheet. The system owner is often a third-party investor (“tax inves- tor”) who provides investment capital to the project in return for tax benefits. The tax investor is usually a limited liability corporation (LLC) backed by one or more financial institu- tions. In addition to receiving revenues from electricity sales, they can also benefit from federal tax incentives. These tax incentives can account for approximately 50% of the project’s financial return (Bolinger 2009, Rahus 2008). Without the PPA structure, the government agency could not benefit from these federal incentives due to its tax-exempt status.1 The developer and the system owner often are distinct and separate legal entities. In this case, the developer structures the deal and is simply paid for its services. However, the developer will make the ownership structure transparent to the government agency and will be the only contact through- out the process. For this reason, this fact sheet will refer to “system owner” and developer as one in the same. While there are other mechanisms to finance solar PV systems, this publication focuses solely on PPA financing because of its important advantages:2 1. No/low up-front cost. 2. Ability for tax-exempt entity to enjoy lower electricity prices thanks to savings passed on from federal tax incentives. 3. A predictable cost of electricity over 15–25 years. 4. No need to deal with complex system design and permitting process. 5. No operating and maintenance responsibilities. High-Level Project Plan for Solar PV with PPA Financing Implementing power purchase agreements involves many facets of an organization: decision maker, energy manager, facilities manager, contracting officer, attorney, budget offi- cial, real estate manager, environmental and safety experts, and potentially others (Shah 2009). While it is understood that some employees may hold several of these roles, it is important that all skill sets are engaged early in the process. Execution of a PPA requires the following project coordina- tion efforts, although some may be concurrent:3 Step 1. Identify Potential Locations Identify approximate area available for PV installation including any potential shading. The areas may be either on rooftops or on the ground. A general guideline for solar installations is 5–10 watts (W) per square foot of usable rooftop or other space.4 In the planning stages, it is useful to create a CD that contains site plans and to use Google Earth software to capture photos of the proposed sites (Pechman 2008). In addition, it is helpful to identify current electricity costs. Estimating System Size (this page) discusses the online tools used to evaluate system performance for U.S. buildings. Step 2. Issue a Request for Proposal (RFP) to Competitively Select a Developer If the aggregated sites are 500 kW or more in electricity demand, then the request for proposal (RFP) process will likely be the best way to proceed. If the aggregate demand is significantly less, then it may not receive sufficient response rates from developers or it may receive responses with expensive electricity pricing. For smaller sites, government entities should either 1) seek to aggregate multiple sites into a single RFP or 2) contact developers directly to receive bids without a formal RFP process (if legally permissible within the jurisdiction). Links to sample RFP documents (and other useful docu- ments) can be found at the end of this fact sheet. The materi- als generated in Step 1 should be included in the RFP along with any language or requirements for the contract. In addition, the logistical information that bidders may require to create their proposals (described later) should be included. It is also worthwhile to create a process for site visits. 3 Adapted from a report by GreenTech Media (Guice 2008) and from conver- sations with Bob Westby, NREL technology manager for the Federal Energy Management Program (FEMP). 4 This range represents both lower efficiency thin-film and higher efficiency crystalline solar installations. The location of the array (rooftop or ground) can also affect the power density. Source: http://www.solarbuzz.com/Consumer/ FastFacts.htm Renewable industry associations can help identify Web sites that accept RFPs. Each bidder will respond with an initial proposal including a term sheet specifying estimated output, pricing terms, ownership of environmental attributes (i.e., RECs) and any perceived engineering issues. Step 3. Contract Development After a winning bid is selected, the contracts must be negoti- ated—this is a time-sensitive process. In addition to the PPA between the government agency and the system owner, there will be a lease or easement specifying terms for access to the property (both for construction and maintenance). REC sales may be included in the PPA or as an annex to it (see Page 6 for details on RECs). Insurance and potential municipal law issues that may be pertinent to contract development are on Page 8. Step 4. Permitting and Rebate Processing The system owner (developer) will usually be responsible for filing permits and rebates in a timely manner. However, the government agency should note filing deadlines for state-level incentives because there may be limited windows or auction processes. The Database of State Incentives for Renewables and Efficiency (http://www.dsireusa.org/) is a useful resource to help understand the process for your state. Step 5. Project Design, Procurement, Construction, and Commissioning The developer will complete a detailed design based on the term sheet and more precise measurements; it will then procure, install, and commission the solar PV equipment. The commissioning step certifies interconnection with the utility and permits system startup. Once again, this needs to be done within the timing determined by the state incentives. Failure to meet the deadlines may result in forfeiture of benefits, which will likely change the electricity price to the government agency in the contract. The PPA should firmly establish realistic developer responsibilities along with a process for determining monetary damages for failure to perform.

That stimulates competition which is key to the industry

Wheaton ‘8 (Glenn Wheaton, Glenn B. Wheaton, Sergeant First Class, US Army (ret.), is the co-founder and president of the non-profit Hawaii Remote Viewer's Guild dedicated to the research and training of remote viewing; and a director of the International Remote Viewing Association (IRVA), “Request for Proposal (RFP)”, <http://www.epiqtech.com/request-for-proposal-rfp.htm>, November 20, 2008, LEQ)

A Request for Proposal (RFP), is the primary document that is sent to suppliers that invites them to submit a proposal to provide goods or services. Internally, an RFP can also be referred to as a sourcing project, a document, or an associated event (competitive bidding). Unlike a Request for Information (RFI) or a Request for Quotation (RFQ), an RFP is designed to get suppliers to provide a creative solution to a business problem or issue. RFPs should be used carefully since they can take a lot of time for both the organization and its suppliers. However, for more complex projects, an RFP may be the most effective way to source the goods or services required. When to Use an RFP Purchasing personnel should not use an RFP when they are only requesting information from suppliers, want merely pricing information, or only want to engage in a competitive bidding scenario. An RFP does make use of competitive bidding (this is an effective way to source), but an RFP should not be used if cost is the sole or main evaluation criteria. An RFP should be used when a project is sufficiently complex that it warrants a proposal from a supplier. RFPs are helpful when supplier creativity and innovative approaches to problems are needed. It is important to remember that the RFP process can take a significant amount of time to complete and could result in delays to the start of the project. Therefore, it only makes sense to use this when the benefits from obtaining supplier proposals are greater than the extra time it takes to prepare the RFP and to manage the RFP process. Benefits One of the main benefits that can arise if the RFP process is handled well is that the organization will have a good handle on the potential project risks for a complex project. The organization will also understand the prospective benefits that it can realize during the course of the project. Using an RFP also encourages suppliers to submit organized proposals that can be evaluated using a quantifiable methodology. In addition, an RFP lets suppliers know that the situation will be competitive. The competitive bidding scenario is often the best method available for obtaining the best pricing and, if done correctly, the best value. An RFP also gives purchasing personnel and project stakeholders the ability to visualize how the project will go and the approach that the suppliers will use to complete it

# 2ac electricity prices

**DOD budget cuts wreck the economy**

Keller ’12 (John Keller, Writer for Military & Aerospace Electronics, “Consensus may be building in Congress to halt automatic defense budget cuts, says AIA president”, <http://www.militaryaerospace.com/articles/2012/03/aia-comment-on-sequestration.html>, March 29, 2012, LEQ)

ARLINGTON, Va., 29 March 2012. Threatened automatic cuts in the U.S. Department of Defense (DOD) budget, which would take place if Congress fails by the end of this year to make additional federal budget cuts or tax increases would hollow out our military, endanger our troops and stop economic recovery dead in its tracks, Marion C. Blakey, president and chief executives officer of the Aerospace Industries Association (AIA) trade group in Arlington, Va., said today. The congressionally approved 2011 Budget Control Act calls for across-the-board defense budget cuts to begin on 1 Jan. 2013 if Congress fails to cut spending, increases taxes, or both to reign-in budget deficits. The law calls for Congress to cut defense spending by $500 billion over 10 years if lawmakers cannot reach agreement on budget targets, which looks increasingly likely. Defense experts say automatic defense cuts, or "sequestration," could put a stop to U.S. Air Force plans for a new long-range jet bomber, a new Army tactical vehicle, and could reduce the U.S. Navy's fleet of aircraft carriers lower than the current 11 vessels. The AIA's Blakey, in a statement released today, says a bipartisan consensus is emerging that the sequestration cuts imposed by the Budget Control Act are a cure worse than the disease. Related stories -- We can thank a self-absorbed Congress for hurting national defense if deep automatic defense cuts happen -- Two-year DOD spending for electronics and communications set to drop by nearly one-fourth -- Pentagon proposes deep cuts in lasers and directed-energy weapons work in 2013 budget. "More deep cuts to defense investments could cost over a million jobs and create enormous economic dislocation in thousands of communities across the country just as economic recovery is finally taking root," Blakey wrote. "In addition, these cuts would cede American leadership in a host of critical technologies, allowing our enemies to close the gap in stealth flight, air defenses, unmanned vehicles and surveillance and reconnaissance."

No link

**SMRs solve Mars colonization**

**O’Neil 11**, Ian, PhD from University of Wales, founder and editor of Astroengine, space producer for Discovery News [“'Suitcase' Nuclear Reactors to Power Mars Colonies,” August 30th, http://news.discovery.com/space/mars-colonies-powered-by-mini-nuclear-reactors-110830.html]

Nuclear power is an emotive subject -- particularly in the wake of the Fukushima power plant disaster after Japan's March earthquake and tsunami -- but in space, it may be an essential component of spreading mankind beyond terrestrial shores. On Monday, at the 242nd National Meeting and Exposition of the American Chemical Society (ACS) in Denver, Colo., the future face of space nuclear power was described. You can forget the huge reactor buildings, cooling towers and hundreds of workers; the first nuclear reactors to be landed on alien worlds to support human settlement will be tiny. Think less "building sized" and more "suitcase sized." "People would never recognize the fission power system as a nuclear power reactor," said James E. Werner, lead of the Department of Energy's (DOE) Idaho National Laboratory. "The reactor itself may be about 1 feet wide by 2 feet high, about the size of a carry-on suitcase. There are no cooling towers. A fission power system is a compact, reliable, safe system that may be critical to the establishment of outposts or habitats on other planets. Fission power technology can be applied on Earth's Moon, on Mars, or wherever NASA sees the need for continuous power." The joint NASA/DOE project is aiming to build a demonstration unit next year. Obviously, this will be welcome news to Mars colonization advocates; to have a dependable power source on the Martian surface will be of paramount importance. The habitats will need to have a constant power supply simply to keep the occupants alive. This will be "climate control" on an unprecedented level. Water extraction, reclamation and recycling; food cultivation and storage; oxygen production and carbon dioxide scrubbing; lighting; hardware, tools and electronics; waste management -- these are a few of the basic systems that will need to be powered from the moment humans set foot on the Red Planet, 24 hours 39 minutes a day (or "sol" -- a Martian day), 669 sols a year. Fission reactors can provide that. However, nuclear fission reactors have had a very limited part to play in space exploration up until now. Russia has launched over 30 fission reactors, whereas the US has launched only one. All have been used to power satellites. Radioisotope thermoelectric generators (RTGs), on the other hand, have played a very important role in the exploration of the solar system since 1961. These are not fission reactors, which split uranium atoms to produce heat that can then be converted into electricity. RTGs depend on small pellets of the radioisotope plutonium-238 to produce a steady heat as they decay. NASA's Pluto New Horizons and Cassini Solstice missions are equipped with RTGs (not solar arrays) for all their power needs. The Mars Science Laboratory (MSL), to be launched in November 2011, is powered by RTGs for Mars roving day or night. RTGs are great, but to power a Mars base, fission reactors would be desirable because they deliver more energy. And although solar arrays will undoubtedly have a role to play, fission reactors will be the premier energy source for the immediate future. "The biggest difference between solar and nuclear reactors is that nuclear reactors can produce power in any environment," said Werner. "Fission power technology doesn't rely on sunlight, making it able to produce large, steady amounts of power at night or in harsh environments like those found on the Moon or Mars. A fission power system on the Moon could generate 40 kilowatts or more of electric power, approximately the same amount of energy needed to power eight houses on Earth." "The main point is that nuclear power has the ability to provide a power-rich environment to the astronauts or science packages anywhere in our solar system and that this technology is mature, affordable and safe to use." Of course, to make these "mini-nuclear reactors" a viable option for the first moon and Mars settlements, they'll need to be compact, lightweight and safe. Werner contends that once the technology is validated, we'll have one of the most versatile and affordable power resources to support manned exploration of the solar system.

**extinction**

**Schulze-Makuch and Davies 2010** (Dirk Schulze-Makuch, Ph.D., School of Earth and Environmental Sciences, Washington State University and Paul Davies, Ph.D., Beyond Center, Arizona State University, “To Boldly Go: A One-Way Human Mission to Mars”, <http://journalofcosmology.com/Mars108.html>)

There are several reasons that motivate the establishment of a permanent Mars colony. We are a vulnerable species living in a part of the galaxy where cosmic events such as major asteroid and comet impacts and supernova explosions pose a significant threat to life on Earth, especially to human life. There are also more immediate threats to our culture, if not our survival as a species. These include global pandemics, nuclear or biological warfare, runaway global warming, sudden ecological collapse and supervolcanoes (Rees 2004). Thus, the colonization of other worlds is a must if the human species is to survive for the long term. The first potential colonization targets would be asteroids, the Moon and Mars. The Moon is the closest object and does provide some shelter (e.g., lava tube caves), but in all other respects falls short compared to the variety of resources available on Mars. The latter is true for asteroids as well. Mars is by far the most promising for sustained colonization and development, because it is similar in many respects to Earth and, crucially, possesses a moderate surface gravity, an atmosphere, abundant water and carbon dioxide, together with a range of essential minerals. Mars is our second closest planetary neighbor (after Venus) and a trip to Mars at the most favorable launch option takes about six months with current chemical rocket technology.

**Plan solves military oil entanglement**

Buis ’12 (Tom Buis, CEO, Growth Energy, Co-written by Buis and Growth Energy Board Co-Chair Gen. Wesley K. Clark (Ret.), “American Families Need American Fuel”, <http://energy.nationaljournal.com/2012/05/powering-our-military-whats-th.php>, May 23, 2012, LEQ)

Our nation is dangerously dependent on foreign oil. We import some 9 million barrels per day, or over 3 billion barrels per year; the U.S. military itself comprises two percent of the nation’s total petroleum use, making it the world’s largest consumer of energy and oil imports. Of U.S. foreign oil imports, one out of five barrels comes from unfriendly nations and volatile areas, including at least 20 percent stemming from the Persian Gulf, including Bahrain, Iraq, Iran, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates. Further, our nation heavily relies on hot-beds of extremism, as Saudi Arabia, Venezuela, Nigeria are our third, fourth, and fifth, respectively, largest exporters of oil. How dangerous is this? Very! Not only does America’s huge appetite for oil entangle us into complicated relationships with nations marred by unstable political, economic, and security situations, it also gravely impacts our military, who risk their lives daily to protect foreign energy supply routes. Because of our addiction to oil, we have been in almost constant military conflict, lost more than 6,500 soldiers and created a whole new class of wounded warriors, thousands of whom will need long-term care funded by our government. One in eight soldiers killed or wounded in Iraq from 2003-2007 were protecting fuel convoys, with a total of 3,000 Army casualties alone. We maintain extra military forces at an annual cost of about $150 billion annually, just to assure access to foreign oil - because we know that if that stream of 9 million barrels per day is seriously interrupted, our economy will crash. That's what I call dangerously dependent. Even worse, according to a new Bloomberg Government analysis, Pentagon spending on fuel is dramatically increasing. This will force the military to dedicate even more funds toward energy costs, at the expense of other priorities, like training and paying soldiers. In fact, every $.25 increase in the cost of jet fuel makes a $1 billion difference in the Department of Defense’s bottom line – a debt that will be passed along to the American taxpayer. And if that's not enough to make you want to avoid foreign oil, then consider this: every dollar hike in the international, politically-rigged price of oil hands Iran about $3 million more per day, that their regime can use to sow mischief, fund terrorism, and develop missiles and nuclear weapons. Enough is enough! We have domestic alternatives that can protect American interests, and promote prosperity and security – including, more domestic oil production, using natural gas and biofuels, like ethanol, as fuel, converting coal to liquid fuel, and moving as rapidly as possible to vehicles powered by green energy. By introducing clean energy and fuel alternatives, this would rapidly reduce both the strain of securing foreign energy supply routes in unstable regions, as well as unnecessary economic and political entanglement with volatile regimes. It is imperative the U.S. military leverage its position as a leader and enact pertinent energy policies to best enhance American energy – and national – security.

**SMRs solve inevitable water wars**

**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. 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**.”

# Politics

**High skill reform inevitable**

Matthew Yglesias, Slate, 1/15/13, How the GOP Can Roll Obama on Immigration, www.slate.com/blogs/moneybox/2013/01/15/immigration\_reform\_will\_obama\_get\_rolled.html

Of the major policy issues under discussion in Washington, "immigration reform" stands out for having unusually undefined content. For the major immigration-advocacy groups, the goal is clear, a comprehensive bill that includes a path to citizenship for the overwhelming majority of unauthorized migrants already living in the United States. But many other aspects of immigration law are in the mix as part of a proposed deal, and it seems to me that there's a fair chance that a nimble Republican Party could essentially roll the Democratic coalition and pass an "immigration reform" bill that doesn't offer the path Latino advocacy groups are looking for. Elise Foley has the key line from her briefing on the administration's thinking about immigration, namely that a piecemeal approach "could result in passage of the less politically complicated pieces, such as an enforcement mechanism and high-skilled worker visas, while leaving out more contentious items such as a pathway to citizenship for undocumented immigrants." And indeed it could. But how can they stop it? The last House GOP effort to split the high-tech visas question from the path to citizenship question was an absurd partisan ploy. If Republicans want to get serious about it they should be able to make it work. The centerpiece would be something on increased immigration of skilled workers. That's something the tech industry wants very much, it's a great idea on the merits, and few influential people have any real beef with it. High tech visas will easily generate revenue to pay for some stepped-up enforcement. Then instead of adding on a poison pill so Democrats will block the bill, you need to add a sweetener. Not the broad path to citizenship, but something small like the DREAM Act. Now you've got a package that falls massively short of what Latino groups are looking for, but that I think Democrats will have a hard time actually blocking. After all, why would they block it? It packages three things—more skilled immigration, more enforcement, and help for DREAMers—they say they want. Blocking it because it doesn't also do the broad amnesty that liberals want and conservatives hate would require the kind of fanaticism that is the exact opposite of Obama's approach to politics.

Relations inevitable – 8 common interests

**Tellis 07** – senior associate at the Carnegie Endowment for International Peace, specializing in international security, defense, and Asian strategic issues. Former Department of State senior adviser to the Undersecretary of State for Political Affairs. Former senior policy analyst at the RAND corporation (Ashley J. “What should we expect from india as a strategic partner?” <http://www.carnegieendowment.org/2007/03/01/what-should-we-expect-from-india-as-strategic-partner/961>)

These links are only reinforced by the new and dramatic convergence of national interests between the United States and India in a manner never witnessed during the Cold War. Today and for the foreseeable future, both Washington and New Delhi will be bound by a common interest in: • Preventing Asia from being dominated by any single power that has the capacity to crowd out others and which may use aggressive assertion of national self-interest to threaten American presence, American alliances, and American ties with the regional states; • Eliminating the threats posed by state sponsors of terrorism who may seek to use violence against innocents to attain various political objectives, and more generally neutralizing the dangers posed by terrorism and religious extremism to free societies; • Arresting the further spread of weapons of mass destruction (WMD) and related technologies to other countries and subnational entities, including substate actors operating independently or in collusion with states; • Promoting the spread of democracy not only as an end in itself but also as a strategic means of preventing illiberal polities from exporting their internal struggles over power abroad; • Advancing the diffusion of economic development with the intent of spreading peace through prosperity through the expansion of a liberal international economic order that increases trade in goods, services, and technology worldwide; • Protecting the global commons, especially the sea lanes of communications, through which flow not only goods and services critical to the global economy but also undesirable commerce such as drug trading, human smuggling, and WMD technologies; • Preserving energy security by enabling stable access to existing energy sources through efficient and transparent market mechanisms (both internationally and domestically), while collaborating to develop new sources of energy through innovative approaches that exploit science and technology; and, • Safeguarding the global environment by promoting the creation and use of innovative technology to achieve sustainable development; devising permanent, self-sustaining, marketbased institutions and systems that improve environmental protection; developing coordinated strategies for managing climate change; and assisting in the event of natural disasters.

**Wont pass**

Politico 3-5-13. dyn.politico.com/printstory.cfm?uuid=12207C2F-7F94-479F-959C-F539B631CDF1

“More likely that we deal with one bill at a time, more likely that the Senate slams them all together,” said Oklahoma Rep. James Lankford, chairman of the Republican Policy Committee, who is involved with immigration strategy. “They do so few bills over there, they’re going to do one big giant, we may do a few small [bills] and see what we work on in conference together.”¶ Still, as Washington is a-twitter about immigration reform, and President Barack Obama is corralling support on Capitol Hill, the GOP leadership is staring at a daunting statistic: More than 140 Republicans represent districts with nearly no Hispanics. So many of them look at immigration reform through a parochial lens, not as a national political imperative like the party bigwigs.¶ The uptick in private action tells a more hopeful story for reform than was previously understood. Of course, passing any immigration reform bills is a political risk because if the House is seen even temporarily as moving minor proposals while the Senate moves a massive bill, that action could be seen as insufficient.¶ For instance, the piecemeal approach could risk putting some House Republicans crosswise with national party apparatus — who see comprehensive immigration reform as a pathway toward maintaining power in Washington.¶ “I don’t like how some people on our side who are pushing a comprehensive plan who say, ‘The reason we have to do this if because we’re not getting enough of the Hispanic vote at the presidential level,’” said Rep. Tom Rooney (R-Fla.) . “For me, policy should be driven because of policy, not politics, and I know that’s wishful thinking.”¶ Ryan’s office did not answer an email about the private conversations. Gowdy told reporters he would talk about anything except immigration.¶ The desire to avoid comprehensive movement on immigration is so widespread, so geographically diverse, that it’s hard to ignore and might be impossible for leadership to circumvent.¶ Rep. Reid Ribble (R-Wis.) said he is “hopeful … that rather than trying to do a major comprehensive reform, we will try and do it sequentially.”¶ “Everyone agrees on certain things,” Ribble said.¶ Rooney said Republicans would “lose a group of people right off the bat” if they try to cobble together a comprehensive bill.

**PC theory is wrong- winners win**

Hirsh, 2-7 – National Journal chief correspondent, citing various political scientists

[Michael, former Newsweek senior correspondent, "There’s No Such Thing as Political Capital," National Journal, 2-9-13, www.nationaljournal.com/magazine/there-s-no-such-thing-as-political-capital-20130207, accessed 2-8-13, mss]

The idea of political capital—or mandates, or momentum—is so poorly defined that presidents and pundits often get itwrong. On Tuesday, in his State of the Union address, President Obama will do what every president does this time of year. For about 60 minutes, he will lay out a sprawling and ambitious wish list highlighted by gun control and immigration reform, climate change and debt reduction. In response, the pundits will do what they always do this time of year: They will talk about how unrealistic most of the proposals are, discussions often informed by sagacious reckonings of how much “political capital” Obama possesses to push his program through. Most of **this** talk **will have** no bearing on what actually happens over the next four years. Consider this: Three months ago, just before the November election, if someone had talked seriously about Obama having enough political capital to oversee passage of both immigration reform and gun-control legislation at the beginning of his second term—even after winning the election by 4 percentage points and 5 million votes (the actual final tally)—this person would have been called crazy and stripped of his pundit’s license. (It doesn’t exist, but it ought to.) In his first term, in a starkly polarized country, the president had been so frustrated by GOP resistance that he finally issued a limited executive order last August permitting immigrants who entered the country illegally as children to work without fear of deportation for at least two years. Obama didn’t dare to even bring up gun control, a Democratic “third rail” that has cost the party elections and that actually might have been even less popular on the right than the president’s health care law. And yet, for reasons that have very little to do with Obama’s personal prestige or popularity—variously put in terms of a “mandate” or “political capital”—chances are fair that both will now happen. What changed? In the case of gun control, of course, it wasn’t the election. It was the horror of the 20 first-graders who were slaughtered in Newtown, Conn., in mid-December. The sickening reality of little girls and boys riddled with bullets from a high-capacity assault weapon seemed to precipitate a sudden tipping point in the national conscience. One thing changed after another. Wayne LaPierre of the National Rifle Association marginalized himself with poorly chosen comments soon after the massacre. The pro-gun lobby, once a phalanx of opposition, began to fissure into reasonables and crazies. Former Rep. Gabrielle Giffords, D-Ariz., who was shot in the head two years ago and is still struggling to speak and walk, started a PAC with her husband to appeal to the moderate middle of gun owners. Then she gave riveting and poignant testimony to the Senate, challenging lawmakers: “Be bold.” As a result, momentum has appeared to build around some kind of a plan to curtail sales of the most dangerous weapons and ammunition and the way people are permitted to buy them. It’s impossible to say now whether such a bill will pass and, if it does, whether it will make anything more than cosmetic changes to gun laws. But one thing is clear: The **political tectonics** have **shift**ed **dramatically** in very little time. Whole new possibilities exist now that didn’t a few weeks ago. Meanwhile, the Republican members of the Senate’s so-called Gang of Eight are pushing hard for a new spirit of compromise on immigration reform, a sharp change after an election year in which the GOP standard-bearer declared he would make life so miserable for the 11 million illegal immigrants in the U.S. that they would “self-deport.” But this turnaround has very little to do with Obama’s personal influence—his political mandate, as it were. It has almost entirely to do with just two numbers: 71 and 27. That’s 71 percent for Obama, 27 percent for Mitt Romney, the breakdown of the Hispanic vote in the 2012 presidential election. Obama drove home his advantage by giving a speech on immigration reform on Jan. 29 at a Hispanic-dominated high school in Nevada, a swing state he won by a surprising 8 percentage points in November. But the movement on immigration has mainly come out of the Republican Party’s recent introspection, and the realization by its more thoughtful members, such as Sen. Marco Rubio of Florida and Gov. Bobby Jindal of Louisiana, that without such a shift the party may be facing demographic death in a country where the 2010 census showed, for the first time, that white births have fallen into the minority. It’s got nothing to do with Obama’s political capital or, indeed, Obama at all. The point is not that “political capital” is a meaningless term. Often it is a synonym for “mandate” or “momentum” in the aftermath of a decisive election—and just about every politician ever elected has tried to claim more of a mandate than he actually has. Certainly, Obama can say that because he was elected and Romney wasn’t, he has a better claim on the country’s mood and direction. Many pundits still defend political capital as a useful metaphor at least. “It’s an unquantifiable but meaningful concept,” says Norman Ornstein of the American Enterprise Institute. “You can’t really look at a president and say he’s got 37 ounces of political capital. But the fact is, it’s a concept that matters, if you have popularity and some momentum on your side.” The real problem is that the idea of political capital—or mandates, or momentum—is so poorly defined that presidents and pundits often get it wrong. “Presidents usually over-estimate it,” says George Edwards, a presidential scholar at Texas A&M University. “The best kind of political capital—some sense of an electoral mandate to do something—is very rare. It almost never happens. In 1964, maybe. And to some degree in 1980.” For that reason, **political capital** is a concept that **misleads** far more than it enlightens. **It is** **distortionary**. It conveys the idea that we know more than we really do about the ever-elusive concept of political power, and it discounts the way unforeseen events can suddenly change everything. Instead, it suggests, erroneously, that a political figure has a concrete amount of political capital to invest, just as someone might have real investment capital—that a particular leader can bank his gains, and the size of his account determines what he can do at any given moment in history. Naturally, any president has practical and electoral limits. Does he have a majority in both chambers of Congress and a cohesive coalition behind him? Obama has neither at present. And unless a surge in the economy—at the moment, still stuck—or some other great victory gives him more momentum, it is inevitable that the closer Obama gets to the 2014 election, the less he will be able to get done. Going into the midterms, Republicans will increasingly avoid any concessions that make him (and the Democrats) stronger. But the abrupt emergence of the immigration and gun-control issues illustrates how suddenly shifts in mood can occur and how political interests can align in new ways just as suddenly. Indeed, the pseudo-concept of political capital masks a larger truth about Washington that is kindergarten simple: You just don’t know what you can do until you try. Or as Ornstein himself once wrote years ago, “**Winning wins.”** In theory, and in practice, depending on Obama’s handling of any particular issue, even in a polarized time, he could still deliver on a lot of his second-term goals, depending on his skill and the breaks. Unforeseen catalysts can appear, like Newtown. Epiphanies can dawn, such as when many Republican Party leaders suddenly woke up in panic to the huge disparity in the Hispanic vote. Some **political scientists** **who study** the elusive calculus of **how to pass legislation** and run successful presidencies **say** that **political capital is**, at best, **an empty concept**, and that **almost nothing in** the **academic literature** successfully quantifies or even defines it. “It can refer to a very abstract thing, like a president’s popularity, but there’s no mechanism there. That makes it kind of useless,” says Richard Bensel, a government professor at Cornell University. Even Ornstein concedes that the calculus is far more complex than the term suggests. **Winning** on one issue often **changes the** **calculation** for the next issue; there is never any known amount of capital. “The idea here is, if an issue comes up where **the conventional wisdom is that president is not going to get what he wants**, and [they]he gets it, then each time that happens, it changes the calculus of the other actors” Ornstein says. “If they think he’s going to win, they may change positions to get on the winning side. **It’s a bandwagon effect**.” ALL THE WAY WITH LBJ Sometimes, a clever practitioner of power can get more done just because [they’re]he’s aggressive and knows the hallways of Congress well. Texas A&M’s Edwards is right to say that the outcome of the 1964 election, Lyndon Johnson’s landslide victory over Barry Goldwater, was one of the few that conveyed a mandate. But one of the main reasons for that mandate (in addition to Goldwater’s ineptitude as a candidate) was President Johnson’s masterful use of power leading up to that election, and his ability to get far more done than anyone thought possible, given his limited political capital. In the newest volume in his exhaustive study of LBJ, The Passage of Power, historian Robert Caro recalls Johnson getting cautionary advice after he assumed the presidency from the assassinated John F. Kennedy in late 1963. Don’t focus on a long-stalled civil-rights bill, advisers told him, because it might jeopardize Southern lawmakers’ support for a tax cut and appropriations bills the president needed. “One of the wise, practical people around the table [said that] the presidency has only a certain amount of coinage to expend, and you oughtn’t to expend it on this,” Caro writes. (Coinage, of course, was what political capital was called in those days.) Johnson replied, “Well, what the hell’s the presidency for?” Johnson didn’t worry about coinage, and he got the Civil Rights Act enacted, along with much else: Medicare, a tax cut, antipoverty programs. He appeared to understand not just the ways of Congress but also the way to maximize the momentum he possessed in the lingering mood of national grief and determination by picking the right issues, as Caro records. “Momentum is not a mysterious mistress,” LBJ said. “It is a controllable fact of political life.” Johnson had the skill and wherewithal to realize that, at that moment of history, he could have unlimited coinage if he handled the politics right. He did. (At least until Vietnam, that is.)

# 2ac k

**Framework – debate should be about the consequences of the plan were it to be done by the federal government – infinite number of assumptions and possible alt actors guts predictability**

**Key to avoid technocrat fill-in**

**Kuzemko 12** [Caroline Kuzemko, CSGR University of Warwick, Security, the State and Political Agency: Putting ‘Politics’ back into UK Energy, http://www.psa.ac.uk/journals/pdf/5/2012/381\_61.pdf]

Both Hay (2007) and Flinders and Buller (2006) suggest that there are other forms that depoliticisation can take, or in the terminology of Flinders and Buller ‘tactics’ which politicians can pursue in order to move a policy field to a more indirect governing relationship (Flinders and Buller 2006: 296). For the purposes of understanding the depoliticisation of UK energy policy, however, two of Colin Hay’s forms of depoliticisation are most useful: the ‘… offloading of areas of formal political responsibility to the market…’ and the passing of policymaking responsibility to quasipublic, or independent, authorities (Hay 2007: 82-3). 1 What each of these forms of depoliticisation has in common is the degree to which they can serve, over time, to reduce political capacity by removing processes of deliberation and contestation, thereby reducing the ability for informed agency and choice. In that politics can be understood as being inclusive of processes of deliberation, contestation, informed agency and collective choice the lack of deliberation and capacity for informed agency would result in sub-optimal politics (Hay 2007: 67; cf. Gamble 2000; Wood 2011; Jenkins 2011). There seems little doubt that, with regard to energy as a policy area, the principal of establishing a more indirect governing system had become accepted by UK political elites. One of the very few close observers of UK energy policy from the 1980s to early 2000s claims that both Conservative and New Labour politicians had actively sought to remove energy from politics, making it an ‘economic’ subject: From the early 1980s, British energy policy, and its associated regulatory regime, was designed to transform a state-owned and directed sector into a normal commodity market. Competition and 1 "These"forms"are"referred"to"elsewhere"by"the"author"as"‘marketised’"and"‘technocratic’"depoliticisation"(Kuzemko" 2012b:").liberalization would, its architects hoped, take energy out of the political arena… Labour shared this vision and hoped that energy would drop off the political agenda…. (Helm 2003: 386) 2 As already suggested this paper considers the intention to depoliticise energy to have been reasonably successful. By the early 2000s the Energy Ministry had been disbanded, there was little or no formal Parliamentary debate, energy was not represented at Cabinet level, responsibility for the supply of energy had been passed to the markets, it was regulated by an independent body, and the (cf. Kuzemko 2012b). Furthermore, the newly formed Energy Directorate within the Department of Trade and Industry (DTI), which now had responsibility for energy policy, had no specific energy mandates but instead mandates regarding encouraging the right conditions for business with an emphasis on competition (Helm et al 1989: 55; cf. Kuzemko 2012b: 107). As feared by various analysts who write about depoliticisation as a sub-optimal form of politics, these processes of depoliticisation had arguably resulted in a lack of deliberation about energy and its governance outside of narrow technocratic elite circles. Within these circles energy systems were modelled, language was specific and often unintelligible to others, including generalist politicians or wider publics, and this did, indeed, further encourage a high degree of disengagement with the subject (cf. Kern 2010; Kuzemko 2012b; Stern 1987). Technical language and hiring practices that emphasised certain forms of economic education further isolated elite technocratic circles from political contestation and other forms of knowledge about energy. Arguably, by placing those actors who have been elected to represent the national collective interest at one remove from processes of energy governance the result was a lack of formal political capacity in this policy field. It is worth, briefly, at this point reiterating the paradoxical nature of depoliticisation. Whilst decisions to depoliticise are deeply political, political capacity to deliberate, contest and act in an issue area can be reduced through these processes. Depoliticisation has been an ongoing form of governing throughout the 20 th century it may (Burnham 2001: 464), however, be particularly powerful and more difficult to reverse when underpinned by increasingly dominant ideas about how best to govern. For example Hay, in looking for the domestic sources of depoliticisation in the 1980s and 1990s, suggests that these processes were firmly underpinned by neoliberal and public choice ideas not only about the role of the state but also about the ability for political actors to make sound decisions relating, in particular, to economic governance (Hay 2007: 95-99). Given the degree to which such ideas were held increasingly to be legitimate over this time period depoliticisation was, arguably, genuinely understood by many as a process that would result in better governance (Interviews 1, 2, 3, 15 cf. Hay 2007: 94; Kern 2010). This to a certain extent makes decisions to depoliticise appear both less instrumental but also harder to reverse given the degree to which such ideas become further entrenched via processes of depoliticisation (cf. Kuzemko 2012b: 61-66; Wood 2011: 7).

**perm do both**

**perm do the plan and all non-competitive parts of the alt**

**vague alts are a voting issue – makes stable offense impossible**

There’s always value to life

Frankl (Holocaust Survivor) 46 (Victor Frankl, Professor of Neurology and Psychiatry at the University of Vienna, Man’s Search for Meaning, 1946, p. 104)

But I did not only talk of the future and the veil which was drawn over it. I also mentioned the past; all its joys, and how its light shone even in the present darkness. Again I quoted a poet—to avoid sounding like a preacher myself—who had written, “Was Dii erlebst, k,ann keme Macht der Welt Dir rauben.” (What you have experienced, no power on earth can take from you.) Not only our experiences, but all we have done, whatever great thoughts we may have had, and all we have suffered, all this is not lost, though it is past; we have brought it into being. Having been is also a kind of being, and perhaps the surest kind. Then I spoke of the many opportunities of giving life a meaning. I told my comrades (who lay motionless, although occasionally a sigh could be heard) that human life, under any circumstances, never ceases to have a meaning, and that this infinite meaning of life includes suffering and dying, privation and death. I asked the poor creatures who listened to me attentively in the darkness of the hut to face up to the seriousness of our position. They must not lose hope but should keep their courage in the certainty that the hopelessness of our struggle did not detract from its dignity and its meaning. I said that someone looks down on each of us in difficult hours—a friend, a wife, somebody alive or dead, or a God—and he would not expect us to disappoint him. He would hope to find us suffering proudly—not miserably—knowing how to die.

**Ecosecurity discourse key to solvency**

**Matthew 2**, Richard A, associate professor of international relations and environmental political at the University of California at Irvine, Summer (ECSP Report 8:109-124)

In addition, **environmental security's language** and findings can benefit conservation and sustainable development."' Much environmental security literature emphasizes the importance of development assistance, sustainable livelihoods, fair and reasonable access to environmental goods, and conservation practices as the vital upstream measures that in the long run will contribute to higher levels of human and state security. The Organization for Economic Cooperation and Development (OECD) and the International Union for the Conservation of Nature (IUCN) are examples of bodies that have been quick to recognize how the language of environmental security can help them. The scarcity/conflict thesis has alerted these groups to prepare for the possibility of working on environmental rescue projects in regions that are likely to exhibit high levels of related violence and conflict. These groups are also aware that an **association with security can expand** their **acceptance and constituencies** in some countries in which the military has political control, For the first time in its history; the contemporary environmental movement can regard military and intelligence agencies as potential **allies in the struggle** to contain or reverse humangenerated environmental change. (In many situations, of course, the political history of the military--as well as its environmental record-raise serious concerns about the viability of this cooperation.) Similarly, **the language of security has provided a basis for** some **fruitful discussions** between environmental groups and representatives of extractive industries. In many parts of the world, mining and petroleum companies have become embroiled in conflict. These companies have been accused of destroying traditional economies, cultures, and environments; of political corruption; and of using private militaries to advance their interests. They have also been targets of violence, Work is now underway through the environmental security arm of the International Institute for Sustainable Development (IISD) to address these issues with the support of multinational corporations. Third, the general conditions outlined in much environmental security research can help organizations such as USAID, the World Bank, and IUCN identify priority cases--areas in which investments are likely to have the greatest ecological and social returns. For all these reasons, IUCN elected to integrate environmental security into its general plan at the Amman Congress in 2001. Many other environmental groups and development agencies are taking this perspective seriously (e.g. Dabelko, Lonergan& Matthew, 1999). However, for the most part these efforts remain preliminary.'

Conclusions **Efforts to dismiss environment and security research and policy activities on the grounds that they have been unsuccessful are premature and misguided**. This negative criticism has all too often been based on an excessively simplified account of the research findings of Homer-Dixon and a few others. Homer-Dixon’s scarcity-conflict thesis has made important and highly visible contributions to the literature, but it is only a small part of a larger and very compelling theory. This broader theory has roots in antiquity and speaks to the pervasive conflicts and security implications of complex nature-society relationships. The theory places incidents of violence in larger structural and historical contexts while also specifying contemporarily significant clusters of variables. From this more generalized and inclusive perspective, violence and conflict are revealed rarely as a society’s endpoint and far more often as parts of complicated adaptation processes. The contemporary research on this classical problematic has helped to revive elements of security discourse and analysis that were marginalized during the Cold War. It has also made valuable contributions to our understanding of the requirements of human security, the diverse impacts of globalization, and the nature of contemporary transnational security threats. Finall,y environmental security research has been valuable in myriad ways to a range of academics, policymakers, and activists, although the full extent of these contributions remains uncertain, rather than look for reasons to abandon this research and policy agenda, **now is the time** to recognize and **to build on the** remarkable **achievements** of the entire environmental security field.

# Round 6

# 1ac

#### Scenario 1 is Coal:

#### SMR’s are a sustainable method to solve global problems- this comes from James Hansen in a personal letter to Obama

Hansen ‘8 (James and Anniek Hansen, That really smart climate dude, <http://www.pdfdownload.org/pdf2html/pdf2html.php?url=http%3A%2F%2Fwww.columbia.edu%2F~jeh1%2Fmailings%2F20081229_DearMichelleAndBarack.pdf&images=yes>, December 29, 2008, LEQ)

(3) Urgent R&D on 4th generation nuclear power with international cooperation. Energy efficiency, renewable energies, and a "smart grid" deserve first priority in our effort to reduce carbon emissions. With a rising carbon price, renewable energy can perhaps handle all of our needs. However, most experts believe that making such presumption probably would leave us in 25 years with still a large contingent of coal-fired power plants worldwide. Such a result would be disastrous for the planet, humanity, and nature. 4 th generation nuclear power (4 th GNP) and coal-fired power plants with carbon capture and sequestration (CCS) at present are the best candidates to provide large baseload nearly carbon-free power (in case renewable energies cannot do the entire job). Predictable criticism of 4 th GNP (and CCS) is: "it cannot be ready before 2030." However, the time needed could be much abbreviated with a Presidential initiative and Congressional support. Moreover, improved (3 rd generation) light water reactors are available for near-term needs. In our opinion, 4 th GNP ii deserves your strong support, because it has the potential to help solve past problems with nuclear power: nuclear waste, the need to mine for nuclear fuel, and release of radioactive material iii . Potential proliferation of nuclear material will always demand vigilance, but that will be true in any case, and our safety is best secured if the United States is involved in the technologies and helps define standards. Existing nuclear reactors use less than 1% of the energy in uranium, leaving more than 99% in long-lived nuclear waste. 4 th GNP can "burn" that waste, leaving a small volume of waste with a half-life of decades rather than thousands of years. Thus 4 th GNP could help solve the nuclear waste problem, which must be dealt with in any case. Because of this, a portion of the $25B that has been collected from utilities to deal with nuclear waste justifiably could be used to develop 4 th generation reactors. The principal issue with nuclear power, and other energy sources, is cost. Thus an R&D objective must be a modularized reactor design that is cost competitive with coal. Without such capability, it may be difficult to wean China and India from coal. But all developing countries have great incentives for clean energy and stable climate, and they will welcome technical cooperation aimed at rapid development of a reproducible safe nuclear reactor.

**Coal plants destroy low income neighborhoods and minority communities**

**NAACP, No Date**. National Association for the Advancement of Colored People, *NAACP commends Agreement to Close Two Chicago Coal Plants,* In between 2009- 2012. <http://www.naacp.org/news/entry/naacp-commends-agreement-to-close-two-chicago-coal-plants>

(Chicago, IL) – NAACP leaders commended the agreement between Midwest Generation, Chicago officials and environmental groups that will lead to the closure of Fisk Generating Station and Crawford Generating Station. Fisk and Crawford ranked as two of the worst environmental justice offenders in an NAACP report released last year. The report, “Coal Blooded: Putting Profits Before People in Illinois”, analyzed emissions and demographic factors – including race, income, and population density – to rank plants’ “environmental justice performance”. Fisk and Crawford both received an “F”. “This agreement means a cleaner, healthier environment for the communities around these coal plants,” stated NAACP President and CEO Benjamin Todd Jealous. “Environmental justice is a civil rights issue, and the NAACP is committed to strong regulation and monitoring of toxic coal emissions. For too long, Fisk and Crawford have been literally choking some of Chicago’s most diverse neighborhoods, and some of its poorest.” “Coal-fired power plants are disproportionately located in low-income communities and communities of color, and Fisk and Crawford represent two of the most egregious offenders,” stated Jacqueline Patterson, Director of NAACP Environmental and Climate Justice Programs. “The Little Village Environmental Justice Organization and Mayor Emanuel were effective in raising the health concerns felt by so many Chicago citizens. Though it was a long time coming, it is heartening to see Midwest Generation take the socially responsible path.” “The 600,000 Chicago residents living within three miles of Fisk or Crawford have suffered long enough,” stated Rose Joshua, President of the NAACP South Side Chicago unit. “This is a true victory for grassroots democracy – a group of citizens who refused to be marginalized and spoke up for the health and wellbeing of their families and their environment.” Proximity to coal emissions can lead to a variety of respiratory diseases, including asthma and bronchitis, and can lead to premature death. The average income within three miles of Crawford is $11,097, and 83.9% of that population is composed of people of color. In the three miles surrounding Fisk, the average income is $15,065, and people of color make up 83.1% of the population. “Coal Blooded” was a coalition effort initiated by NAACP, Little Village Environmental Justice Organization and the Indigenous Environmental Network. Founded in 1909, the NAACP is the nation's oldest and largest civil rights organization. Its members throughout the United States and the world are the premier advocates for civil rights in their communities, conducting voter mobilization and monitoring equal opportunity in the public and private sectors.

#### These minority communities suffer the worst because coal plants dump their waste on the immediate surrounding areas

BLF, SOC, GCPA, and Clear Air, 2002. Black Leadership forum- Black leaders to grapple with issues of the deepest significance to African Americans, particularly civil rights and major public policy issues, BLF sponsored two international forums in Durban, South Africa, Today focuses on environmental justice. The Southern Organizing Committee for Economic and Social Justice- SOC was in the vanguard promoting community empowerment, capacity building and grassroots organizing, particularly in the South. Under the leadership of Connie Tucker who has served as the Executive Council of the National Environmental Justice Advisory Council, its Waste and Facility Siting Sub-committee, The Georgia Coalition for The Peoples’ Agenda- an advocacy organization that includes all of the major Civil Rights/Human Rights/Peace & Justice organizations around the state of Georgia. Dr. Joseph E. Lowery is the convener of this coalition. Dr. Joseph E. Lowery is minister in the [United Methodist Church](http://en.wikipedia.org/wiki/United_Methodist_Church) and leader in the [American](http://en.wikipedia.org/wiki/United_States) [civil rights](http://en.wikipedia.org/wiki/American_Civil_Rights_Movement_(1955-1968)) movement and effectively became Martin Luther King’s Immediate successor , Clear the Air- A joint project of three tasks forces: Clean Air Task Force, National Environmental Trust and U.S. PIRG Education Fund. The Clean Air Task Force is a non-profit organization dedicated to restoring clean air and healthy environments through scientific research, public education and legal advocacy. The National Environmental Trust is a non-profit, non-partisan organization dedicated to applying modern communications and public education techniques to environmental education and advocacy. The U.S. PIRG Education Fund is a nonprofit, nonpartisan organization that conducts independent research, and educates and organizes the public about a wide variety of environmental, consumer and government reform problems. *Air of injustice*. <http://www.catf.us/resources/publications/files/Air_of_Injustice.pdf>

People living near power plants can also be exposed to contaminants in power plant wastes. Power plant waste is largely made up of ash and other unburned materials that are left after the coal is burned. Each year more than 100 million tons of waste are generated from burning coal and oil. (32) These wastes contain high levels of metals like mercury, arsenic, lead, chromium, and cadmium. Disposal of power plant waste in unlined lagoons and landfills can contaminate groundwater (a source of drinking water) as can mine filling (dumping large volumes of combustion waste in abandoned mines). Power plant wastes are sometimes applied to agricultural fields, a practice that can directly contaminate the soil and can contaminate nearby areas with windblown dust.

#### Scenario 2: Warming

#### Climate change is coming now and is bearing a hugely disproportionate impact on those already at the greatest socioeconomic disadvantage, causing widespread physical displacement and death and culminate in *extinction of all species*

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

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

#### Small Modular Reactors achieve significant GHG reductions

Rosner, Goldberg, and Hezir et. al. ‘11 (Robert Rosner, Robert Rosner is an astrophysicist and founding director of the Energy Policy Institute at Chicago. He was the director of Argonne National Laboratory from 2005 to 2009, and Stephen Goldberg, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, Joseph S. Hezir, Principal, EOP Foundation, Inc., Many people have made generous and valuable contributions to this study. Professor Geoff Rothwell, Stanford University, provided the study team with the core and supplemental analyses and very timely and pragmatic advice. Dr. J’Tia Taylor, Argonne National Laboratory, supported Dr. Rothwell in these analyses. Deserving special mention is Allen Sanderson of the Economics Department at the University of Chicago, who provided insightful comments and suggested improvements to the study. Constructive suggestions have been received from Dr. Pete Lyons, DOE Assistant Secretary of Nuclear Energy; Dr. Pete Miller, former DOE Assistant Secretary of Nuclear Energy; John Kelly, DOE Deputy Assistant Secretary for Nuclear Reactor Technologies; Matt Crozat, DOE Special Assistant to the Assistant Secretary for Nuclear Energy; Vic Reis, DOE Senior Advisor to the Under Secretary for Science; and Craig Welling, DOE Deputy Office Director, Advanced Reactor Concepts Office, as well as Tim Beville and the staff of DOE’s Advanced Reactor Concepts Office. The study team also would like to acknowledge the comments and useful suggestions the study team received during the peer review process from the nuclear industry, the utility sector, and the financial sector. Reviewers included the following: Rich Singer, VP Fuels, Emissions, and Transportation, MidAmerican Energy Co.; Jeff Kaman, Energy Manager, John Deere; Dorothy R. Davidson, VP Strategic Programs, AREVA; T. J. Kim, Director—Regulatory Affairs & Licensing, Generation mPower, Babcock & Wilcox; Amir Shahkarami, Senior Vice President, Generation, Exelon Corp.; Michael G. Anness, Small Modular Reactor Product Manager, Research & Technology, Westinghouse Electric Co.; Matthew H. Kelley and Clark Mykoff, Decision Analysis, Research & Technology, Westinghouse Electric Co.; George A. Davis, Manager, New Plant Government Programs, Westinghouse Electric Co.; Christofer Mowry, President, Babcock & Wilcox Nuclear Energy, Inc.; Ellen Lapson, Managing Director, Fitch Ratings; Stephen A. Byrne, Executive Vice President, Generation & Transmission Chief Operating Officer, South Carolina Electric & Gas Company; Paul Longsworth, Vice President, New Ventures, Fluor; Ted Feigenbaum, Project Director, Bechtel Corp.; Kennette Benedict, Executive Director, Bulletin of the Atomic Scientist; Bruce Landrey, CMO, NuScale; Dick Sandvik, NuScale; and Andrea Sterdis, Senior Manager of Strategic Nuclear Expansion, Tennessee Valley Authority. The authors especially would like to acknowledge the discerning comments from Marilyn Kray, Vice-President at Exelon, throughout the course of the study, “Small Modular Reactors – Key to Future Nuclear Power”, <http://epic.uchicago.edu/sites/epic.uchicago.edu/files/uploads/SMRWhite_Paper_Dec.14.2011copy.pdf>, November 2011, LEQ)

As stated earlier, SMRs have the potential to achieve significant greenhouse gas emission reductions. They could provide alternative base load 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.

#### This debate space is key- *repeated messages* in the public sphere are necessary – the status quo de-emphasizes warming- incorrect information is running rampant

**Romm ‘12** (Joe Romm is a Fellow at American Progress and is the editor of Climate Progress, which New York Times columnist Tom Friedman called "the indispensable blog" and Time magazine named one of the 25 “Best Blogs of 2010.″ In 2009, Rolling Stone put Romm #88 on its list of 100 “people who are reinventing America.” Time named him a “Hero of the Environment″ and “The Web’s most influential climate-change blogger.” Romm was acting assistant secretary of energy for energy efficiency and renewable energy in 1997, where he oversaw $1 billion in R&D, demonstration, and deployment of low-carbon technology. He is a Senior Fellow at American Progress and holds a Ph.D. in physics from MIT., 2/26/2012, “Apocalypse Not: The Oscars, The Media And The Myth of ‘Constant Repetition of Doomsday Messages’ on Climate”, <http://thinkprogress.org/romm/2012/02/26/432546/apocalypse-not-oscars-media-myth-of-repetition-of-doomsday-messages-on-climate/#more-432546>)

The two greatest myths about global warming communications are 1) constant repetition of doomsday messages has been a major, ongoing strategy and 2) that strategy doesn’t work and indeed is actually counterproductive! These myths are so deeply ingrained in the environmental and progressive political community that when we finally had a serious shot at a climate bill, the powers that be decided not to focus on the threat posed by climate change in any serious fashion in their $200 million communications effort (see my 6/10 post “Can you solve global warming without talking about global warming?“). These myths are so deeply ingrained in the mainstream media that such messaging, when it is tried, is routinely attacked and denounced — and the flimsiest studies are interpreted exactly backwards to drive the erroneous message home (see “Dire straits: Media blows the story of UC Berkeley study on climate messaging“) The only time anything approximating this kind of messaging — not “doomsday” but what I’d call blunt, science-based messaging that also makes clear the problem is solvable — was in 2006 and 2007 with the release of An Inconvenient Truth (and the 4 assessment reports of the Intergovernmental Panel on Climate Change and media coverage like the April 2006 cover of Time). The data suggest that strategy measurably moved the public to become more concerned about the threat posed by global warming (see recent study here). You’d think it would be pretty obvious that the public is not going to be concerned about an issue unless one explains why they should be concerned about an issue. And the social science literature, including the vast literature on advertising and marketing, could not be clearer that only repeated messages have any chance of sinking in and moving the needle. Because I doubt any serious movement of public opinion or mobilization of political action could possibly occur until these myths are shattered, I’ll do a multipart series on this subject, featuring public opinion analysis, quotes by leading experts, and the latest social science research. Since this is Oscar night, though, it seems appropriate to start by looking at what messages the public are exposed to in popular culture and the media. It ain’t doomsday. Quite the reverse, climate change has been mostly an invisible issue for several years and the message of conspicuous consumption and business-as-usual reigns supreme. The motivation for this post actually came up because I received an e-mail from a journalist commenting that the “constant repetition of doomsday messages” doesn’t work as a messaging strategy. I had to demur, for the reasons noted above. But it did get me thinking about what messages the public are exposed to, especially as I’ve been rushing to see the movies nominated for Best Picture this year. I am a huge movie buff, but as parents of 5-year-olds know, it isn’t easy to stay up with the latest movies. That said, good luck finding a popular movie in recent years that even touches on climate change, let alone one a popular one that would pass for doomsday messaging. Best Picture nominee The Tree of Life has been billed as an environmental movie — and even shown at environmental film festivals — but while it is certainly depressing, climate-related it ain’t. In fact, if that is truly someone’s idea of environmental movie, count me out. The closest to a genuine popular climate movie was the dreadfully unscientific The Day After Tomorrow, which is from 2004 (and arguably set back the messaging effort by putting the absurd “global cooling” notion in people’s heads! Even Avatar, the most successful movie of all time and “the most epic piece of environmental advocacy ever captured on celluloid,” as one producer put it, omits the climate doomsday message. One of my favorite eco-movies, “Wall-E, is an eco-dystopian gem and an anti-consumption movie,” but it isn’t a climate movie. I will be interested to see The Hunger Games, but I’ve read all 3 of the bestselling post-apocalyptic young adult novels — hey, that’s my job! — and they don’t qualify as climate change doomsday messaging (more on that later). So, no, the movies certainly don’t expose the public to constant doomsday messages on climate. Here are the key points about what repeated messages the American public is exposed to: The broad American public is exposed to virtually no doomsday messages, let alone constant ones, on climate change in popular culture (TV and the movies and even online). There is not one single TV show on any network devoted to this subject, which is, arguably, more consequential than any other preventable issue we face. The same goes for the news media, whose coverage of climate change has collapsed (see “Network News Coverage of Climate Change Collapsed in 2011“). When the media do cover climate change in recent years, the overwhelming majority of coverage is devoid of any doomsday messages — and many outlets still feature hard-core deniers. Just imagine what the public’s view of climate would be if it got the same coverage as, say, unemployment, the housing crisis or even the deficit? When was the last time you saw an “employment denier” quoted on TV or in a newspaper? The public is exposed to constant messages promoting business as usual and indeed idolizing conspicuous consumption. See, for instance, “Breaking: The earth is breaking … but how about that Royal Wedding? Our political elite and intelligentsia, including MSM pundits and the supposedly “liberal media” like, say, MSNBC, hardly even talk about climate change and when they do, it isn’t doomsday. Indeed, there isn’t even a single national columnist for a major media outlet who writes primarily on climate. Most “liberal” columnists rarely mention it. At least a quarter of the public chooses media that devote a vast amount of time to the notion that global warming is a hoax and that environmentalists are extremists and that clean energy is a joke. In the MSM, conservative pundits routinely trash climate science and mock clean energy. Just listen to, say, Joe Scarborough on MSNBC’s Morning Joe mock clean energy sometime. The major energy companies bombard the airwaves with millions and millions of dollars of repetitious pro-fossil-fuel ads. The environmentalists spend far, far less money. As noted above, the one time they did run a major campaign to push a climate bill, they and their political allies including the president explicitly did NOT talk much about climate change, particularly doomsday messaging Environmentalists when they do appear in popular culture, especially TV, are routinely mocked. There is very little mass communication of doomsday messages online. Check out the most popular websites. General silence on the subject, and again, what coverage there is ain’t doomsday messaging. Go to the front page of the (moderately trafficked) environmental websites. Where is the doomsday? If you want to find anything approximating even modest, blunt, science-based messaging built around the scientific literature, interviews with actual climate scientists and a clear statement that we can solve this problem — well, you’ve all found it, of course, but the only people who see it are those who go looking for it. Of course, this blog is not even aimed at the general public. Probably 99% of Americans haven’t even seen one of my headlines and 99.7% haven’t read one of my climate science posts. And Climate Progress is probably the most widely read, quoted, and reposted climate science blog in the world. Anyone dropping into America from another country or another planet who started following popular culture and the news the way the overwhelming majority of Americans do would get the distinct impression that nobody who matters is terribly worried about climate change. And, of course, they’d be right — see “The failed presidency of Barack Obama, Part 2.” It is total BS that somehow the American public has been scared and overwhelmed by repeated doomsday messaging into some sort of climate fatigue. If the public’s concern has dropped — and public opinion analysis suggests it has dropped several percent (though is bouncing back a tad) — that is primarily due to the conservative media’s disinformation campaign impact on Tea Party conservatives and to the treatment of this as a nonissue by most of the rest of the media, intelligentsia and popular culture.

#### Every action possible must be undertaken- inaction only allows hegemonic institutions to reify their power

Schatz 12 (JL, Binghamton U, "The Importance of Apocalypse: The Value of End-­‐Of-­‐ The-­‐World Politics While Advancing Ecocriticism," The Journal of Ecocriticism: Vol 4, No 2 (2012))

Any hesitancy to deploy images of apocalypse out of the risk of acting in a biopolitical manner ignores how any particular metaphor—apocalyptic or not—always risks getting co--‐opted. It does not excuse inaction. Clearly hegemonic forces have already assumed control of determining environmental practices when one looks at the debates surrounding off--‐shore drilling, climate change, and biodiversity within the halls of Congress. “As this ideological quagmire worsens, urgent problems … will go unsolved … only to fester more ominously into the future. … [E]cological crisis … cannot be understood outside the larger social and global context … of internationalized markets, finance, and communications” (Boggs 774). If it weren’t for people such as Watson connecting things like whaling to the end of the world it wouldn’t get the needed coverage to enter into public discourse. It takes big news to make headlines and hold attention spans in the electronic age. Sometimes it even takes a reality TV show on Animal Planet. As Luke reminds us, “Those who dominate the world exploit their positions to their advantage by defining how the world is known. Unless they also face resistance, questioning, and challenge from those who are dominated, theycertainly will remainthedominant forces” (2003: 413). Merely sitting back and theorizing over metaphorical deployments does a grave injustice to the gains activists are making on the ground. It also allows hegemonic institutions to continually define the debate over the environment by framing out any attempt for significant change, whether it be radical or reformist. Only by jumping on every opportunity for resistance can ecocriticism have the hopes of combatting the current ecological reality. This means we must recognize that we cannot fully escape the master’s housesince the surrounding environment always shapes any form of resistance. Therefore, we ought to act even if we may get co--‐opted**.** As Foucault himself reminds us, “instead of radial ruptures more often one is dealing with mobile and transitory points of resistance, producing cleavages in a society that shift about[.] … And it is doubtless the strategic codification of these points of resistance that makes a revolution possible, somewhat similar to the way in which the state relies on the institutional integration of power relationships. It is in this sphere of force relations that we must try to analyze the mechanisms of power” (96--‐97). Here Foucault “asks us to think about resistance differently, as not anterior to power, but a component of it. If we take seriously these notions on the exercise and circulation of power, then we … open … up the field of possibility to talk about particular kinds of environmentalism” (Rutherford 296). This is not to say that all actions are resistant. Rather, the revolutionary actions that are truly resistant oftentimes appear mundane since it is more about altering the intelligibility that frames discussions around the environment than any specific policy change. Again, this is why people like Watson use one issue as a jumping off point to talk about wider politics of ecological awareness. Campaigns that look to the government or a single policy but for a moment, and then go on to challenge hegemonic interactions with the environment through other tactics, allows us to codify strategic points of resistance in numerous places at once. Again, this does not mean we must agree with every tactic. It does mean that even failed attempts are meaningful. For example, while PETA’s ad campaigns have drawn criticism for comparing factory farms to the Holocaust, and featuring naked women who’d rather go naked than wear fur, their importance extends beyond the ads alone6. By bringing the issues to the forefront they draw upon known metaphors and reframe the way people talk about animals despite their potentially anti--‐Semitic and misogynist underpinnings. Michael Hardt and Antonio Negri’s theorization of the multitude serves as an excellent illustration of how utilizing the power of the master’s biopolitical tools can become powerful enough to deconstruct its house despite the risk of co--‐optation or backlash. For them, the multitude is defined by the growing global force of people around the world who are linked together by their common struggles without being formally organized in a hierarchal way. While Hardt and Negri mostly talk about the multitude in relation to global capitalism, their understanding of the commons and analysis of resistance is useful for any ecocritic. They explain, [T]he multitude has matured to such an extent that it is becoming able, through its networks of communication and cooperation … [and] its production of the common, to sustain an alternative democratic society on its own. … Revolutionary politics must grasp, in the movement of the multitudes and through the accumulation of common and cooperative decisions, the moment of rupture … that can create a new world. In the face of the destructive state of exception of biopower, then, there is also a constituent state of exception of democratic biopolitics[,] … creating … a new constitutive temporality. (357) Once one understands the world as interconnected—instead of constructed by different nation--‐states and single environments—conditions in one area of the globe couldn’t be conceptually severed from any other. In short, we’d all have a stake in the global commons. Ecocritics can then utilize biopolitics to shape discourse and fight against governmental biopower by waking people up to the pressing need to inaugurate a new future for there to be any future. Influencing other people through argument and end--‐of--‐the--‐world tactics is not the same biopower of the state so long as it doesn’t singularize itself but for temporary moments. Therefore, “it is not unreasonable to hope that in a biopolitical future (after the defeat of biopower) war will no longer be possible, and the intensity of the cooperation and communication among singularities … will destroy its [very] possibility” (Hardt & Negri 347). In The context of capitalism, when wealth fails to trickle down it would be seen as a problem for the top since it would stand testament to their failure to equitably distribute wealth. In the context of environmentalism, not--‐in--‐my--‐backyard reasoning that displaces ecological destruction elsewhere would be exposed for the failure that it is. There is no backyard that is not one’s own. Ultimately, images of planetary doom demonstrate how we are all interconnected and in doing so inaugurate a newworld where multitudes, and not governments, guide the fate of the planet.

#### And our rhetoric of catastrophe is an effective way of garnering attention

**POIRIER 2** Professor of Law - Seton Hall 2002 Case Western University Law Review 53 409

In identifying the Litany and giving it such a prominent place in his argument, Lomborg basically accuses environmentalists of using the rhetoric of catastrophe illicitly. One obvious response is that the rhetoric of catastrophe is shared by all parties to the debate. In an arena crowded with issues, claims of impending disaster may be an effective way of getting political attention. n80 More novel is an argument, which I develop primarily from the writings of German sociologist Ulrich Beck, that political debate about risk necessarily takes the shape that Lomborg accuses environmentalists of foisting on the public. If Beck is right about the politics of fear and the inevitability of expert and media intermediaries who interpret risk to the masses, then Lomborg's accusations lose much of their force. The muddle of environmental and anti-environmental rhetoric is just another inevitable part of the complexity of environmental policy. Lomborg's expectation that it would be otherwise is at best a naive outlook fueled by his simplistic and idealized view of the role of science in environmental policymaking. I argued in Part II.A.1. above that debates over science policy will tend to become polarized because of the large interests at stake. It might seem that exaggerated reliance on potential catastrophic outcomes is the province of environmentalists. Those opposed to the environmentalists' dire predictions, it might seem, can hardly be put in the catastrophe camp. But there are other kinds of arguments from catastrophe. I will name two. One is the "overregulation is underregulation" argument. Lomborg himself provides a fine example. He stresses the plight of two billion people without clean water or sanitation, who will not be rescued if we listen to the foolish fears of the Litany. This is not an argument from ecological collapse, but it is surely an argument from catastrophe, social catastrophe through misallocation [\*4281 of resources. n81 The other typical argument from catastrophe for the right is the property rights argument. Regulate what property owners can do with their own property, and we face the destruction of civil society, the end of investment, the loss of personal freedom, and so on. In discussing environmental rhetoric, I recently constructed an opposition of the environmental jeremiad and the property rights encomium. n82 But one must recognize that there is also a standard property rights jeremiad\_ »

#### Students interrogating environmental issues is critical to developing sustainable solutions

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Environmental education

Many writers have determined that the main aim of environmental education is to change attitudes, that will in turn change behaviour. As long ago as 1976, Ramsey and Rickson identified that it has long been known that the basis for many environmental problems is irresponsible behaviour. Without a doubt, one of the most important influences on behaviour is attitude, that in turn is influenced by education. Campbell Bradley et al. (1999) stress the need for trying to change young people’s environmental attitudes because young people ultimately will be affected by, and will need to provide, solutions to environmental problems arising from present day actions. As future policymakers, the youth of today will be responsible for ‘fixing’ the environment and they will be the ones who must be persuaded to act now in order to avoid paying a high price to repair damage to the environment in the future, if indeed it is repairable. Therefore it appears that effective environmental education, which changes the attitudes of young people, is crucial. The (then) Department for Education (DFE) report, commonly known as the ‘Toyne Report’ (DFE, 1993), concluded that as education seeks to lead opinion, it will do so more effectively if it keeps in mind the distinctive nature of its mission, which is first and foremost to improve its students’ understanding. Their concern may well be awakened as a result; but it must be a properly informed concern. This does not necessarily mean treating the environment as a purely scientific issue, but does mean that the respective roles of science and ethics need to be distinguished, and the complexities of each need to be acknowledged. **Failure to do this may lead all too readily to an ‘environmentalism’ which**, by depicting possibilities as certainties, **can only discredit itself in the long run** and feed the complacency which it seeks to dispel. McKeown-Ice and Dendinger (2000) have identified the fact that scientific knowledge and political intervention will not solve the environmental problem on their own, thus implying that something additional is required to change behaviour. As has already been discussed, behaviour changes can only occur if attitudes change and this can be achieved through education. As Fien (1997) identifies, environmental education can play a key role by creating awareness, and changing people’s values, skills and behaviour. Introducing environmental elements into the curriculum can therefore be seen as a potentially effective way of transferring knowledge. This should in turn improve attitudes that will lead to improvements in environmental behaviour. Graham (2000) believes that it is crucial that building professionals not only participate in the creation of projects that have low environmental impact, but equally it is important that they learn to conceive, nurture, promote and facilitate the kind of paradigm changes seen as necessary to create a sustainable society. There are however limitations as to what education can achieve on its own, for as Jucker (2002) believes, if we do not do everything we can to transform our political, economic and social systems into more sustainable structures, we might as well forget the educational part.

#### The plan is the United States federal government taking responsibility for its actions

Claussen ‘6 (Eileen, October 5, “Climate Change: The State of The Question and The Search For The Answer”, President of the PEW center for climate change, http://www.pewclimate.org/press\_ room/speech\_transcripts/stjohns2of2.cfm)

But Africa produces just 2 to 3 percent of worldwide emissions of greenhouse gases. The United States, by contrast, with just 5 percent of the global population, is responsible for more than 20 percent of worldwide emissions. And there is also the issue of cumulative emissions. The fact is that climate change is a problem that has been decades in the making as carbon dioxide and other gases have accumulated in the atmosphere over time. These gases have a long life and can remain in the atmosphere for decades or even centuries. And, in the span of the last century or so, it was the United States and other already developed countries that were producing the lion’s share of these emissions. Looking only at carbon dioxide, the United States was responsible for more than 30 percent of global emissions between 1850 and 2000. The comparable figure for China: just 7 or 8 percent. Even considering the high rates of projected growth in China’s and India’s emissions, the cumulative contributions of developed and developing countries to climate change will not reach parity until sometime between 2030 and 2065. Clearly all of the major emitting countries need to be a part of the solution to climate change. But saying that all of today’s big emitters should be equally responsible for reducing their emissions is like going to a restaurant and having a nice dinner and then running into a friend who joins you for coffee. And, when the check comes, you make your friend who only had the coffee split the cost of the entire dinner. Yes, developing countries need to do their part, but there is no denying that the developed world, including the United States, has a moral and ethical responsibility to act first. We also have a responsibility to help developing nations adapt to a warming world. No matter what we do, some amount of global warming already is built into the climate system. There will be impacts; there already are impacts. And it is people living in poverty in the developing world who will face the most serious consequences. So it really comes down, again, to a question of responsibility. What is our responsibility? And it is not just our responsibility to our fellow man (or woman). There is also our responsibility to the natural world, to the earth. Beyond human societies, the natural world also will suffer from the effects of climate change. In fact, we are already seeing changes in the natural world due to climate change. Coral reefs are at risk because of warmer and more acidic ocean waters. Polar bears are threatened by declines in sea ice. Species already are disappearing because of new diseases connected to climate change. In short, climate change holds the potential of inflicting severe damage on the ecosystems that support all life on earth. So why, then, have we failed to take responsibility? Why has there been such an absence of political will?

#### Simply urging can’t resolve consumptive practices

**Jackson** ‘**12** (Tim, Fairly bright guy, *Prosperity Without Growth: Economics for a Finite Planet*, Kindle Locations 2803-2854)

The downshifting movement now has a surprising allegiance across a number of developed economies. A recent survey on downshifting in Australia found that 23 per cent of respondents had engaged in some form of downshifting in the five years prior to the study. A staggering 83 per cent felt that Australians are too materialistic. An earlier study in the US found that 28 per cent had taken some steps to simplify and 62 per cent expressed a willingness to do so. Very similar results have been found in Europe.23 Research on the success of these initiatives is quite limited. But the findings from studies that do exist are interesting. In the first place, the evidence confirms that ‘simplifiers’ appear to be happier. Consuming less, voluntarily, can improve subjective well-being – completely contrary to the conventional model.24 At the same time, intentional communities remain marginal. The spiritual basis for them doesn’t appeal to everyone, and the secular versions seem less resistant to the incursions of consumerism. Some of these initiatives depend heavily on having sufficient personal assets to provide the economic security needed to pursue a simpler lifestyle. More importantly, even those in the vanguard of social change turn out to be haunted by conflict – internal and external.25 These conflicts arise because people find themselves at odds with their own social world. Participation in the life of society becomes a challenge in its own right. People are trying to live, quite literally, in opposition to the structures and values that dominate society. In the normal course of events, these structures and values shape and constrain how people behave. They have a profound influence on how easy or hard it is to behave sustainably.26 The Role of Structural Change Examples of the perverse effect of dominant structures are legion: private transport is incentivized over public transport; motorists are prioritized over pedestrians; energy supply is subsidized and protected, while demand management is often chaotic and expensive; waste disposal is cheap, economically and behaviourally; recycling demands time and effort: ‘bring centres’ are few and far between and often overflowing with waste. Equally important are the subtle but damaging signals sent by government, regulatory frameworks, financial institutions, the media and our education systems: business salaries are higher than those in the public sector, particularly at the top; nurses and those in the caring professions are consistently less well paid; private investment is written down at high discount rates making longterm costs invisible; success is counted in terms of material status (salary, house size and so on); children are brought up as a ‘shopping generation’ – hooked on brand, celebrity and status.27 Policy and media messages about the recession underline this point. Opening a huge new shopping centre at the height of the financial crisis in October 2008, Mayor of London Boris Johnson spoke of persuading people to come out and spend their money, despite the credit crunch. Londoners had made a ‘prudent decision to give Thursday morning a miss and come shopping’, he said of the huge crowds who attended the opening.28 George W. Bush’s infamous call for people to ‘go out shopping’ in the wake of the 9/11 disaster is one of the most staggering examples of the same phenomenon. Little wonder that people trying to live more sustainably find themselves in conflict with the social world around them. These kinds of asymmetry represent a culture of consumption that sends all the wrong signals, penalizing pro-environmental behaviour, and making it all but impossible even for highly motivated people to act sustainably without personal sacrifice. It’s important to take this evidence seriously. As laboratories for social change, intentional households and communities are vital in pointing to the possibilities for flourishing within ecological limits. But they are also critical in highlighting the limits of voluntarism. Simplistic exhortations for people to resist consumerism are destined to failure. Particularly when the messages flowing from government are so painfully inconsistent. People readily identify this inconsistency and perceive it as hypocrisy. Or something worse. Under current conditions, it’s tantamount to asking people to give up key capabilities and freedoms as social beings. Far from being irrational to resist these demands, it would be irrational not to, in our society. Several lessons flow from this. The first is the obvious need for government to get its message straight. **Urging people to Act on CO2**, to insulate their homes, turn down their thermostat, put on a jumper, drive a little less, walk a little more, holiday at home, buy locally produced goods (and so on) **will either go unheard or be rejected as manipulation for as long as all the messages about high-street consumption point in the opposite direction**.29 Equally, **it’s clear that changing the social logic of consumption cannot simply be relegated to the realm of individual choice. In spite of a growing desire for change, it’s almost impossible for people to simply choose sustainable lifestyles, however much they’d like to. Even highly-motivated individuals experience conflict as they attempt to escape consumerism. And the chances of extending this behaviour across society are negligible without changes in the social structure**.

#### We should not be skeptical of warming

**Banning, 9** – University of Colorado communication professor, PhD  
(Marlia Elisabeth, “When Poststructural Theory and Contemporary Politics Collide\*The Vexed Case of Global Warming,” Communication and Critical/Cultural Studies, Vol. 6, No. 3, September 2009, pp. 285-304

My second purpose is to ask what institutional and discursive conditions have enabled this moment, in which the broad ideals of academic freedom and protocols guiding scientific inquiry appear to hold precarious authority in the public arena, and the knowledge produced by this inquiry is increasingly viewed as political. A complex of factors contributes to the difficulty for US publics to know what to believe about global warming or who to hold accountable for changes in policy: The quality of information that US publics have received is certainly key. Perhaps a more insidious set of epistemological problems, however, **are the assumptions that the debate over global warming is in fact a debate, that all discourse is equally political, and that there are no standards by which to determine what to accept as contingently true**. Even the most rudimentary rhetorical analysis of the public discourse on global warming would reveal that the interlocutors in this debate are not equally positioned in terms Global Warming 287of resources, motives, and authority, nor do they abide by a normative set of deliberative standards for public discourse. There are two institutional arenas related to this set of epistemological problems to which I pay particular attention, the public arena with its broad array of government, economic, and political operatives; and the academic arena\*specifically\*how theoretical discourses on knowledge and truth generated within this arena have been exported to, if not expropriated in, public discourse. **This co-optation of contemporary critical perspectives on knowledge and truth in public discourse deserves particular scrutiny**: When commercial interests deploy contemporary critical perspectives on knowledge and truth to obfuscate and mislead publics, they impede interventions designed to restore conditions for public reason in the political realm**. Rhetorical critics and critical communication scholars are uniquely positioned to intervene when scientific conclusions relevant to public policy but disadvantageous to private and elite interests are manipulated**. It is not clear, however, how critical scholars of any stripe intervene in order to press this social imperative into service in the public arena, or what might be the moment and manner of critical intervention in pseudo-controversies such as these. As I will show, those like myself who are indebted to poststructuralist 8 theories of knowledge, truth, and power and who want to intervene in contemporary struggles over policy find ourselves positioned awkwardly\*at best\*by these theories and our own standards of disinterestedness. Our capacities as critical rhetorical and communication scholars are not easily translated into practice and when they are, they face the same claims of partisan politics as all discourse. The question of how these capacities might be pressed into service, however, seems worthy of attention.

#### Individual focused stratigies get coopted by global institutions

Monbiot ‘4 (George Monbiot, journalist, academic, and political and environmental activist, 2004, Manifesto for a New World Order, p. 11-13)

The quest for global solutions is difficult and divisive. Some members of this movement are deeply suspicious of all institutional power at the global level, fearing that it could never be held to account by the world’s people. Others are concerned that a single set of universal prescriptions would threaten the diversity of dissent. A smaller faction has argued that all political programmes are oppressive: our task should not be to replace one form of power with another, but to replace all power with a magical essence called ‘anti-power’.  But most of the members of this movement are coming to recognize that if we propose solutions which can be effected only at the local or the national level, we remove ourselves from any meaningful role in solving precisely those problems which most concern us. Issues such as climate change, international debt, nuclear proliferation, war, peace and the balance of trade between nations can be addressed only globally or internationally. Without global measures and global institutions, it is impossible to see how we might distribute wealth from rich nations to poor ones, tax the mobile rich and their even more mobile money, control the shipment of toxic waste, sustain the ban on landmines, prevent the use of nuclear weapons, broker peace between nations or prevent powerful states from forcing weaker ones to trade on their terms. If we were to work only at the local level, we would leave these, the most critical of issues, for other people to tackle. Global governance will take place whether we participate in it or not. Indeed, it must take place if the issues which concern us are not to be resolved by the brute force of the powerful. That the international institutions have been designed or captured by the dictatorship of vested interests is not an argument against the existence of international institutions, but a reason for overthrowing them and replacing them with our own. It is an argument for a global political system which holds power to account. In the absence of an effective global politics, moreover, local solutions will always be undermined by communities of interest which do not share our vision. We might, for example, manage to persuade the people of the street in which we live to give up their cars in the hope of preventing climate change, but unless everyone, in all communities, either shares our politics or is bound by the same rules, we simply open new road space into which the neighbouring communities can expand. We might declare our neighbourhood nuclear-free, but unless we are simultaneously working, at the international level, for the abandonment of nuclear weapons, we can do nothing to prevent ourselves and everyone else from being threatened by people who are not as nice as we are. We would deprive ourselves, in other words, of the power of restraint. By first rebuilding the global politics, we establish the political space in which our local alternatives can flourish. If, by contrast, we were to leave the governance of the necessary global institutions to others, then those institutions will pick off our local, even our national, solutions one by one. There is little point in devising an alternative economic policy for your nation, as Luis Inacio ‘Lula’ da Silva, now president of Brazil, once advocated, if the International Monetary Fund and the financial speculators have not first been overthrown. There is little point in fighting to protect a coral reef from local pollution, if nothing has been done to prevent climate change from destroying the conditions it requires for its survival.

#### Our authors are not hacks

Kloor, 1-15 – NYU professor, former fellow at the University of Colorado’s Center for Environmental Journalism

[Keith, "The Pro-Nukes Environmental Movement," Mother Jones, 1-15-13, www.motherjones.com/environment/2013/01/pro-nuclear-power-environmental-movement, accessed 1-17-13, mss]

James **Hansen**, **NASA's top climate scientist**, **is** **one of the most** impassioned and **trusted voices** **on** global **warming**. People listen closely to what he says about how drastically the climate is changing. But when Hansen suggests what to do about it, many of those same people tune him out. Some even roll their eyes. What message is he peddling that few seemingly want to hear? It's twofold: No. 1, solar and wind power cannot meet the world's voracious demand for energy, especially given the projected needs of emerging economies like India and China, and No. 2, **nuclear** power **is our best hope to get off of fossil fuels, which are** primarily responsible for the heat-trapping gases **cooking the planet**. Many in the environmental community say that renewable energy is a viable solution to the climate problem. So do numerous energy wonks, including two researchers who penned a 2009 cover story in Scientific American asserting that "wind, water, and solar technologies can provide 100 percent of the world's energy" by 2030. Hansen calls claims like this the equivalent of "believing in the Easter Bunny and Tooth Fairy." He's not the only **environmental luminary** who is bullish on nuclear power. Last year, Columbia University's Jeffrey Sachs, director of the Earth Institute, echoed Hansen's argument. A number of other champions of nuclear power have stepped forward in recent years, from Australian climate scientist Barry Brook to American writer Gwyneth Cravens, author of Power to Save the World: The Truth about Nuclear Energy. A breakaway group in the traditionally no-nukes environmental movement has also begun advocating passionately for nuclear power. That story is the subject of a new documentary that is premiering this month at the Sundance Festival. These are not corporate stooges **of the nuclear industry;** to a person**, their embrace of nuclear** power **is** motivated by a deep concern about climate change **and the conviction that no other** carbon-free source of **energy is sufficient (and safe) enough to replace coal and gas**. They see themselves as **realists** who want to solve the full equation of global warming and energy, not a fantasy version of the problem.

#### The United States Federal Government should not have restrictions on small modular thorium reactors.

# Solvency

**no shortage**

ITA 11

(International Trade Administration, “The Commercial Outlook for U.S. Small Modular Nuclear Reactors” Manufacturing and Services Competitiveness Report, February 2011, US Department of Commerce)

A serious obstacle to the resurgence of traditional nuclear power in the United States is the eroded domestic manufacturing capacity for the major nuclear components. A robust program of building SMRs, however, could make use of existing domestic capacity that is already capable of completely constructing most proposed SMR designs. **SMRs would not require the ultra-heavy forgings that currently can only be made overseas.** U.S. suppliers say that firms could retool using existing capabilities and resources and could source most of the components of SMRs here in the United States. This ability could mean tremendous new commercial opportunities for U.S. firms and workers.

A substantial SMR deployment program in the United States could result in the creation of many new jobs in manufacturing, engineering, transportation, construction (for site preparation and installation) and craft labor, professional services, and ongoing plant operations. As SMR manufacturers prove their designs in the domestic market, **they will likely consider export opportunities**. The modular nature of SMRs and their relative portability means that locating export-oriented SMR manufacturing and assembly could make sense for U.S. companies, as opposed to the localiza-tion that is typically necessary for building larger reactors

**no cost problems**

**Skutnik 11**, Steve, Assistant Professor of Nuclear Engineering at the University of Tennessee “Are Small Modular Reactors A Nuclear Economics Game-Changer?” June 28th, <http://theenergycollective.com/skutnik/60188/excellent-op-ed-small-modular-reactors-and-then-some,>

SMRs have the potential to change the economics of the game by several means. First, many proposed SMR designs are engineered to be mass-produced and pre-fabricated in factories, rather than built on-site. This could tremendously push down prices while also shortening construction times, thus ameliorating what is currently one of nuclear's biggest weaknesses at the moment. Meanwhile, the "small" in SMRs also may have potentially positive implications for both cost and safety: SMRs can be potentially built into the ground, using the surrounding earth as containment, due to their relatively small size. Given the lower total power and nuclear material within the reactor, it can be said to have a lower overall "radiological footprint," meaning simplified safety planning. Finally, the "right-size" power of SMR capacity may allow them to be sold in a greater number of markets - places both where a new full-sized reactor is too big for the needs of a community (for example, Fort Calhoun, north of Omaha, is the smallest reactor in the U.S. nuclear fleet, clocking in at only 500 MW; compare this to currently proposed new reactor designs, which begin in the neighborhood of 1000-1100 MW). Likewise, the smaller size means that for utilities only looking to incrementally expand capacity, small reactors may prove to be competitive with alternatives such as natural gas turbines. One point which I think nuclear advocates tend to allow themselves to be blindsided to at times is in the fact that above all else, it is economics which will ultimately determine the future of the nation's electricity portfolio. Factors like politics certainly come into play (particularly such issues as energy portfolio mandates, etc.), and likewise factors such as safety can never be understated. Nor should public acceptance ever be ignored, much as it has to the industry's peril in the past. However, those ultimately committing the funds to expand energy sources are the utilities, many of whom answer either directly to shareholders or to ratepayers. In this regard, they have an obligation in either sense to produce power as profitably or affordably as possible. Thus, the decision for utilities will always ultimately come down to economics, something that nuclear advocates cannot simply ignore. I don't necessarily doubt the assertions of fellow advocates such as Rod Adams, who assert that fossil fuels have a strong interest to defend in continuing to sell their products. (Although I will say that I also don't necessarily buy the idea that those who argue natural gas is currently more economical based on short-term factors are necessarily on the fossil fuel dole, either.) But the fact remains - for nuclear to succeed, it must be able to compete, head to head, dollar for dollar. Nuclear energy has tremendous advantages to offer, in that is clean, abundant, and easily the most energy-dense source we have available at our disposal. Yet at the end of the day, decisions over energy investments do not necessarily come down to these factors: they come down to economics, and often (regrettably) economic return over the short-term. This may be where SMRs ultimately change the game for nuclear, then - namely, by bringing the advantages of nuclear to bear in a more economically attractive package.

# Warming

**Solvency contention no links tech-optimism and solves the impact**

James Krier, University of Michigan Law Professor, 1985, ESSAY: THE UN-EASY CASE FOR TECHNOLOGICAL OPTIMISM, 84 Mich. L. Rev. 405, Lexis

A technological optimist is not simply a person with unqualified enthusiasm about technological promise. Saint-Simon (1760-1825) was an enthusiast, but he was not a technological optimist as the term is currently used. Saint-Simon, rather, was a utopian who happened to attach his vision to technocratic expertise. n4 He was the forefather of Technocracy, an active utopian movement in the 1930s and one not entirely dead even today. n5 Technological optimists are not utopians, but something less -- let us say quasi-utopians, after a recent usage (applied to himself) of Robert Dahl's. n6 Unlike any self-respecting pure utopian, quasi-utopians (and technological optimists) seek not perfection but tolerable imperfection, tolerable because it is better than anything else they consider attainable though not nearly as good as lots of alternatives that can be imagined.

But technological optimists are also something more than mere believers, or faddists, or techniks. n7 Their views are rigorously formulated, grounded in an apparent reality, based on knowledge and experience, and artfully defended. There are no crazies among the best of the optimists; they are conservative, respected experts who command enormous authority. They have a very specific position -- namely, "that exponential technological growth will allow us to expand resources ahead of exponentially increasing demands." n8 This is the precise meaning of technological optimism as a term of art.

Some commonplace examples of the optimistic view suggest its range of applications: If the world is running short of food, we can count on technological innovation to increase the productivity of agricultural land and the acreage of arable land itself, through better seeds, better fertilizers, herbicides and pesticides, and better irrigation techniques. If environmental quality is threatened, more effective pollution-control technology and be developed to deal with the problem. If fossil fuels are growing short, technology can reduce the costs of discovery and extraction. It can also provide fuel substitutes, natural or synthetic. n9

As these examples might suggest, technological growth means technological advance; it means breakthroughs -- new techniques that get more output per unit input -- rather than simply more of an old technology. Exponential technological growth means continuously compounding technological capacity, a growing accumulation of breakthroughs.

Technological optimism took on its precise meaning, its exponential character, as a direct consequence of The Limits to Growth, n10 an extraordinarily controversial book published in 1972 and distributed in millions of copies, worldwide, in its first two years. n11 The tie between the book and the notion of exponential technological growth is immediately apparent. The authors of Limits constructed a simulation model of the world (World 3) and fed into it data based on the assumption that population, industrial production, and pollution would continue to grow exponentially into the future, as they have in the past. n12 The conclusions of this exercise were obviously foregone. Since the world in its physical aspects is finite, exponential growth must eventually hit a limit. The limit was said to be only about a generation away (as of 1972) and would be reached not through a smooth transition but by a crash from good to very bad (poor, crowded, hungry, polluted) conditions. Measures to avert the projected catastrophe would involve (or reflect) radical "value changes" -- policies, for example, to reduce birth rates to the point of death rates, to hold capital investment equal to depreciation, to reduce consumption and change its emphasis from material goods to services, to recycle resources n13 -- and require substantial lead times. They had to be implemented quickly in order to escape an otherwise inevitable disaster.

As critics were quick to point out, the authors of Limits, for all the attention they gave to exponential growth, neglected in the case of technology. n14 Take that growth into account, and suddenly the future [\*409] looks more promising. Many if not most of the alleged ills of increasing population, production, and consumption, and of apparently diminishing natural resources, can be remedied without drastic measures. Malthusian prospects can be avoided without the basic alterations in social values, organization, and behavior urged by the pessimists. The ultimate problem of "running out" is not really a foreseeable problem at all. It can be forestalled by exponential technological advance.

**co2 key**

**Lacis 10**, Andrew A, Gavin A. Schmidt, David Rind, Reto A. Ruedy, all of the NASA Goddard Institute for Space Studies [“Atmospheric CO2: Principal Control Knob Governing Earth’s Temperature,” October 15th, Science, 2010 VOL 330] HURWITZ Atmospheric CO2: Principal Control Knob Governing Earth’s Temperature Ample physical evidence shows that carbon dioxide (CO2) is the single most important climate-relevant greenhouse gas in Earth’s atmosphere. This is because CO2, like ozone, N2O, CH4, and chlorofluorocarbons, does not condense and precipitate from the atmosphere at current climate temperatures, whereas water vapor can and does. Noncondensing greenhouse gases, which account for 25% of the total terrestrial greenhouse effect, thus serve to provide the stable temperature structure that sustains the current levels of atmospheric water vapor and clouds via feedback processes that account for the remaining 75% of the greenhouse effect. Without the radiative forcing supplied by CO2 and the other noncondensing greenhouse gases, the terrestrial greenhouse would collapse, plunging the global climate into an icebound Earth state. It often is stated that water vapor is the chief greenhouse gas (GHG) in the atmosphere. For example, it has been asserted that “about 98% of the natural greenhouse effect is due to water vapour and stratiform clouds with CO2 contributing less than 2%” (1). If true, this would imply that changes in atmospheric CO2 are not important influences on the natural greenhouse capacity of Earth, and that the continuing increase in CO2 due to human activity is therefore not relevant to climate change. This misunderstanding is resolved through simple examination of the terrestrial greenhouse. The difference between the nominal global mean surface temperature (TS = 288 K) and the global mean effective temperature (TE = 255 K) is a common measure of the terrestrial greenhouse effect (GT = TS – TE = 33 K). Assuming global energy balance, TE is also the Planck radiation equivalent of the 240 W/m2 of global mean solar radiation absorbed by Earth. The Sun is the source of energy that heats Earth. Besides direct solar heating of the ground, there is also indirect longwave (LW) warming arising from the thermal radiation that is emitted by the ground, then absorbed locally within the atmosphere, from which it is re-emitted in both upward and downward directions, further heating the ground and maintaining the temperature gradient in the atmosphere. This radiative interaction is the greenhouse effect, which was first discovered by Joseph Fourier in 1824 (2), experimentally verified by John Tyndall in 1863 (3), and quantified by Svante Arrhenius in 1896 (4). These studies established long ago that water vapor and CO2 are indeed the principal terrestrial GHGs. Now, further consideration shows that CO2 is the one that controls climate change.

#### Warming causes extinction- tipping point

Dyer ‘12 (London-based independent journalist, PhD from King's College London, citing UC Berkeley scientists (Gwynne, "Tick, tock to mass extinction date," The Press, 6-19-12, l/n, accessed 8-15-12, mss)

Meanwhile, a team of respected scientists warn that life on Earth may be on the way to an irreversible "**tipping point"**. Sure. Heard that one before, too. Last month one of the world's two leading scientific journals, Nature, published a paper, "Approaching a state shift in Earth's biosphere," pointing out that more than 40 per cent of the Earth's land is already used for human needs. With the human population set to grow by a further two billion by 2050, that figure could soon exceed 50 per cent. "It really will be a new world, biologically, at that point," said the paper's lead author, Professor Anthony Barnofsky of the University of California, Berkeley. But Barnofsky doesn't go into the details of what kind of new world it might be. Scientists hardly ever do in public, for fear of being seen as panic-mongers. Besides, it's a relatively new hypothesis, but it's a pretty convincing one, and it should be more widely understood. Here's how bad it could get. The scientific consensus is that we are still on track for 3 degrees C of warming by 2100, but that's just warming caused by human greenhouse- gas emissions. The problem is that +3 degrees is well past the point where the major feedbacks kick in: natural phenomena triggered by our warming, like melting permafrost and the loss of Arctic sea-ice cover, that will add to the heating and that we cannot turn off. The trigger is actually around 2C (3.5 degrees F) higher average global temperature. After that we lose control of the process: ending our own carbon- dioxide emissions would no longer be enough to stop the warming. We may end up trapped on an escalator heading up to +6C (+10.5F), with no way of getting off. And +6C gives you the **mass extinction**. There have been five mass extinctions in the past 500 million years, when 50 per cent or more of the species then existing on the Earth vanished, but until recently the only people taking any interest in this were paleontologists, not climate scientists. They did wonder what had caused the extinctions, but the best answer they could come up was "climate change". It wasn't a very good answer. Why would a warmer or colder planet kill off all those species? The warming was caused by massive volcanic eruptions dumping huge quantities of carbon dioxide in the atmosphere for tens of thousands of years. But it was very gradual and the animals and plants had plenty of time to migrate to climatic zones that still suited them. (That's exactly what happened more recently in the Ice Age, as the glaciers repeatedly covered whole continents and then retreated again.) There had to be a more convincing kill mechanism than that. The paleontologists found one when they discovered that a giant asteroid struck the planet 65 million years ago, just at the time when the dinosaurs died out in the most recent of the great extinctions. So they went looking for evidence of huge asteroid strikes at the time of the other extinction events. They found none. What they discovered was that there was indeed major warming at the time of all the other extinctions - and that the warming had radically changed the oceans. The currents that carry oxygen- rich cold water down to the depths shifted so that they were bringing down oxygen- poor warm water instead, and gradually the depths of the oceans became anoxic: the deep waters no longer had any oxygen. When that happens, the sulfur bacteria that normally live in the silt (because oxygen is poison to them) come out of hiding and begin to multiply. Eventually they rise all the way to the surface over the whole ocean, killing all the oxygen-breathing life. The ocean also starts emitting enormous amounts of lethal hydrogen sulfide gas that destroy the ozone layer and directly poison land- dwelling species. This has happened many times in the Earth's history.

#### It will be rapid

**Light ‘12** (Malcolm, PhD, University of London – Earth science and climate consultant, “Global Extinction within one Human Lifetime as a Result of a Spreading Atmospheric Arctic Methane Heat wave and Surface Firestorm,” <http://arctic-news.blogspot.com/p/global-extinction-within-one-human.html>)

Although the sudden high rate Arctic methane increase at Svalbard in late 2010 data set applies to only a short time interval, similar sudden methane concentration peaks also occur at Barrow point and the effects of a major methane build-up has been observed using all the major scientific observation systems. Giant fountains/torches/plumes of methane entering the atmosphere up to 1 km across have been seen on the East Siberian Shelf. This methane eruption data is so consistent and aerially extensive that when combined with methane gas warming potentials, Permian extinction event temperatures and methane lifetime data it paints a frightening picture of the beginning of the now uncontrollable global warming induced destabilization of the subsea Arctic methane hydrates on the shelf and slope which started in late 2010. This process of methane release will **accelerate exponentially**, release huge quantities of methane into the atmosphere and lead to the demise of all life on earth before the middle of this century. Introduction The 1990 global atmospheric mean temperature is assumed to be 14.49 oC (Shakil, 2005; NASA, 2002; DATAWeb, 2012) which sets the 2 oC anomaly above which humanity will lose control of her ability to limit the effects of global warming on major climatic and environmental systems at 16.49 oC (IPCC, 2007). The major Permian extinction event temperature is 80 oF (26.66 oC) which is a temperature anomaly of 12.1766 oC above the 1990 global mean temperature of 14.49 oC (Wignall, 2009; Shakil, 2005). Results of Investigation Figure 1 shows a huge sudden atmospheric spike like increase in the concentration of atmospheric methane at Svalbard north of Norway in the Arctic reaching 2040 ppb (2.04 ppm)(ESRL/GMO, 2010 - Arctic - Methane - Emergency - Group.org). The cause of this sudden anomalous increase in the concentration of atmospheric methane at Svalbard has been seen on the East Siberian Arctic Shelf where a recent Russian - U.S. expedition has found widespread, continuous powerful methane seepages into the atmosphere from the subsea methane hydrates with the methane plumes (fountains or torches) up to 1 km across producing an atmospheric methane concentration 100 times higher than normal (Connor, 2011). Such high methane concentrations could produce local temperature anomalies of more than 50 oC at a conservative methane warming potential of 25. Figure 2 is derived from the Svalbard data in Figure 1 and the methane concentration data has been used to generate a Svalbard atmospheric temperature anomaly trend using a methane warming potential of 43.5 as an example. The huge sudden anomalous spike in atmospheric methane concentration in mid August, 2010 at Svalbard is clearly evident and the methane concentrations within this spike have been used to construct a series of radiating methane global warming temperature trends for the entire range of methane global warming potentials in Figure 3 from an assumed mean start temperature of -3.575 degrees Centigrade for Svalbard (see Figure 2) (Norwegian Polar Institute; 2011). Figure 3 shows a set of radiating Arctic atmospheric methane global warming temperature trends calculated from the steep methane atmospheric concentration gradient at Svalbard in 2010 (ESRL/GMO, 2010 - Arctic-Methane-Emergency-Group.org). The range of extinction temperature anomalies above the assumed 1990 mean atmospheric temperature of 14.49 oC (Shakil, 2005) are also shown on this diagram as well as the 80 oF (26.66 oC) major Permian extinction event temperature (Wignall, 2009). Sam Carana (pers. com. 7 Jan, 2012) has described large December 2011 (ESRL-NOAA data) warming anomalies which exceed 10 to 20 degrees centigrade and cover vast areas of the Arctic at times. In the centres of these regions, which appear to overlap the Gakkel Ridge and its bounding basins, the temperature anomalies may exceed 20 degrees centigrade. See this site:<http://www.esrl.noaa.gov/psd/map/images/fnl/sfctmpmero1a30frames.fnl.anim.html> The temperature anomalies in this region of the Arctic for the period from September 8 2011 to October 7, 2011 were only about 4 degrees Centigrade above normal (Carana, pers. com. 2012) and this data set can be seen on this site: <http://arctic-newsblogspot.com/p/arctic-temperatures.html> Because the Svalbard methane concentration data suggests that the major spike in methane emissions began in late 2010 it has been assumed for calculation purposes that the 2010 temperature anomalies peaked at 4 degrees Centigrade and the 2011 anomalies at 20 degrees Centigrade in the Gakkel Ridge region. The assumed 20 degree Centigrade temperature anomaly trend from 2010 to 2011 in the Gakkel Ridge region requires a methane gas warming potential of about 1000 to generate it from the Svalbard methane atmospheric concentration spike data in 2010. Such high methane warming potentials could only be active over a very short time interval (less than 5.7 months) as shown when the long methane global warming potential lifetimes data from the IPCC (2007; 1992) and Dessus, Laponte and Treut (2008 ) are used to generate a global warming potential growth curve with a methane global warming potential of 100 with a lifespan of 5 years. Because of the high methane global warming potential (1000) of the 2011, 20 oC temperature anomalies in the Gakkel Ridge region, the entire methane global warming potential range from 5 to 1000 has been used to construct the radiating set of temperature trends shown in Figure 3. The 50, 100, 500 and 1000 methane global warming potential (GWP) trends are red and in bold. The choice of a high temperature methane peak with a global warming potential near 1000 is in fact very conservative because the 16 oC increase is assumed to occur over a year. The observed ESRL-NOAA Arctic temperature anomalies varied from 4 to 20 degrees over less than a month in 2011 (Sam Carana, pers. comm. 2012). […] . This very narrow temperature range includes all the mathematically and visually determined extinction times and their means for the northern and southern hemispheres which were calculated quite separately (Figure 7; Table 1). Once the world's ice caps have completely melted away at temperatures above 22.49 oC and times later than 2051.3, the Earth's atmosphere will heat up at an extremely fast rate to reach the Permian extinction event temperature of 80oF (26.66 oC)(Wignall, 2009) by which time all life on Earth will have been completely extinguished. The position where the latent heat of ice melting curve intersects the 8 oC extinction line (22.49 oC) at 2051.3 represents the time when 100 percent of all the ice on the surface of the Earth will have melted. If we make this point on the latent heat of ice melting curve equal to 1 we can determine the time of melting of any fraction of the Earth's icecaps by using the time\*temperature function at each time from 2051.3 back to 2015, the time the average Arctic atmospheric temperature curve is predicted to exceed 0 oC. The process of melting 1 kg of ice and heating the produced water up to a certain temperature is a function of the sum of the latent heat of melting of ice is 334 kilo Joules/kg and the final water temperature times the 4.18 kilo Joules/Kg.K (Wikipedia, 2012). This however represents the energy required over a period of one second to melt 1 kg of ice to water and raise it to the ambient temperature. Therefore the total energy per mass of ice over a certain time period is equal to (334 +(4.18\*Ambient Temperature)\*time in seconds that the melted water took to reach the ambient temperature. From the fractional time\*temperature values at each ambient temperature the fractional amounts of melting of the total global icecaps have been calculated and are shown on Figure 9. The earliest calculated fractional volume of melting of the global ice caps in 2016 is 1.85\*10^-3 of the total volume of global ice with an average yearly rate of ice melting of 2.557\*10^-3 of the total volume of global ice. This value is remarkably similar to, but slightly less than the average rate of melting of the Arctic sea ice measured over an 18 year period of 2.7\*10^-3 (1978 to 1995; 2.7% per decade - IPCC 2007).This close correlation between observed rates of Arctic ice cap and predicted rates of global ice cap melting indicates that average rates of Arctic ice cap melting between 1979 and 2015 (which represents the projected time the Arctic will lose its ice cover - Masters, 2009) will be continued during the first few years of melting of the global ice caps after the Arctic ice cover has gone in 2015 as the mean Arctic atmospheric temperature starts to climb above 0 oC. However from 2017 the rate of melting of the global ice will start to accelerate as will the atmospheric temperature until by 2049 it will be more than 9 times as fast as it was around 2015 (Table 2). The mean rate of melting of the global icecap between 2017 and 2049 is some 2\*10^-2, some 7.4 times the mean rate of melting of the Arctic ice cap (Table 2). In concert with the increase in rate of global ice cap melting between 2017 and 2049, the acceleration in the rate of melting also increases from 7\*10^-4 to 9.9\*10^-4 with a mean value close to 8.6\*10^-4 (Table 2). The ratio of the acceleration in the rate of global ice cap melting to the Arctic ice cap melting increases from 3.4 in 2017 to 4.8 by 2049 with a mean near 4.2. This fast acceleration in the rate of global ice cap melting after 2015 compared to the Arctic sea ice cap melting before 2015 is because the mean Arctic atmospheric temperature after 2017 is spiraling upward in temperature above 0 oC adding large amounts of additional energy to the ice and causing it to melt back more quickly. The melt back of the Arctic ice cap is a symptom of the Earth's disease but not its cause and it is the cause that has to be dealt with if we hope to bring about a cure. Therefore a massive cut back in carbon dioxide emissions should be mandatory for all developed nations (and some developing nations as well). Total destruction of the methane in the Arctic atmosphere is also mandatory if we are to survive the effects of its now catastrophic rate of build up in the atmospheric methane concentration However cooling of the Arctic using geoengineering methods is also vitally important to reduce the effects of the ice cap melting further enhancing the already out of control destabilization of the methane hydrates on the Arctic shelf and slope. · Developed (and some developing) countries must cut back their carbon dioxide emissions by a very large percentage (50% to 90%) by 2020 to immediately precipitate a cooling of the Earth and its crust. If this is not done the earthquake frequency and methane emissions in the Arctic will continue to grow exponentially leading to our inexorable demise between 2031 to 2051. · Geoenginering must be used immediately as a cooling method in the Arctic to counteract the effects of the methane buildup in the short term. However these methods will lead to further pollution of the atmosphere in the long term and will not solve the earthquake induced Arctic methane buildup which is going to lead to our annihilation. · The United States and Russia must immediately develop a net of powerful radio beat frequency transmission stations around the Arctic using the critical 13.56 MHZ beat frequency to break down the methane in the stratosphere and troposphere to nanodiamonds and hydrogen (Light 2011a) . Besides the elimination of the high global warming potential methane, the nanodiamonds may form seeds for light reflecting noctilucent clouds in the stratosphere and a light coloured energy reflecting layer when brought down to the Earth by snow and rain (Light 2011a). HAARP transmission systems are able to electronically vibrate the strong ionospheric electric current that feeds down into the polar areas and are thus the least evasive method of directly eliminating the buildup of methane in those critical regions (Light 2011a). The warning about extinction is stark. It is remarkable that global scientists had not anticipated a giant buildup of methane in the atmosphere when it had been so clearly predicted 10 to 20 years ago and has been shown to be critically linked to extinction events in the geological record (Kennett et al. 2003). Furthermore all the experiments should have already been done to determine which geoengineering methods were the most effective in oxidising/destroying the methane in the atmosphere in case it should ever build up to a concentration where it posed a threat to humanity. Those methods need to be applied immediately if there is any faint hope of reducing the catastrophic heating effects of the fast building atmospheric methane concentration.

#### Its anthro- 500 studies go aff

Romm ‘10 (Jon, Editor of Climate Progress, Senior Fellow at the American Progress, former Acting Assistant Secretary of Energy for Energy Efficiency and Renewable Energy, Fellow of the American Association for the Advancement of Science, “Disputing the “consensus” on global warming,” <http://climateprogress.org/2010/06/16/scientific-consensus-on-global-warming-climate-science/>,)

A good example of how scientific evidence drives our understanding concerns how we know that humans are the dominant cause of global warming. This is, of course, the deniers’ favorite topic. Since it is increasingly obvious that the climate is changing and the planet is warming, the remaining deniers have coalesced to defend their Alamo — that human emissions aren’t the cause of recent climate change and therefore that reducing those emissions is pointless. Last year, longtime Nation columnist [Alexander Cockburn wrote](http://www.counterpunch.org/cockburn04282007.html), “There is still zero empirical evidence that anthropogenic production of CO2 is making any measurable contribution to the world’s present warming trend. The greenhouse fearmongers rely entirely on unverified, crudely oversimplified computer models to finger mankind’s sinful contribution.” In fact, the evidence is amazingly strong. Moreover, if the relatively complex climate models are oversimplified in any respect, it is by omitting amplifying feedbacks and other factors that suggest human-caused climate change will be worse than is widely realized. The [IPCC concluded](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Ch09.pdf) last year: “Greenhouse gas forcing has very likely (>90 percent) caused most of the observed global warming over the last 50 years. This conclusion takes into account … the possibility that the response to solar forcing could be underestimated by climate models.” Scientists have come to understand that “forcings” (natural and human-made) explain most of the changes in our climate and temperature both in recent decades and over the past millions of years. The primary human-made forcings are the heat-trapping greenhouse gases we generate, particularly carbon dioxide from burning coal, oil and natural gas. The natural forcings include fluctuations in the intensity of sunlight (which can increase or decrease warming), and major volcanoes that inject huge volumes of gases and aerosol particles into the stratosphere (which tend to block sunlight and cause cooling)…. Over and over again, scientists have demonstrated that observed changes in the climate in recent decades can only be explained by taking into account the observed combination of human and natural forcings. Natural forcings alone just don’t explain what is happening to this planet. For instance, in April 2005, one of the nation’s top climate scientists, NASA’s James Hansen, led a team of scientists that made “precise measurements of increasing ocean heat content over the past 10 years,” which revealed that the Earth is absorbing far more heat than it is emitting to space, confirming what earlier computer models had shown about warming. [Hansen called](http://www.columbia.edu/~jeh1/imbalance_release.pdf) this energy imbalance the “smoking gun” of climate change, and said, “There can no longer be genuine doubt that human-made gases are the dominant cause of observed warming.” Another 2005 study, led by the Scripps Institution of Oceanography, compared actual ocean temperature data from the surface down to hundreds of meters (in the Atlantic, Pacific and Indian oceans) with climate models and [concluded](http://www.sciencemag.org/cgi/content/abstract/1112418): A warming signal has penetrated into the world’s oceans over the past 40 years. The signal is complex, with a vertical structure that varies widely by ocean; it cannot be explained by natural internal climate variability or solar and volcanic forcing, but is well simulated by two anthropogenically [human-caused] forced climate models. We conclude that it is of human origin, a conclusion robust to observational sampling and model differences. Such studies are also done for many other observations: land-based temperature rise, atmospheric temperature rise, sea level rise, arctic ice melt, inland glacier melt, Greeland and Antarctic ice sheet melt, expansion of the tropics (desertification) and changes in precipitation. Studies compare every testable prediction from climate change theory and models (and suggested by paleoclimate research) to actual observations. How many studies? Well, the IPCC’s definitive treatment of the subject, “Understanding and Attributing Climate Change,” has 11 full pages of references, some 500 peer-reviewed studies. This is not a consensus of opinion. It is what scientific research and actual observations reveal. And the science behind human attribution has gotten much stronger in the past 2 years (see a recent literature review by the Met Office [here](http://www.metoffice.gov.uk/corporate/pressoffice/2010/pr20100305.html)). That brings us to another problem with the word “consensus.” It can mean “unanimity” or “the judgment arrived at by most of those concerned.” Many, if not most, people hear the second meaning: “consensus” as majority opinion. The scientific consensus most people are familiar with is the IPCC’s “Summary for Policymakers” reports. But those aren’t a majority opinion. Government representatives participate in a line-by-line review and revision of these summaries. So China, Saudi Arabia and that hotbed of denialism — the Bush administration — get to veto anything they don’t like. The deniers call this “politicized science,” suggesting the process turns the IPCC summaries into some sort of unscientific exaggeration. In fact, the reverse is true. The net result is unanimous agreement on a conservative or watered-down document. You could argue that rather than majority rules, this is “minority rules.” Last April, in an article titled “Conservative Climate,” [Scientific American](http://www.sciam.com/article.cfm?chanID=sa006&articleID=5B9E73AD-E7F2-99DF-3F71280BCE41ED77&colID=5) noted that objections by Saudi Arabia and China led the IPCC to remove a sentence stating that the impact of human greenhouse gas emissions on the Earth’s recent warming is five times greater than that of the sun. In fact, lead author Piers Forster of the University of Leeds in England said, “The difference is really a factor of 10.” Then I discuss the evidence we had even back in 2008 that the IPCC was underestimating key climate impacts, a point I [update here](http://climateprogress.org/2010/02/18/ipcc-lowballs-impacts-pachauri-disband/). The bottom line is that recent observations and research make clear the planet almost certainly faces a greater and more imminent threat than is laid out in the IPCC reports. That’s why climate scientists are so desperate. That’s why they keep begging for immediate action. And that’s why the “consensus on global warming” is a phrase that should be forever retired from the climate debate. The leading scientific organizations in this country and around the world, including all the major national academies of science, aren’t buying into some sort of consensus of opinion. They have analyzed the science and observations and expressed their understanding of climate science and the likely impacts we face on our current emissions path — an understanding that has grown increasingly dire in recent years (see “[An illustrated guide to the latest climate science](http://climateprogress.org/2010/02/17/an-illustrated-guide-to-the-latest-climate-science/)” and “[An introduction to global warming impacts: Hell and High Water](http://climateprogress.org/2009/03/22/an-introduction-to-global-warming-impacts-hell-and-high-water/)“).

#### Other countries model our technology- global demonstration

**Traub 12/14** (James, fellow of the Centre on International Cooperation. He writes Terms of Engagement for Foreign Policy,” “Transforming the future lies in our hands,” <http://gulfnews.com/opinions/columnists/transforming-the-future-lies-in-our-hands-1.1118704>, December 14, 2012)

Despite President Barack Obama’s vow, in his first post-reelection press conference, to take decisive action on climate change, the global climate talks in Doha dragged to a close with the US, as usual, a target of activists’ wrath. The Obama administration has shown no interest in submitting to a binding treaty on carbon emissions and refuses to increase funding to help developing countries reduce their own emissions, even as the US continues to behave as a global scofflaw on climate change. Actually, that is not true — the last part, anyway. According to the International Energy Agency, US emissions have dropped 7.7 per cent since 2006 — “the largest reduction of all countries or regions”. Yes, you read that correctly. The US, which has refused to sign the Kyoto Accords establishing binding targets for emissions, has reduced its carbon footprint faster than the greener-than-thou European countries. The reasons for this have something to do with climate change itself (warm winters mean less heating oil — something to do with market forces — the shift from coal to natural gas in power plants) and something to do with policy at the state and regional levels. And in the coming years, as both new gas-mileage standards and new power-plant regulations, championed by the Obama administration kick in, policy will drive the numbers further downwards. US emissions are expected to fall 23 per cent between 2002 and 2020. Apparently, Obama’s record on climate change is not quite as calamitous as reputation would have it. The West has largely succeeded in bending downwards the curve of carbon emissions. However, the developing world has not. Last year, China’s emissions rose 9.3 per cent; India’s, 8.7 per cent. China is now the world’s No 1 source of carbon emissions, followed by the US, the European Union (EU) and India. The emerging powers have every reason to want to emulate the energy-intensive economic success of the West — even those, like China, who have taken steps to increase energy efficiency, are not prepared to do anything to harm economic growth. The real failure of US policy has been, first, that it is still much too timid; and second, that it has not acted in such a way as to persuade developing nations to take the truly difficult decisions which would put the world on a sustainable path. There is a useful analogy with the nuclear nonproliferation regime. In an earlier generation, the nuclear stockpiles of the US and the Soviet Union posed the greatest threat to global security. Now, the threat comes from the proliferation of weapons to weak or rogue states or to non-state actors. However, the only way that Washington can persuade other governments to join in a tough nonproliferation regime is by taking the lead in reducing its own nuclear stockpile — which the Obama administration has sought to do, albeit with very imperfect success. In other words, where power is more widely distributed, US action matters less in itself, but carries great weight as a demonstration model — or anti-demonstration model. Logic would thus dictate that the US bind itself in a global compact to reduce emissions, as through the Nuclear Nonproliferation Treaty (NPT) it has bound itself to reduce nuclear weapons. However, the Senate would never ratify such a treaty. And even if it did, would China and India similarly bind themselves? Here the nuclear analogy begins to break down because the NPT mostly requires that states submit to inspections of their nuclear facilities, while a climate change treaty poses what looks very much like a threat to states’ economic growth. Fossil fuels are even closer to home than nukes. Is it any wonder that only EU countries and a few others have signed the Kyoto Accords? A global version of Kyoto is supposed to be readied by 2015, but a growing number of climate change activists — still very much a minority — accept that this may not happen and need not happen. So what can Obama do? It is possible that much tougher action on emissions will help persuade China, India and others that energy efficiency need not hinder economic growth. As Michael Levi, a climate expert at the Council on Foreign Relations points out, the US gets little credit abroad for reducing emissions largely — thanks to “serendipitous” events. Levi argues, as do virtually all policy thinkers and advocates, that the US must increase the cost of fossil fuels, whether through a “carbon tax” or cap-and-trade system, so that both energy efficiency and alternative fuels become more attractive and also to free-up money to be invested in new technologies. This is what Obama’s disappointed supporters thought he would do in the first term and urge him to do now. Obama is probably not going to do that. In his post-election news conference, he insisted that he would find “bipartisan” solutions to climate change and congressional Republicans are only slightly more likely to accept a sweeping change in carbon pricing than they are to ratify a climate-change treaty. The president also said that any reform would have to create jobs and growth, which sounds very much like a signal that he will avoid new taxes or penalties (even though advocates of such plans insist that they would spur economic growth). All these prudent political calculations are fine when you can afford to fail. But we cannot afford to fail. Global temperatureshave alreadyincreased 0.7 degrees Celsius. Disasterreallystrikes ata2 degree Celsius increase, which leads to large-scale drought, wildfires, decreased food production and coastal flooding. However, the current global trajectory of coal, oil and gas consumption means that, according to Fatih Birol, the International Energy Agency’s chief economist, “the door to a 2 degreeCelsius trajectory is about to close.” That is how dire things are. What, then, can Obama do that is equal to the problem? He can invest. Once the fiscal cliff negotiations are behind him, and after he has held his planned conversation with “scientists, engineers and elected officials,” he can tell the American people that they have a once-in-a-lifetime opportunity to transform the future — for themselves and for people everywhere. He can propose — as he hoped to do as part of the stimulus package of 2009 — that the US build a “smart grid” to radically improve the efficiency of electricity distribution. He can argue for large-scale investments in research and development of new sources of energy and energy-efficient construction technologies and lots of other whiz-bang things. This, too, was part of the stimulus spending; it must become bigger and permanent. The reason Obama should do this is, first, because the American people will (or could) rally behind a visionary programme in a way that they never will get behind the dour mechanics of carbon pricing. Second, because the way to get to a carbon tax is to use it as a financing mechanism for such a plan. Third, because oil and gas are in America’s bloodstream; as Steven Cohen, executive director of the Earth Institute, puts it: “The only thing that’s going to drive fossil fuels off the market is cheaper renewable energy.” Fourth, the US cannot afford to miss out on the gigantic market for green technology. Finally, there’s leverage. China and India may not do something sensible but painful, like adopting carbon pricing, because the US does so, but they will adopt new technologies if the US can prove that they work without harming economic growth. Developing countries have already made major investments in reducing air pollution, halting deforestation and practising sustainable agriculture. They are just too modest. It is here, above all, that the US can serve as a demonstration model — the world’s most egregious carbon consumer showing the way to a low-carbon future. Global warming-denial is finally on the way out. Three-quarters of Americans now say they believe in global warming and more than half believe that humans are causing it and want to see a US president take action. President Obama does not have to do the impossible. He must, however, do the possible.

# k

**No link – we think the state is bad – they’ve messed up warming and**

**This logic of social death replicates the violence of the middle passage – rejection is necessary to honor the dead**

**Brown 2009** – professor of history and of African and African American Studies specializing in Atlantic Slavery (Vincent, “Social Death and Political Life in the Study of Slavery,” http://history.fas.harvard.edu/people/faculty/documents/brown-socialdeath.pdf)

But this was not the emphasis of Patterson’s argument. As a result, those he has inspired have often conflated his exposition of slaveholding ideology with a description of the actual condition of the enslaved. Seen as a state of being, the concept of social death is ultimately out of place in the political history of slavery. If studies of slavery would account for the outlooks and maneuvers of the enslaved as an important part of that history, scholars would do better to keep in view the struggle against alienation rather than alienation itself. To see social death as a productive peril entails a subtle but significant shift in perspective, from seeing slavery as a condition to viewing enslavement as a predicament, in which enslaved Africans and their descendants never ceased to pursue a politics of belonging, mourning, accounting, and regeneration. In part, the usefulness of social death as a concept depends on what scholars of slavery seek to explain—black pathology or black politics, resistance or attempts to remake social life? For too long, debates about whether there were black families took precedence over discussions of how such families were formed; disputes about whether African culture had “survived” in the Americas overwhelmed discussions of how particular practices mediated slaves’ attempts to survive; and scholars felt compelled to prioritize the documentation of resistance over the examination of political strife in its myriad forms. But of course, because slaves’ social and political life grew directly out of the violence and dislocation of Atlantic slavery, these are false choices. And we may not even have to choose between tragic and romantic modes of storytelling, for history tinged with romance may offer the truest acknowledgment of the tragedy confronted by the enslaved: it took heroic effort for them to make social lives. There is romance, too, in the tragic fact that although scholars may never be able to give a satisfactory account of the human experience in slavery, they nevertheless continue to try. If scholars were to emphasize the efforts of the enslaved more than the condition of slavery, we might at least tell richer stories about how the endeavors of the weakest and most abject have at times reshaped the world. The history of their social and political lives lies between resistance and oblivion, not in the nature of their condition but in their continuous struggles to remake it. Those struggles are slavery’s bequest to us.

**LINK—their assumption of ontological blackness essentializes blackness as a racial category subservient to whiteness**

**Welcome 2004** – completing his PhD at the sociology department of the City University of New York's Graduate Center (H. Alexander, "White Is Right": The Utilization of an Improper Ontological Perspective in Analyses of Black Experiences, Journal of African American Studies, Summer-Fall 2004, Vol. 8, No. 1 & 2, pp. 59-73)

In many of the studies of blacks, the experiences of whites, not blacks, are used as the backing for the construction of the warrants/rules that are employed to evaluate black experiences, delimiting the "concepts and relationships that can exist" in the black community. The life histories of whites are used as the standard against which black experiences are measured and as the goals to which blacks are encouraged to strive. The employment of this ontology fallaciously limits the range of black agency, producing deceitful narratives where the navigation of the social environment by blacks is dictated by either a passive response to, or a passive adoption of, white scripts. This ontology erroneously limits descriptions and evaluations of black experiences, excluding viable causal determinants of the socio-economic status of blacks and constructing restricted descriptions of black agency. The utilization of whiteness to determine and/or evaluate blackness begins when whiteness and white life histories come to represent what is "right." "White is right" is a sarcastic phrase that was an extremely popular slur during the Black Power movement in the mid-1960s to the early 1970s; the utilization of this phrase represents a form of social critique that takes exception to both the privileging of white biographies as accurate descriptions of history and the reconstitution of these histories as a template that blacks and other people of color should follow for navigating social environments and achieving positive social mobility. Part of the prominence of the "white is right" perspective comes from the numerical superiority of whites. As a group, whites have been in the majority throughout the history of the United States and the prominence of the white experience has been used to argue that white experiences should be used as a social template. It has been used as such in the works of Robert Park (1939) and Gunnar Myrdal (1944), both of whom suggested that by copying the patterns of whites, blacks would achieve positive social mobility. However, use of the numerical superiority of whites to support claims about the "rightness" of white experiences relies on the equation of quantitative dominance with qualitative dominance and the employment of the fallacious argumentum ad populum. The actual source of the dominance of the "white is right" perspective lies in the dynamics of power. The location of the origins of the dominant ideology in power relations is conceptualized in the work of Michel Foucault (1980), who theorized that power is imbricated with discourse: We must make allowance for the complex and unstable process whereby discourse can be both an instrument and an effect of power, but also a hindrance, a stumbling-block, a point of resistance and a starting point for an opposing strategy. Discourse transmits and produces power; it reinforces it, but also undermines and exposes it, renders it fragile and makes it possible to thwart it (p. 101). Key to the deployment of discourses is an underlying strategy. As such, the prominence of the "white is right" perspective can be traced to attempts to create an "order,"or a way of thinking. Foucault's theoretical lens supports the hypothesis that the privileging of white experiences and the use of these experiences as an ontological framework for the analyses of black experiences is an effect of power imbalances.

**The impact – with the analyst in a position of authority, those being analyzed are treating as raw material. The affirmative replaces material exploitation with psychic exploitation – turns case.**

Brickman ‘3 [Celia (Center for Religion and Psychotherapy of Chicago, PhD in Religion and the Human Sciences at the University of Chicago); Aboriginal Populations in the Mind: Race and Primitivity in Psychoanalysis; Columbia University Press; New York; p. 201-2 //nick]

The authority of early anthropologists and psychoanalysis alike had been bolstered by the attempts of their respective disciplines to model themselves along scientific lines as a way of placing their new forms of knowledge within a recognizable framework of legitimacy. Contemporary anthropology now distances itself not only from its colonial ancestry but from the positivism of earlier social science approaches—attempts to ground knowledge of social worlds in the observation, measurement, and quantification of elements of human behavior; while certain trends in contemporary psychoanalysis have begun to distance themselves from the model of the natural sciences, which attempts to ground knowledge of the natural world by studying phenomena in laboratory conditions that ensure an uncontaminated source of data. Both these models presupposed a scientific observer, the integrity of whose observations and conclusions depended on his or her detachment and separation from the subjects under investigation. They presupposed a separate and preexisting anthropological or psychological reality that would be decoded by the neutral and unimplicated scientist, assisted by universalizing theories and undisturbed by any consideration of the political processes governing these encounters.6 Such models allowed practitioners of anthropology to ignore not only the embeddedness of both members of the anthropological encounter within historically constructed and politically interacting contexts but also the domination of their own world views through their interpretations and representations of the subjects they attempted to describe. Similarly, by rendering the unconscious as the pristine object of a scientific investigation, psychoanalysts hid their domination of the psychoanalytic subject, replacing recognition (a mutual act) with observation (a unilateral act) and camouflaging their influence as disinterested interpretation. The psychoanalyst, like the anthropologist, was hailed as the agent who would make authoritative interpretations and judgments concerning the passive human objects of investigation whose own knowledge was treated as the raw material, rather than part of the final product, of the investigation.

Our politics is necessary to celebrating life. The alternative denies our potential to affirm life and condemns others to unnecessary suffering.

May ‘5 (Todd May, prof @ Clemson. “To change the world, to celebrate life,” Philosophy & Social Criticism 2005 Vol 31 nos 5–6 pp. 517–531)

To change the world and to celebrate life. This, as the theologian Harvey Cox saw, is the struggle within us. It is a struggle in which one cannot choose sides; or better, a struggle in which one must choose both sides. The abandonment of one for the sake of the other can lead only to disaster or callousness. Forsaking the celebration of life for the sake of changing the world is the path of the sad revolutionary. In his preface to Anti-Oedipus, Foucault writes that one does not have to be sad in order to he revolutionarv. The matter is more urgent than that, however. One cannot be both sad and revolutionary lacking a sense of the wondrous that is already here, among us, one who is bent upon changing the world can only become solemn or bitter. He or she is focused only on the future; the present is what is to be overcome. The vision of what is not but must come to be overwhelms all else, and the point of change itself becomes lost. The history of the left in the 20th century offers numerous examples of this, and the disaster that attends to it should be evident to all of us by now. The alternative is surely not to shift one’s allegiance to the pure celebration of life, although there are many who have chosen this path. It is at best blindness not to see the misery that envelops so many of our fellow humans, to say nothing of what happens to sentient nonhuman creatures. The attempt to jettison world-changing for an uncritical assent to the world as it is requires a self-deception that I assume would be anathema for those of us who have studied Foucault. Indeed, it is anathema for all of us who awaken each day to an America whose expansive boldness is matched only by an equally expansive disregard for those we place in harm’s way. This is the struggle, then. The one between the desire for life celebration and the desire for world-changing. The struggle between reveling in the contingent and fragile joys that constitute our world and wresting it from its intolerability. I am sure it is a struggle that is not foreign to anyone who is reading this. I am sure as well that the stakes for choosing one side over another that I have recalled here are obvious to everyone. The question then becomes one of how to choose both sides at once. III Maybe it happens this way. You walk into a small meeting room at the back of a local bookstore. There are eight or ten people milling about. They’re dressed in dark clothes, nothing fancy, and one or two of them have earrings or dreadlocks. They vary in age. You don’t know any of them. You’ve never seen them before. Several of them seem to know one another. They are affectionate, hugging, letting a hand linger on a shoulder or an elbow. A younger man, tall and thin, with an open face and a blue baseball cap bearing no logo, glides into the room. Two others, a man and a woman, shout, ‘Tim!’ and he glides over to them and hugs them, one at a time. They tell him how glad they are that he could make it, and he says that he just got back into town and heard about the meeting. You stand a little off to the side. Nobody has taken a seat at the rectangle of folding tables yet. You don’t want to be the first to sit down. Tim looks around the room and smiles. Several other people filter in. You’re not quite sure where to put your hands so you slide them into your jean pockets. You hunch your shoulders. Tim’s arrival has made you feel more of an outsider. But then he sees you. He edges his way around several others and walks up to you and introduces himself. You respond. Tim asks and you tell him that this is your first time at a meeting like this. He doesn’t ask about politics but about where you’re from. He tells you he has a friend in that neighborhood and do you know . . . ? Then several things happen that you only vaguely notice because you’re talking with Tim. People start to sit down at the rectangle of tables. One of them pulls out a legal pad with notes on it. She sits at the head of the rectangle; or rather, when she sits down there, it becomes the head. And there’s something you don’t notice at all. You are more relaxed, your shoulders have stopped hunching, and when you sit down the seat feels familiar. The woman at the head of the table looks around. She smiles; her eyes linger over you and a couple of others that you take to be new faces, like yours. She says, ‘Maybe we should begin.’ IV I can offer only a suggestion of an answer here today. It is a suggestion that brings together some thoughts from the late writings of Maurice Merleau-Ponty with those of Foucault, in order to sketch not even a framework for thought, but the mere outlines of a framework. It is not a framework that would seek to find the unconscious of each in the writings of the other. Neither thinker finishes or accomplishes the other. (Often, for example regarding methodology, they do not even agree.) Rather, it is a framework that requires both of them, from their very different angles, in order to be able to think it. My goal in constructing the outlines of this framework is largely philosophical. That is to say, the suggestion I would like to make here is not one for resolving for each of us the struggle of life-celebration and world-changing, but of offering a way to conceive ourselves that allows us to embrace both sides of this battle at the same time. Given the thinkers I have chosen as reference points, it will be no surprise when I say that that conception runs through the body. Let me start with Merleau-Ponty. In his last writings, particularly in The Visible and the Invisible, he offers a conception of the body that is neither at odds nor even entangled with the world, but is of the very world itself. His concept of the flesh introduces a point of contact that is also a point of undifferentiation. The flesh, Merleau-Ponty writes, ‘is the coiling over of the visible upon the seeing body, of the tangible upon the touching body, which is attested in particular when the body sees itself, touches itself seeing and touching the things, such that, as tangible it descends among them’.2 We must recall this economy of the flesh before we turn to Foucault. There is, for Merleau-Ponty, a single Being. Our world is of that Being, and we are of our world. We are not something that confronts the world from outside, but are born into it and do not leave it. This does not mean that we cannot remove ourselves from the immediacy of its grasp. What it means is that to remove ourselves from that immediacy is neither the breaking of a bond nor the discovery of an original dichotomy or dualism. What is remarkable about human beings is precisely our capacity to confront the world, to reflect upon it, understand it, and change it, while still being of a piece with it. To grasp this remarkable character, it is perhaps worth recalling Gilles Deleuze’s concept of the fold. The world is not composed of different parts; there is no transcendent, whether of God or of subjectivity. The world is one. As Deleuze sometimes says, being is univocal. This oneness is not, however, inert or inanimate. Among other things, it can fold over on itself, creating spaces that are at once insides and outsides, at once different from and continuous with one another. The flesh is a fold of Being in this sense. It is of the world, and yet encounters it as if from a perceptual or cognitive distance. It is a visibility that sees, a tangible that touches, an audible that hears. Merleau- Ponty writes: There is vision, touch when a certain visible, a certain tangible, turns back upon the whole of the visible, the whole of the tangible, of which it is a part, or when suddenly it finds itself surrounded by them, or when between it and them, and through their commerce, is formed a Visibility, a Tangible in itself, which belong properly neither to the body qua fact nor to the world qua fact . . . and which therefore form a couple, a couple more real than either of them.3 For Merleau-Ponty, thought and reflection do not attach themselves to this flesh from beyond it, but arise through it. As our body is of this world, our thought is of our bodies, its language of a piece with the world it addresses. ‘[I]f we were to make completely explicit the architectonics of the human body, its ontological framework, and how it sees itself and hears itself, we would see the possibilities of language already given in it.’4 This conception of the body as flesh of the world is not foreign to Foucault, although of course the terms Merleau-Ponty uses are not his. We might read Foucault’s politics as starting from here, inaugurated at the point of undifferentiation between body and world. The crucial addition he would make is that that point of undifferentiation is not historically inert. The body/world nexus is inscribed in a history that leaves its traces on both at the same time, and that crosses the border of the flesh and reaches the language that arises from it, and the thought that language expresses. How does this work?V Maybe it doesn’t happen that way. Maybe it happens another way. Maybe you walk into a room at a local community center. The room is large, but there aren’t many people, at least yet. There’s a rectangular table in the center, and everyone is sitting around it. A couple of people look up as you walk in. They nod slightly. You nod back, even more slightly. At the head of the table is someone with a legal pad. She does not look up. She is reading the notes on the pad, making occasional marks with the pen in her right hand. Other people come in and take places at the table. One or two of them open laptop computers and look for an outlet. Eventually, the table fills up and people start sitting in chairs behind the table. Your feel as though you’re in an inner circle where you don’t belong. You wonder whether you should give up your chair and go sit on the outside with the others who are just coming in now. Maybe people notice you, think you don’t belong there. At this moment you’d like to leave. You begin to feel at once large and small, visually intrusive and an object of scrutiny. You don’t move because maybe this is OK after all. You just don’t know. The room is quiet. A couple of people cough. Then the woman seated at the head of the table looks up. She scans the room as if taking attendance. She says, ‘Maybe we should begin.’ VI Merleau-Ponty’s discussion of the body as flesh is an ontological one. Although he does not see the body as remote from its historical inscription, his discussion does not incorporate the role such inscription plays. For a body to be of the world is also for it to be temporal, to be encrusted in the continuous emerging of the world over time. And this emerging is not abstract; rather, it is concrete. The body/world nexus evolves during particular historical periods. This fold of the flesh, this body, is not nowhere and at any time. It is there, then; or it is here, now. A body is entangled within a web of specific events and relations that, precisely because it is of this world, are inescapably a part of that body’s destiny. As Merleau-Ponty tells us in Phenomenology of Perception, ‘our open and personal existence rests on an initial foundation of acquired and stabilized existence. But it could not be otherwise, if we are temporality, since the dialectic of acquisition and future is what constitutes time.’5 The medium for the body’s insertion into a particular net of events and relations is that of social practices. Our bodies are not first and foremost creatures of the state or the economy, no more than they are atomized wholes distinct from the world they inhabit. Or better, they are creatures of the state and the economy inasmuch as those appear through social practices, through the everyday practices that are the ether of our lives. Social practices are the sedimentation of history at the level of the body. When I teach, when I write this article, when I run a race or teach one of my children how to ride a bicycle, my body is oriented in particular ways, conforming to or rejecting particular norms, responding to the constraints and restraints of those practices as they have evolved in interaction with other practices over time. Through its engagement in these practices, my body has taken on a history that is not of my making but is nevertheless part of my inheritance. It is precisely because, as Merleau-Ponty has written, the body and the world are not separate things but rather in a chiasmic relation that we can think this inheritance. And it is because of Foucault’s histories that we can recognize that this inheritance is granted through specific social practices. And of course, as Foucault has taught us, social practices are where the power is. It is not, or not simply, at the level of the state or the modes of production where power arises. It is, as he sometimes puts it, at the capillaries. One of the lessons of Discipline and Punish is that, if the soul is the prison of the body, this is because the body is inserted into a set of practices that create for it a soul. These practices are not merely the choices of an individual whose thought surveys the world from above, but instead the fate of a body that is of a particular world at a particular time and place. Moreover, these practices are not merely in service to a power that exists outside of them; they are mechanisms of power in their own right. It is not because Jeremy Bentham disliked the prison population that the Panopticon became a grid for thinking about penal institutions. It is instead because the evolution of penal practices at that time created an opening for the economy of visibility that the Panopticon represented. When Foucault writes that . . . the soul has a reality, it is produced permanently around, on, within the body by the functioning of a power that is exercised on those punished – and, in a more general way, on those one supervises, trains and corrects, over madmen, children at home and at school, the colonized, over those who are stuck at a machine and supervised for the rest of their lives6 his claim is informed by four other ones that lie behind it: that bodies are of a piece with the world, that the body/world nexus is a temporal one, that the medium of that corporeal temporality is the practices a body is engaged in, and that that medium is political as well as social. The last three claims are, of course, of the framework of Foucault’s thought. The first one is the ontological scaffolding provided by Merleau-Ponty. And it is by means of all four that we can begin to conceive things so as to be able to choose both world-changing and lifecelebrating at the same time. VII It could happen yet another way. Increasingly, it does. There is no meeting. There are no tables and no legal pads. Nobody sits down in a room together, at least nobody sits down at a place you know about. There may not even be a leaflet. Maybe you just got an email that was forwarded by someone you know slightly and who thought you might be interested. At the bottom there’s a link, in case you want to unsubscribe. If you don’t unsubscribe you get more notices, with petitions to sign or times and places for rallies or teach-ins or marches. Maybe there’s also a link for feedback or a list for virtual conversations or suggestions. If you show up, it’s not to something you put together but to something that was already in place before you arrived. How did you decide on this rally or teach-in? You sat in front of your computer screen, stared at it, pondering. Maybe you emailed somebody you know, asking for their advice. Is it worth going? If it’s on campus you probably did. It matters who will see you, whether you have tenure, how much you’ve published. There are no Tims here. You’ve decided to go. If it’s a teach-in, you’ve got plausible deniability; you’re just there as an observer. If it’s a rally, you can stand to the side. But maybe you won’t do that. The issue is too important. You don’t know the people who will be there, but you will stand among them, walk among them. You will be with them, in some way. Bodies at the same time and place. You agree on the issue, but it’s a virtual agreement, one that does not come through gestures or words but through sharing the same values and the same internet connections. As you march, as you stand there, nearly shoulder to shoulder with others of like mind, you’re already somewhere else, telling this story to someone you know, trying to get them to understand the feeling of solidarity that you are projecting back into this moment. You say to yourself that maybe you should have brought a friend along. There are many ways to conceive the bond between world-changing and life-celebrating. Let me isolate two: one that runs from Merleau-Ponty to Foucault, from the body’s chiasmic relation with the world to the politics of its practices; and the other one running back in the opposite direction. The ontology Merleau-Ponty offers in his late work is one of wonder. Abandoning the sterile philosophical debates about the relation of mind and body, subject and object, about the relation of reason to that which is not reason, or the problem of other minds, his ontology forges a unity of body and world that puts us in immediate contact with all of its aspects. No longer are we to be thought the self-enclosed creatures of the philosophical tradition. We are now in touch with the world, because we are of it. Art, for example, does not appeal solely to our minds; its beauty is not merely a matter of the convergence of our faculties. We are moved by art, often literally moved, because our bodies and the work of art share the same world. As Merleau-Ponty says, ‘I would be at great pains to say where is the painting I am looking at. For I do not look at it as I do a thing; I do not fix it in its place. My gaze wanders in it as in the halos of Being. It is more accurate to say that I see according to it, or with it, than that I see it.’7 It is only because my body is a fold of this world that art can affect me so. But this affection is also a vulnerability. As my look can happen according to a work of art, so it can happen according to a social practice. And even more so in proportion as that social practice and its effects are suffused through the world in which I carry on my life, the world my body navigates throughout the day, every day. I do not have a chance to look according to a painting by Cezanne very often; but I do encounter the effects of normalization as it has filtered through the practices of my employment, of my students’ upbringing, and of my family’s expectations of themselves and one another. The vulnerability of the body, then, is at once its exposure to beauty and its opening to what is intolerable. We might also see things from the other end, starting from politics and ending at the body. I take it that this is what Foucault suggests when he talks about bodies and pleasures at the end of the first volume of the History of Sexuality. If we are a product of our practices and the conception of ourselves and the world that those practices have fostered, so to change our practices is to experiment in new possibilities both for living and, inseparably, for conceiving the world. To experiment in sexuality is not to see where the desire that lies at the core of our being may lead us; that is simply the continuation of our oppression by other means. Rather, it is to construct practices where what is at issue is no longer desire but something else, something that might go by the name of bodies and pleasures. In doing so, we not only act differently, we think differently, both about ourselves and about the world those selves are inseparable from. And because these experiments are practices of our bodies, and because our bodies are encrusted in the world, these experiments become not merely acts of political resistance but new folds in the body/ world nexus. To construct new practices is to appeal to aspects or possibilities of the world that have been previously closed to us. It is to offer novel, and perhaps more tolerable, engagements in the chiasm of body and world. Thus we might say of politics what Merleau-Ponty has said of painting, that we see according to it. Here, I take it, is where the idea of freedom in Foucault lies. For Foucault, freedom is not a metaphysical condition. It does not lie in the nature of being human, nor is it a warping, an atomic swerve, in the web of causal relations in which we find ourselves. To seek our freedom in a space apart from our encrustation in the world is not so much to liberate ourselves from its influence as to build our own private prison. Foucault once said: There’s an optimism that consists in saying that things couldn’t be better. My optimism would consist rather in saying that so many things can be changed, fragile as they are, bound up more with circumstances than with necessities, more arbitrary than self-evident, more a matter of complex, but temporary, historical circumstances than with inevitable anthropological constraints . . .8 That is where to discover our freedom. And what happens from there? From the meetings, from the rallies, from the petitions and the teach-ins? What happens next? There is, after all, always a next. If you win this time – end aid to the contras, divest from apartheid South Africa, force debt-forgiveness by technologically advanced countries – there is always more to do. There is the de-unionization of workers, there are gay rights, there is Burma, there are the Palestinians, the Tibetans. There will always be Tibetans, even if they aren’t in Tibet, even if they aren’t Asian. But is that the only question: Next? Or is that just the question we focus on? What’s the next move in this campaign, what’s the next campaign? Isn’t there more going on than that? After all, engaging in political organizing is a practice, or a group of practices. It contributes to making you who you are. It’s where the power is, and where your life is, and where the intersection of your life and those of others (many of whom you will never meet, even if it’s for their sake that you’re involved) and the buildings and streets of your town is. This moment when you are seeking to change the world, whether by making a suggestion in a meeting or singing at a rally or marching in silence or asking for a signature on a petition, is not a moment in which you don’t exist. It’s not a moment of yours that you sacrifice for others so that it no longer belongs to you. It remains a moment of your life, sedimenting in you to make you what you will become, emerging out of a past that is yours as well. What will you make of it, this moment? How will you be with others, those others around you who also do not cease to exist when they begin to organize or to protest or to resist? The illusion is to think that this has nothing to do with you. You’ve made a decision to participate in world-changing. Will that be all there is to it? Will it seem to you a simple sacrifice, for this small period of time, of who you are for the sake of others? Are you, for this moment, a political ascetic? Asceticism like that is dangerous. Freedom lies not in our distance from the world but in the historically fragile and contingent ways we are folded into it, just as we ourselves are folds of it. If we take Merleau-Ponty’s Being not as a rigid foundation or a truth behind appearances but as the historical folding and refolding of a univocity, then our freedom lies in the possibility of other foldings. Merleau-Ponty is not insensitive to this point. His elusive concept of the invisible seems to gesture in this direction. Of painting, he writes: the proper essence of the visible is to have a layer of invisibility in the strict sense, which it makes present as a certain absence . . . There is that which reaches the eye directly, the frontal properties of the visible; but there is also that which reaches it from below . . . and that which reaches it from above . . . where it no longer participates in the heaviness of origins but in free accomplishments.9 Elsewhere, in The Visible and the Invisible, he says: if . . . the surface of the visible, is doubled up over its whole extension with an invisible reserve; and if, finally, in our flesh as the flesh of things, the actual, empirical, ontic visible, by a sort of folding back, invagination, or padding, exhibits a visibility, a possibility that is not the shadow of the actual but its principle . . . an interior horizon and an exterior horizon between which the actual visible is a partitioning and which, nonetheless, open indefinitely only upon other visibles . . .10 What are we to make of these references? We can, to be sure, see the hand of Heidegger in them. But we may also, and for present purposes more relevantly, see an intersection with Foucault’s work on freedom. There is an ontology of freedom at work here, one that situates freedom not in the private reserve of an individual but in the unfinished character of any historical situation. There is more to our historical juncture, as there is to a painting, than appears to us on the surface of its visibility. The trick is to recognize this, and to take advantage of it, not only with our thoughts but with our lives. And that is why, in the end, there can be no such thing as a sad revolutionary. To seek to change the world is to offer a new form of life-celebration. It is to articulate a fresh way of being, which is at once a way of seeing, thinking, acting, and being acted upon. It is to fold Being once again upon itself, this time at a new point, to see what that might yield. There is, as Foucault often reminds us, no guarantee that this fold will not itself turn out to contain the intolerable. In a complex world with which we are inescapably entwined, a world we cannot view from above or outside, there is no certainty about the results of our experiments. Our politics are constructed from the same vulnerability that is the stuff of our art and our daily practices. But to refuse to experiment is to resign oneself to the intolerable; it is to abandon both the struggle to change the world and the opportunity to celebrate living within it. And to seek one aspect without the other – life-celebration without world-changing, world-changing without life-celebration – is to refuse to acknowledge the chiasm of body and world that is the wellspring of both. If we are to celebrate our lives, if we are to change our world, then perhaps the best place to begin to think is our bodies, which are the openings to celebration and to change, and perhaps the point at which the war within us that I spoke of earlier can be both waged and resolved. That is the fragile beauty that, in their different ways, both Merleau- Ponty and Foucault have placed before us. The question before us is whether, in our lives and in our politics, we can be worthy of it. So how might you be a political body, woven into the fabric of the world as a celebrator and as a changer? You went to the meeting, and then to the demonstration. How was it there? Were the bodies in harmony or in counterpoint? Did you sing with your feet, did your voice soar? Did your mind come alive? Did you see possibilities you had not seen before? Were there people whose words or clothes, or even the way they walked hand in hand (how long has it been since you’ve walked hand in hand with someone out in public?) offer you a possibility, or make you feel alive as well as righteous? And how about those people off to the side, the ones on the sidewalk watching? Maybe they just stared, or maybe nodded as you went past. Or maybe some of them shouted at you to stop blocking the streets with your nonsense. Did you recoil within yourself, see yourself as in a mirror, or as the person at Sartre’s keyhole who’s just been caught? Did you feel superior to them, smug in your knowledge? Or did they, too, show you something you might learn from? Are they you at another moment, a moment in the past or in the future? Are they your parents that you have not explained to, sat down beside, or just shared a meal with? That one over there, the old man slightly stooped in the long overcoat: whom does he remind you of? What message might he have unwittingly brought for you? And why does it have to be a demonstration? You go to a few meetings, a few more demonstrations. You write some letters to legislators. You send an email to the President. And then more meetings. The next thing you know, you’re involved in a political campaign. By then you may have stopped asking why. This is how it goes: demonstrations, meetings with legislators, internet contacts. Does it have to be like this? Are demonstrations and meetings your only means? Do they become, sooner or later, not only means but ends? And what kinds of ends? In some sense they should always be ends: a meeting is a celebration, after all. But there are other ends as well. You go to the meeting because that fulfills your obligation to your political conscience. Does it come to that? There are other means, other ends. Other means/ends. Some people ride bicycles, en masse, slowly through crowded urban streets. You want environmentalism? Then have it. The streets are beautiful with their tall corniced buildings and wide avenues. To ride a bike through these streets instead of hiding in the armor of a car would be exhilarating. If enough of you do it together it would make for a pleasant ride, as well as a little lived environmentalism. Would you want to call it a demonstration? Would it matter? There are others as well who do other things with their bodies, more dangerous things. Some people have gone to Palestine in order to put their bodies between the Palestinians and the Israeli soldiers and settlers who attack them. They lie down next to Palestinians in front of the bulldozers that would destroy homes or build a wall through a family’s olive orchard. They feel the bodies of those they are in solidarity with. They smell the soil of Palestine as they lay there. Sometimes, they are harmed by it. A young woman, Rachel Corrie, was deliberately crushed by a US bulldozer operated by an Israeli soldier as she kneeled in front of a Palestinian home, hoping to stop its demolition. To do politics with one’s body can be like this. To resist, to celebrate, is also to be vulnerable. The world that you embrace, the world of which you are a part, can kill you too. And so you experiment. You try this and you try that. You are a phenomenologist and a genealogist. You sense what is around you, attend to the way your body is encrusted in your political involvements. And you know that that sensing has its own history, a history that often escapes you even as it envelops you. There is always more to what you are, and to what you are involved in, than you can know. So you try to keep vigilant, seeking the possibilities without scorning the realities. It’s a difficult balance. You can neglect it if you like. Many do. But your body is there, woven into the fabric of all the other bodies, animate and inanimate. Whether you like it or not, whether you recognize it or not. The only question is whether you will take up the world that you are of, or leave it to others, to those others who would be more than willing to take your world up for you.

# 1ar

# Warming

#### Coal is increasing globally now- only nuclear solves warming

Tat ‘12 (Chee Hong Tat, Chief Executive, Energy Market Authority of Singapore, “Singapore International Market Week Publication”, “SECURING OUR ENERGY FUTURE APRIL 2012”, LEQ)

Nuclear Faces The Long Road Back For the nuclear industry, recovery will depend on turning around public opinion u For the nuclear industry, Fukushima will stand as the fault line dividing two eras. Before the catastrophic events of March 2011, nuclear energy had been reborn as the clean energy of choice, having emerged from decades as the pariah of the energy family. But the earthquake and tsunami that ripped through the Fukushima Daiichi nuclear power plant changed all of that, radically altering the energy landscape. For the atomic energy sector, it will be a long, hard and expensive road back. "Since the Fukushima disaster in Japan, the EU has begun to carry out comprehensive stress tests at its nuclear power plants," European Commissioner for Energy Mr GÜnther Oettinger said in a video pre- recorded for the Singapore International Energy Week (SIEW) 2011. "It [also] aims to put in place the most advanced legal framework for the sustainable use of nuclear energy." If anything, the Fukushima disaster has shown that nuclear power cannot operate in isolation, requiring instead a comprehensive and global approach to safety. "To strengthen nuclear safety world- wide, we would welcome other countries operating nuclear power plants to carry out similar assessments as soon as pos- sible," Mr Oettinger added. The International Energy Agency (IEA) has painted a gloomy picture of a world with what it calls a "low nuclear case". A reduced nuclear output will lead to "increased import bills, heightened energy security concerns, and make it harder and more expensive to combat climate change." In the immediate aftermath of the Fukushima disaster, Germany, Europe's biggest economy, closed eight of its 17 reactors permanently. It later formally announced plans to shut down its nuclear programme within 11 years. While nuclear has made a muted comeback since Fukushima – the US recently reaffirmed its commitment to nuclear by opening two new nuclear units, the first in 15 years, experts see continuing challenges that will make it very difficult for the nuclear power industry to expand beyond a small handful of reactor projects. China promises that nuclear can be made safer. In particular, its research into safer thorium fuel cycle technology has been applauded by the nuclear lobby. Despite this, experts say nuclear programmes worldwide are set to contract rather than expand. The low nuclear case foresees the total amount of nuclear power capacity fall- ing from 393GW at the end of 2010 to 335GW in 2035, a little more than half the levels previously set out in IEA's New Policies Scenario. New Policies Scenario The share of nuclear power in total gen- eration will drop from 13 per cent in 2010 to just seven per cent in 2035, with implications for energy security, diversity of the fuel mix, spending on energy imports, and energy-related CO2 emissions. "It is clear now that without nuclear, we cannot meet CO2 reduction targets," said IEA's former Executive Director, Mr Nobuo Tanaka, when he opened SIEW 2011 with his keynote lecture. Or, as the agency’s Chief Economist, Dr Fatih Birol, posits – make power in general "viciously more expensive" and close the door to 2°C forever. A shift away from nuclear power "would definitely be bad news for energy security, for climate change and also for the eco- A shift away from nuclear power would definitely be bad news for energy security, for climate change, and also for the economics of the electricity price nomics of the electricity price," he added. Research into small modular reactors (SMR) is still in its infancy although the reduced cost of a 10MW modular unit that could power about 7,000 homes, compared with the one million homes from a conven- tional reactor, is receiving attention. ThE EvEr- ShriNkiNG piE The drastically-altered landscape can be seen in IEA projections for nuclear. Under its 2010 outlook, there was to be a 90 per cent increase in nuclear capacity. This compares with its latest projection of 60 per cent for the same period from 2011. While there will now be heavy reliance on the lighter emissions of gas to meet green house targets, the nuclear disaster has been an unexpected fillip for the renewables and alternative energy sector. The rise was driven by the solar power industry, where the value of transac- tions jumped by 56 per cent to $15.8 billion, to account for almost one-third of take-overs, according to advisory firm PricewaterhouseCoopers. Nevertheless, analysts say any surge in renewable energy is likely to be eclipsed by a return to coal, with a powerfully negative effect on CO2 emissions. Even before the Japanese earthquake, the nuclear industry was struggling. Weak power demand due to the reces-sion and cheaper alternatives such as gas and coal made it difficult to justify the hefty investment in reactors. Only those plants with strong government backing were going ahead. With nuclear-agnostic countries dropping plans for civil nuclear indus- tries, China remains the last hope of the beleaguered sector. While China froze approvals of new nuclear plants follow- ing Fukushima, it has already restarted its programme and the country is set to dominate the nuclear landscape. The PRC's 2020 target of reaching 80,000MW of nuclear capacity, from 10,000MW last year, may have been reduced due to delays caused by Fukush- ima. Nevertheless, its ambitious projects are putting most of the other countries' nuclear plans in the shade. Meanwhile, other emerging econo- mies, including India and the United Arab Emirates, are also planning signifi- cant investments in new reactors. Nuclear’s share of electricity generation is also likely to slip as other forms of generation grow more quickly. In the developed world, the emphasis is on finding alternatives to nuclear power. In Japan, which derived some 30 per cent of its electricity from nuclear power plants prior to Fukushima, efforts to regain public support for restarting the re- actors have made little headway. Since the tsunami, 52 out of the nation's 54 reactors have been offline as of March 2012. One important litmus of the industry's health has been companies that service the nuclear energy marketplace. They, too, have been repositioning themselves in an increasingly unattractive market. Shaw, the US civil engineering com- pany, has sold its 20 per cent stake in nuclear engineering group Westinghouse Electric Company to Toshiba of Japan. Toshiba, for its part, plans to sell the holding to another investor. General Electric, the US industrial group that is one of the world's lead- ing nuclear engineers through its joint venture with Hitachi of Japan, has said it does not hold out much hope for market growth in the immediate future. It now expects nuclear power to decline in importance as other parts of the business grow more rapidly.

#### Other countries model our technology- global demonstration

**Traub 12/14** (James, fellow of the Centre on International Cooperation. He writes Terms of Engagement for Foreign Policy,” “Transforming the future lies in our hands,” <http://gulfnews.com/opinions/columnists/transforming-the-future-lies-in-our-hands-1.1118704>, December 14, 2012)

Despite President Barack Obama’s vow, in his first post-reelection press conference, to take decisive action on climate change, the global climate talks in Doha dragged to a close with the US, as usual, a target of activists’ wrath. The Obama administration has shown no interest in submitting to a binding treaty on carbon emissions and refuses to increase funding to help developing countries reduce their own emissions, even as the US continues to behave as a global scofflaw on climate change. Actually, that is not true — the last part, anyway. According to the International Energy Agency, US emissions have dropped 7.7 per cent since 2006 — “the largest reduction of all countries or regions”. Yes, you read that correctly. The US, which has refused to sign the Kyoto Accords establishing binding targets for emissions, has reduced its carbon footprint faster than the greener-than-thou European countries. The reasons for this have something to do with climate change itself (warm winters mean less heating oil — something to do with market forces — the shift from coal to natural gas in power plants) and something to do with policy at the state and regional levels. And in the coming years, as both new gas-mileage standards and new power-plant regulations, championed by the Obama administration kick in, policy will drive the numbers further downwards. US emissions are expected to fall 23 per cent between 2002 and 2020. Apparently, Obama’s record on climate change is not quite as calamitous as reputation would have it. The West has largely succeeded in bending downwards the curve of carbon emissions. However, the developing world has not. Last year, China’s emissions rose 9.3 per cent; India’s, 8.7 per cent. China is now the world’s No 1 source of carbon emissions, followed by the US, the European Union (EU) and India. The emerging powers have every reason to want to emulate the energy-intensive economic success of the West — even those, like China, who have taken steps to increase energy efficiency, are not prepared to do anything to harm economic growth. The real failure of US policy has been, first, that it is still much too timid; and second, that it has not acted in such a way as to persuade developing nations to take the truly difficult decisions which would put the world on a sustainable path. There is a useful analogy with the nuclear nonproliferation regime. In an earlier generation, the nuclear stockpiles of the US and the Soviet Union posed the greatest threat to global security. Now, the threat comes from the proliferation of weapons to weak or rogue states or to non-state actors. However, the only way that Washington can persuade other governments to join in a tough nonproliferation regime is by taking the lead in reducing its own nuclear stockpile — which the Obama administration has sought to do, albeit with very imperfect success. In other words, where power is more widely distributed, US action matters less in itself, but carries great weight as a demonstration model — or anti-demonstration model. Logic would thus dictate that the US bind itself in a global compact to reduce emissions, as through the Nuclear Nonproliferation Treaty (NPT) it has bound itself to reduce nuclear weapons. However, the Senate would never ratify such a treaty. And even if it did, would China and India similarly bind themselves? Here the nuclear analogy begins to break down because the NPT mostly requires that states submit to inspections of their nuclear facilities, while a climate change treaty poses what looks very much like a threat to states’ economic growth. Fossil fuels are even closer to home than nukes. Is it any wonder that only EU countries and a few others have signed the Kyoto Accords? A global version of Kyoto is supposed to be readied by 2015, but a growing number of climate change activists — still very much a minority — accept that this may not happen and need not happen. So what can Obama do? It is possible that much tougher action on emissions will help persuade China, India and others that energy efficiency need not hinder economic growth. As Michael Levi, a climate expert at the Council on Foreign Relations points out, the US gets little credit abroad for reducing emissions largely — thanks to “serendipitous” events. Levi argues, as do virtually all policy thinkers and advocates, that the US must increase the cost of fossil fuels, whether through a “carbon tax” or cap-and-trade system, so that both energy efficiency and alternative fuels become more attractive and also to free-up money to be invested in new technologies. This is what Obama’s disappointed supporters thought he would do in the first term and urge him to do now. Obama is probably not going to do that. In his post-election news conference, he insisted that he would find “bipartisan” solutions to climate change and congressional Republicans are only slightly more likely to accept a sweeping change in carbon pricing than they are to ratify a climate-change treaty. The president also said that any reform would have to create jobs and growth, which sounds very much like a signal that he will avoid new taxes or penalties (even though advocates of such plans insist that they would spur economic growth). All these prudent political calculations are fine when you can afford to fail. But we cannot afford to fail. Global temperatureshave alreadyincreased 0.7 degrees Celsius. Disasterreallystrikes ata2 degree Celsius increase, which leads to large-scale drought, wildfires, decreased food production and coastal flooding. However, the current global trajectory of coal, oil and gas consumption means that, according to Fatih Birol, the International Energy Agency’s chief economist, “the door to a 2 degreeCelsius trajectory is about to close.” That is how dire things are. What, then, can Obama do that is equal to the problem? He can invest. Once the fiscal cliff negotiations are behind him, and after he has held his planned conversation with “scientists, engineers and elected officials,” he can tell the American people that they have a once-in-a-lifetime opportunity to transform the future — for themselves and for people everywhere. He can propose — as he hoped to do as part of the stimulus package of 2009 — that the US build a “smart grid” to radically improve the efficiency of electricity distribution. He can argue for large-scale investments in research and development of new sources of energy and energy-efficient construction technologies and lots of other whiz-bang things. This, too, was part of the stimulus spending; it must become bigger and permanent. The reason Obama should do this is, first, because the American people will (or could) rally behind a visionary programme in a way that they never will get behind the dour mechanics of carbon pricing. Second, because the way to get to a carbon tax is to use it as a financing mechanism for such a plan. Third, because oil and gas are in America’s bloodstream; as Steven Cohen, executive director of the Earth Institute, puts it: “The only thing that’s going to drive fossil fuels off the market is cheaper renewable energy.” Fourth, the US cannot afford to miss out on the gigantic market for green technology. Finally, there’s leverage. China and India may not do something sensible but painful, like adopting carbon pricing, because the US does so, but they will adopt new technologies if the US can prove that they work without harming economic growth. Developing countries have already made major investments in reducing air pollution, halting deforestation and practising sustainable agriculture. They are just too modest. It is here, above all, that the US can serve as a demonstration model — the world’s most egregious carbon consumer showing the way to a low-carbon future. Global warming-denial is finally on the way out. Three-quarters of Americans now say they believe in global warming and more than half believe that humans are causing it and want to see a US president take action. President Obama does not have to do the impossible. He must, however, do the possible.

**SMR’s rock and are cost competitive**

Madia (Chairman of the Board of Overseers and Vice President for the NAL at Stanford and was the Laboratory Director at the Oak Ridge National Laboratory and the Pacific Northwest National Laboratory) ‘12 (William Madia, Stanford Energy Journal, Dr. Madia serves as Chairman of the Board of Overseers and Vice President for the SLAC National Accelerator Laboratory at Stanford University. Previously, he was the Laboratory Director at the Oak Ridge National Laboratory from 2000-2004 and the Pacific Northwest National Laboratory from 1994-1999., “SMALL MODULAR REACTORS: A POTENTIAL GAME-CHANGING TECHNOLOGY”, <http://energyclub.stanford.edu/index.php/Journal/Small_Modular_Reactors_by_William_Madia>, Spring 2012, LEQ)

There is a new type of nuclear power plant (NPP) under development that has the potential to be a game changer in the power generation market: the small modular reactor (SMR). Examples of these reactors that are in the 50-225 megawatt electric (MW) range can be found in the designs being developed and advanced by Generation mPower (http://generationmpower.com/), NuScale (http://nuscale.com/), the South Korean SMART reactor (http://smart.kaeri.re.kr/) and Westinghouse (http://www.westinghousenuclear.com/smr/index.htm/). Some SMR concepts are up to 20 times smaller than traditional nuclear plants Today’s reactor designers are looking at concepts that are 5 to 20 times smaller than more traditional gigawatt-scale (GW) plants. The reasons are straightforward; the question is, “Are their assumptions correct?” The first assumption is enhanced safety. GW-scale NPPs require sophisticated designs and cooling systems in case of a total loss of station power, as happened at Fukushima due to the earthquake and tsunami. These ensure the power plant will be able to cool down rapidly enough, so that the nuclear fuel does not melt and release dangerous radioactive fission products and hydrogen gas. SMRs are sized and designed to be able to cool down without any external power or human actions for quite some time without causing damage to the nuclear fuel. The second assumption is economics. GW-scale NPPs cost $6 billion to $10 billion to build. Very few utilities can afford to put this much debt on their balance sheets. SMRs offer the possibility of installing 50-225 MW of power per module at a total cost that is manageable for most utilities. Furthermore, modular configurations allow the utilities to deploy a more tailored power generation capacity, and that capacity can be expanded incrementally. In principle, early modules could be brought on line and begin producing revenues, which could then be used to fund the addition of more modules, if power needs arise. The third assumption is based on market need and fit. Utilities are retiring old fossil fuel plants. Many of them are in the few hundred MW range and are located near load centers and where transmission capacity currently exists. SMRs might be able to compete in the fossil re-power markets where operators don’t need a GW of power to serve their needs. This kind of “plug and play” modality for NPPs is not feasible with many of the current large-scale designs, thus giving carbon-free nuclear power an entry into many of the smaller markets, currently not served by these technologies. There are numerous reasons why SMRs might be viable today. Throughout the history of NPP development, plants grew in size based on classic “economies of scale” considerations. Bigger was cheaper when viewed on a cost per installed kilowatt basis. The drivers that caused the industry to build bigger and bigger NPPs are being offset today by various considerations that make this new breed of SMRs viable. Factory manufacturing is one of these considerations. Most SMRs are small enough to allow them to be factory built and shipped by rail or barge to the power plant sites. Numerous industry “rules of thumb” for factory manufacturing show dramatic savings as compared to “on-site” outdoor building methods. Significant schedule advantages are also available because weather delay considerations are reduced. Of course, from a total cost perspective, some of these savings will be offset by the capital costs associated with building multiple modules to get the same total power output. Based on analyses I have seen, overnight costs in the range of $5000 to $8000 per installed kilowatt are achievable. If these analyses are correct, it means that the economies of scale arguments that drove current designs to GW scales could be countered by the simplicity and factory-build possibilities of SMRs. No one has yet obtained a design certification from the Nuclear Regulatory Commission (NRC) for an SMR, so we must consider licensing to be one of the largest unknowns facing these new designs. Nevertheless, since the most developed of the SMRs are mostly based on proven and licensed components and are configured at power levels that are passively safe, we should not expect many new significant licensing issues to be raised for this class of reactor. Still, the NRC will need to address issues uniquely associated with SMRs, such as the number of reactor modules any one reactor operator can safely operate and the size of the emergency planning zone for SMRs. To determine if SMRs hold the potential for changing the game in carbon-free power generation, it is imperative that we test the design, engineering, licensing, and economic assumptions with some sort of public-private development and demonstration program. Instead of having government simply invest in research and development to “buy down” the risks associated with SMRs, I propose a more novel approach. Since the federal government is a major power consumer, it should commit to being the “first mover” of SMRs. This means purchasing the first few hundred MWs of SMR generation capacity and dedicating it to federal use. The advantages of this approach are straightforward. The government would both reduce licensing and economic risks to the point where utilities might invest in subsequent units, thus jumpstarting the SMR industry. It would then also be the recipient of additional carbon-free energy generation capacity. This seems like a very sensible role for government to play without getting into the heavy politics of nuclear waste, corporate welfare, or carbon taxes. If we want to deploy power generation technologies that can realize near-term impact on carbon emissions safely, reliably, economically, at scale, and at total costs that are manageable on the balance sheets of most utilities, we must consider SMRs as a key component of our national energy strategy.

# a/t: magwood

**Magwood’s a hack**

**Grim 12**, Ryan, Washington bureau chief for The Huffington Post “Bill Magwood, NRC Democrat, Is 'Treacherous, Miserable Liar' And 'First-Class Rat,' Says Harry Reid,” 7/30, http://www.huffingtonpost.com/2012/07/30/bill-magwood-nrc-\_n\_1712181.html

Harry Reid isn't known for hyperbole. The soft-spoken Senate majority leader tends to wield his power behind the scenes, and when he does speak at his weekly press briefing, reporters lean in and bend their ears to make out the words. But if Reid is lied to, all that changes. It may sound dissonant to the public to say that honesty is the mostly highly valued quality in Washington. But while members of Congress may lie to their constituents with regularity, lying to one another is considered an unforgiveable sin. In an interview with The Huffington Post, the Nevada Democrat savaged Bill Magwood, a member of the Nuclear Regulatory Commission, when asked if he thought the Democrat had a chance to become NRC chairman. "You know, when you're in this government, this business of politics, the only thing that you have is your word," said Reid, seated in his Capitol office. "I can be as partisan as I have to be, but I always try to be nice. I try never to say bad things about people. Bill Magwood is one of the" -- Reid paused, deciding which adjective to reach for, before picking them all -- "most unethical, prevaricating" -- he paused again, this time for 10 full seconds -- "incompetent people I've ever dealt with. The man sat in that chair -- right there -- and lied to me. I've never, ever in my life had anyone do that. Never." Magwood didn't respond to a request for comment left with his assistant. Reid is a vociferous opponent of storing nuclear waste in Nevada's Yucca Mountain. By backing Obama early in his campaign for president, he persuaded the candidate to promise to block the project. A former staffer of Reid's was named chairman, and Reid said he was assured by Pete Rouse, a senior White House official, that Magwood would also oppose Yucca. Instead, according to Reid and confirmed by sources familiar with the internal dynamics of the NRC, Magwood worked against the effort to shut down Yucca. "That man I will never, ever forget what a treacherous, miserable liar he is. I met with him because Pete Rouse asked me to meet with him. I said, 'Is he OK on Yucca Mountain?' Pete said, 'Yeah.' So I went through some detail with him as to how important this was to me. 'Senator, I know this industry like the back of my hand. You don't have to worry about me,' [Magwood said]. And the conversation was much deeper than that." Late in 2011, HuffPost reported that Magwood was working with Republicans and the nuclear industry to oust then-NRC Chairman Greg Jaczko, just as he had done to his boss Terry Lash at the Department of Energy in the 1990s. "What I eventually found was that he had been deceptive and disloyal," Lash said of his then-number two, when told what Reid said. "I'm surprised at the strength of it, but it's certainly consistent with what I've seen." Reid and Lash have company in their critique of Magwood. In the earlier story about Magwood and the industry, multiple people who've worked closely with him questioned his integrity, but none did so on the record like Reid and Lash:

# a/t: makhijani

**Is wrong**

Barton 10

Charles, frmr PhD Candidate in History, MA in Philsophy, worked on the LFTR concept for about 2/3eds of his ORNL career and recognized by nuclear bloggers most of whom have technical training, and has been mentioned by the Wall Street Journal, “Arjun Makhijani and the Modular Small Reactor null-hypothesis” October 2, 2010, http://nucleargreen.blogspot.com/2010/10/arjun-makhijani-and-modular-small.html)

Arjun Makhijani (with Michele Boyd) has recently published a fact sheet on Small Modular Reactors which in effect advertises itself as the null-hypothesis to the case I an others have been making for some time on the advantages of small reactors. Small Modular ReactorsNo Solution for the Cost, Safety, and Waste Problems of Nuclear Power, Makhijani's title proclaims. But what is the evidence that backs Makhijani's case up. As it turns out **Makhijani offers no empirical data to back up his assertion, so as an example of scientific reasoning,** Makhijani's fact sheet rates an F.

# The Wall

#### No root cause

Goldstein 2 Joshua S., Professor Emeritus of International Relations, American University (Washington, DC) Research Scholar, University of Massachusetts and Nonresident Sadat Senior Fellow, CIDCM, University of Maryland War and Gender , P. 412 2k2

First, peace activists face a dilemma in thinking about causes of war and working for peace. Many peace scholars and activists support the approach, “if you want peace, work for justice”. Then if one believes that sexism contributes to war, one can work for gender justice specifically (perhaps among others) in order to pursue peace. This approach brings strategic allies to the peace movement (women, labor, minorities), but rests on the assumption that injustices cause war. The evidence in this book suggests that causality runs at least as strongly the other way. War is not a product of capitalism, imperialism, gender, innate aggression, or any other single cause, although all of these influences wars’ outbreaks and outcomes. Rather, war has in part fueled and sustained these and other injustices.  So, “if you want peace, work for peace.” Indeed, if you want justice (gener and others), work for peace. Causality does not run just upward through the levels of analysis from types of individuals, societies, and governments up to war. It runs downward too. Enloe suggests that changes in attitudes toward war and the military may be the most important way to “reverse women’s oppression/” The dilemma is that peace work focused on justice brings to the peace movement energy, allies and moral grounding, yet, in light of this book’s evidence, the emphasis on injustice as the main cause of war seems to be empirically inadequate.

#### Structural violence makes the perfect the enemy of the good—Preventing war is a good thing

Coady ‘7

(C.A.J, Australian philosopher with an international reputation for his research in both epistemology and political and applied philosophy, Morality and Political Violence, pg. 28, 2007, Cambridge University Press)

First, let us look briefly at the formulation of his definition, which has some rather curious features. It seems to follow from it that a young child is engaged in violence if its expression of its needs and desires is such that it makes its mother and/or father very tired, even if it is not in any ordinary sense “a violent child” or engaged in violent actions. Furthermore, I will be engaged in violence if, at your request, I give you a sleeping pill that will reduce your actual somatic and mental realisations well below their potential, at least for some hours. Certainly some emendation is called for, and it may be possible to produce a version of the definition that will meet these difficulties (the changing of “influenced” to “influenced against their will” might do the job, but at the cost of making it impossible to act violently toward someone at their request, and that doesn’t seem to be impossible, just unusual). I shall not dwell on this, however, because I want rather to assess Galtung’s reason for seeking to extend the concept of violence in the way he does. His statement of the justification of his definition is as follows: “However, it will soon be clear why we are rejecting the narrow concept of violence according to which violence is somatic incapacitation, or deprivation of health, alone (with killing as the extreme form), at the hands of an actor who intends this to be the consequence. If this were all violence is about, and peace is seen as its negation, then too little is rejected when peace is held up as an ideal. Highly unacceptable social orders would still be compatible with peace. Hence an extended concept of violence is indispensable but the concept should be a logical extension, not merely a list of undesirables.”16 So, for Galtung, the significance of his definition of violence lies in the fact that if violence is undesirable and peace desirable, then if we draw a very wide bow in defining violence we will find that the ideal of peace will commit us to quite a lot. Now it seems to me that this justification of the value of his definition is either muddled or mischievous (and just possibly both). If the suggestion is that peace cannot be a worthy social ideal or goal of action unless it is the total ideal, then the suggestion is surely absurd. A multiplicity of compatible but non-inclusive ideals seems as worthy of human pursuit as a single comprehensive goal, and, furthermore, it seems a more honest way to characterize social realities. Galtung finds it somehow shocking that highly unacceptable social orders would still be compatible with peace, but only the total ideal assumption makes this even surprising. It is surely just an example of the twin facts that since social realities are complex, social ideals and ills do not form an undifferentiated whole (at least not in the perceptions of most men and women), and that social causation is such that some ideals are achievable in relative independence from others. Prosperity, freedom, peace, and equality, for instance, are different ideals requiring different characterisations and justifications, and although it could be hoped that they are compatible in the sense that there is no absurdity in supposing that a society could exhibit a high degree of realization of all four, concrete circumstances may well demand a trade-off amongst them–the toleration, for example, of a lesser degree of freedom in order to achieve peace, or of less general prosperity in the interests of greater equality.

# Overconsumption Inevitable

#### Overconsumption is inevitable

**Huber and Mills ‘5** [Peter Huber, senior fellow at the Manhattan Institute writing on the issues of drug development, energy, technology, and the law and Ph.D in Mechanical Engineering from MIT, Mills earned several patents while working as an engineer in chips and fiber optics, The Bottomless Well: The Twilight of Fuel, the Virtue of Waste, and Why We Will Never Run Out Of Energy, Perseus Books, 2005]

Whatever they may believe about global warming, it's time now for all serious greens, left or right, to face up to three fundamental facts. First, an economic fact. Demand for electricity has been rising without interruption since Edison invented the light bulb over a century ago. Short of some massive economic convulsion that drastically shrinks the economy, it will go on rising. Total U.S. electricity consumption will increase another 20 to 30 percent, at least, over the next ten years. Economic growth marches hand in hand with increased consumption of electricity-always, everywhere, without significant exception in the annals of modern industrial history. Second, a political fact. Neither Democrats nor Republicans will let the grid go cold. Not even if that means burning yet another additional 400 million more tons of coal. Not even if that means, in turn, melting the ice caps and putting much of Bangladesh under water. No governor or president aspires to become the next chief executive recalled from office when the lights go out. Third, a technological fact. Coal, uranium, and gas plants generate gargantuan amounts of power in very small amounts of space, which means they really can and do get built within reach of the population centers that need the power. Sun and wind come nowhere close. Earnest though they are, the people who maintain otherwise are the people who brought us 400 million more tons of coal a year. For at least the first decade of this new century, almost all new demand for electricity will be met with fossil fuels. By coal, because it represents half the installed base, and therefore half the opportunity to expand output at the margin. And by smaller-scale gas- and oil-fired units, because new jet-engine gas turbines can be deployed much faster than larger plants, and because greens dislike them the least. The next five years are set; all we can usefully discuss now is what will come after. Will it be still more fossil fuel, a good half (or more) of it coal? Or more uranium?

# WILDERSON 1AR

#### Wilderson builds his ideas of libidinal economy off of Jared Sexton – it relies upon a notion of the UNCONSCIOUS

Wilderson page 6 the book in 10 (Red, White, and Black: Cinema and the structure of U.S. Antagonisms)

Jared Sexton describes libidinal economy as “the economy, or distribution and arrangement, of desire and identification(their condensation and displacement), and the complex relationship between sexuality and the unconscious.” Needless to say, libidinal economy functions variously across scales and is as “objective” as political economy. It is linked not only to forms of attraction, affection, and alliance, but also to aggression, destruction , and the violence of lethal consumption. Sexton emphasizes that is is the “whole structure of psychic and emotional life,” somtheing more than, but inclusive of or traversed by, what Antonio Gramsci and other Marxists call a “structure of feeling”; it is “a dispensation of energies, concerns, points of attention, anxieties pleasures, appetites, revulsions, and phobias capable of both great mobility and tenacious fixation.”

# Octos

# 1ac

Warming and Water wars advantages from above, same plan/solvency

# 2ac Wilderson

**Framework – debate should be about the consequences of the plan were it to be done by the federal government – infinite number of assumptions and possible alt actors guts predictability**

**Key to avoid technocrat fill-in**

**Kuzemko 12** [Caroline Kuzemko, CSGR University of Warwick, Security, the State and Political Agency: Putting ‘Politics’ back into UK Energy, http://www.psa.ac.uk/journals/pdf/5/2012/381\_61.pdf]

Both Hay (2007) and Flinders and Buller (2006) suggest that there are other forms that depoliticisation can take, or in the terminology of Flinders and Buller ‘tactics’ which politicians can pursue in order to move a policy field to a more indirect governing relationship (Flinders and Buller 2006: 296). For the purposes of understanding the depoliticisation of UK energy policy, however, two of Colin Hay’s forms of depoliticisation are most useful: the ‘… offloading of areas of formal political responsibility to the market…’ and the passing of policymaking responsibility to quasipublic, or independent, authorities (Hay 2007: 82-3). 1 What each of these forms of depoliticisation has in common is the degree to which they can serve, over time, to reduce political capacity by removing processes of deliberation and contestation, thereby reducing the ability for informed agency and choice. In that politics can be understood as being inclusive of processes of deliberation, contestation, informed agency and collective choice the lack of deliberation and capacity for informed agency would result in sub-optimal politics (Hay 2007: 67; cf. Gamble 2000; Wood 2011; Jenkins 2011). There seems little doubt that, with regard to energy as a policy area, the principal of establishing a more indirect governing system had become accepted by UK political elites. One of the very few close observers of UK energy policy from the 1980s to early 2000s claims that both Conservative and New Labour politicians had actively sought to remove energy from politics, making it an ‘economic’ subject: From the early 1980s, British energy policy, and its associated regulatory regime, was designed to transform a state-owned and directed sector into a normal commodity market. Competition and 1 "These"forms"are"referred"to"elsewhere"by"the"author"as"‘marketised’"and"‘technocratic’"depoliticisation"(Kuzemko" 2012b:").liberalization would, its architects hoped, take energy out of the political arena… Labour shared this vision and hoped that energy would drop off the political agenda…. (Helm 2003: 386) 2 As already suggested this paper considers the intention to depoliticise energy to have been reasonably successful. By the early 2000s the Energy Ministry had been disbanded, there was little or no formal Parliamentary debate, energy was not represented at Cabinet level, responsibility for the supply of energy had been passed to the markets, it was regulated by an independent body, and the (cf. Kuzemko 2012b). Furthermore, the newly formed Energy Directorate within the Department of Trade and Industry (DTI), which now had responsibility for energy policy, had no specific energy mandates but instead mandates regarding encouraging the right conditions for business with an emphasis on competition (Helm et al 1989: 55; cf. Kuzemko 2012b: 107). As feared by various analysts who write about depoliticisation as a sub-optimal form of politics, these processes of depoliticisation had arguably resulted in a lack of deliberation about energy and its governance outside of narrow technocratic elite circles. Within these circles energy systems were modelled, language was specific and often unintelligible to others, including generalist politicians or wider publics, and this did, indeed, further encourage a high degree of disengagement with the subject (cf. Kern 2010; Kuzemko 2012b; Stern 1987). Technical language and hiring practices that emphasised certain forms of economic education further isolated elite technocratic circles from political contestation and other forms of knowledge about energy. Arguably, by placing those actors who have been elected to represent the national collective interest at one remove from processes of energy governance the result was a lack of formal political capacity in this policy field. It is worth, briefly, at this point reiterating the paradoxical nature of depoliticisation. Whilst decisions to depoliticise are deeply political, political capacity to deliberate, contest and act in an issue area can be reduced through these processes. Depoliticisation has been an ongoing form of governing throughout the 20 th century it may (Burnham 2001: 464), however, be particularly powerful and more difficult to reverse when underpinned by increasingly dominant ideas about how best to govern. For example Hay, in looking for the domestic sources of depoliticisation in the 1980s and 1990s, suggests that these processes were firmly underpinned by neoliberal and public choice ideas not only about the role of the state but also about the ability for political actors to make sound decisions relating, in particular, to economic governance (Hay 2007: 95-99). Given the degree to which such ideas were held increasingly to be legitimate over this time period depoliticisation was, arguably, genuinely understood by many as a process that would result in better governance (Interviews 1, 2, 3, 15 cf. Hay 2007: 94; Kern 2010). This to a certain extent makes decisions to depoliticise appear both less instrumental but also harder to reverse given the degree to which such ideas become further entrenched via processes of depoliticisation (cf. Kuzemko 2012b: 61-66; Wood 2011: 7).

**perm do both**

**perm do the plan and all non-competitive parts of the alt**

**vague alts are a voting issue – makes stable offense impossible**

**No prior questions**

**Owen 2 –** David, Reader of Political Theory at the Univ. of Southampton, Millennium Vol 31 No 3 2002 p. 655-7

Commenting on the ‘philosophical turn’ in IR, Wæver remarks that ‘[a] frenzy for words like “epistemology” and “ontology” often signals this philosophical turn’, although he goes on to comment that these terms are often used loosely.4 However, loosely deployed or not, it is clear that debates concerning ontology and epistemology play a central role in the contemporary IR theory wars. In one respect, this is unsurprising since it is a characteristic feature of the social sciences that periods of disciplinary disorientation involve recourse to reflection on the philosophical commitments of different theoretical approaches, and there is no doubt that such reflection can play a valuable role in making explicit the commitments that characterise (and help individuate) diverse theoretical positions. Yet, such a philosophical turn is not without its dangers and I will briefly mention three before turning to consider a confusion that has, I will suggest, helped to promote the IR theory wars by motivating this philosophical turn. The first danger with the philosophical turn is that it has an inbuilt tendency to **prioritise** issues of ontology and epistemology over explanatory and/or interpretive power as if the latter two were merely a **simple function** of the former. But while the explanatory and/or interpretive power of a theoretical account is not wholly independent of its ontological and/or epistemological commitments (otherwise criticism of these features would not be a criticism that had any value), it is by no means clear that it is, in contrast, wholly dependent on these philosophical commitments. Thus, for example, one need not be sympathetic to rational choice theory to recognise that it can provide powerful accounts of certain kinds of problems, such as the tragedy of the commons in which dilemmas of collective action are foregrounded. It may, of course, be the case that the advocates of rational choice theory cannot give a good account of why this type of theory is powerful in accounting for this class of problems (i.e., how it is that the relevant actors come to exhibit features in these circumstances that approximate the assumptions of rational choice theory) and, if this is the case, it is a philosophical weakness—but this **does not undermine** the point that, for a certain class of problems, rational choice theory may **provide the best account available to us.** In other words, while the critical judgement of theoretical accounts in terms of their ontological and/or epistemological sophistication is one kind of critical judgement, it is not the only or even necessarily the most importantkind. The second danger run by the philosophical turn is that because prioritisation of ontology and epistemology promotes theory-construction from philosophical first principles, **it cultivates a theory-driven rather than problem-driven approach to IR.** Paraphrasing Ian Shapiro, the point can be put like this: since it is the case that there is always a plurality of possible true descriptions of a given action, event or phenomenon, the challenge is to decide which is the most apt in terms of getting a perspicuous **grip on** the **action,** event or phenomenon in question given the purposes of the inquiry; yet, from this standpoint, ‘theory-driven work is part of a **reductionist program’** in that it ‘dictates always opting for the description that calls for the explanation that flows from the **preferred model** or theory’.5 The justification offered for this strategy rests on the mistaken belief that it is necessary for social science because general explanations are required to characterise the classes of phenomena studied in similar terms. However, as Shapiro points out, **this is to misunderstand the enterprise of science** since ‘whether there are general explanations for classes of phenomena is a question for social-scientific inquiry, **not to be prejudged** before conducting that inquiry’.6 Moreover, this strategy easily slips into the promotion of the pursuit of **generality over** that of **empirical validity.** The third danger is that the preceding two combine to encourage the formation of a particular image of disciplinary debate in IR—what might be called (only slightly tongue in cheek) ‘the Highlander view’—namely, an image of warring theoretical approaches with each, despite occasional temporary tactical alliances, dedicated to the strategic achievement of sovereignty over the disciplinary field. It encourages this view because the turn to, and prioritisation of, ontology and epistemology stimulates **the idea that there can only be one theoretical approach which gets things right**, namely, the theoretical approach that gets its ontology and epistemology right. This image feeds back into IR exacerbating the first and second dangers, and so a potentially **vicious circle arises.**

There’s always value to life

Frankl (Holocaust Survivor) 46 (Victor Frankl, Professor of Neurology and Psychiatry at the University of Vienna, Man’s Search for Meaning, 1946, p. 104)

But I did not only talk of the future and the veil which was drawn over it. I also mentioned the past; all its joys, and how its light shone even in the present darkness. Again I quoted a poet—to avoid sounding like a preacher myself—who had written, “Was Dii erlebst, k,ann keme Macht der Welt Dir rauben.” (What you have experienced, no power on earth can take from you.) Not only our experiences, but all we have done, whatever great thoughts we may have had, and all we have suffered, all this is not lost, though it is past; we have brought it into being. Having been is also a kind of being, and perhaps the surest kind. Then I spoke of the many opportunities of giving life a meaning. I told my comrades (who lay motionless, although occasionally a sigh could be heard) that human life, under any circumstances, never ceases to have a meaning, and that this infinite meaning of life includes suffering and dying, privation and death. I asked the poor creatures who listened to me attentively in the darkness of the hut to face up to the seriousness of our position. They must not lose hope but should keep their courage in the certainty that the hopelessness of our struggle did not detract from its dignity and its meaning. I said that someone looks down on each of us in difficult hours—a friend, a wife, somebody alive or dead, or a God—and he would not expect us to disappoint him. He would hope to find us suffering proudly—not miserably—knowing how to die.

**Warming is a prerequisite**

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

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

**This logic of social death replicates the violence of the middle passage – rejection is necessary to honor the dead**

**Brown 2009** – professor of history and of African and African American Studies specializing in Atlantic Slavery (Vincent, “Social Death and Political Life in the Study of Slavery,” http://history.fas.harvard.edu/people/faculty/documents/brown-socialdeath.pdf)

But this was not the emphasis of Patterson’s argument. As a result, those he has inspired have often conflated his exposition of slaveholding ideology with a description of the actual condition of the enslaved. Seen as a state of being, the concept of social death is ultimately out of place in the political history of slavery. If studies of slavery would account for the outlooks and maneuvers of the enslaved as an important part of that history, scholars would do better to keep in view the struggle against alienation rather than alienation itself. To see social death as a productive peril entails a subtle but significant shift in perspective, from seeing slavery as a condition to viewing enslavement as a predicament, in which enslaved Africans and their descendants never ceased to pursue a politics of belonging, mourning, accounting, and regeneration. In part, the usefulness of social death as a concept depends on what scholars of slavery seek to explain—black pathology or black politics, resistance or attempts to remake social life? For too long, debates about whether there were black families took precedence over discussions of how such families were formed; disputes about whether African culture had “survived” in the Americas overwhelmed discussions of how particular practices mediated slaves’ attempts to survive; and scholars felt compelled to prioritize the documentation of resistance over the examination of political strife in its myriad forms. But of course, because slaves’ social and political life grew directly out of the violence and dislocation of Atlantic slavery, these are false choices. And we may not even have to choose between tragic and romantic modes of storytelling, for history tinged with romance may offer the truest acknowledgment of the tragedy confronted by the enslaved: it took heroic effort for them to make social lives. There is romance, too, in the tragic fact that although scholars may never be able to give a satisfactory account of the human experience in slavery, they nevertheless continue to try. If scholars were to emphasize the efforts of the enslaved more than the condition of slavery, we might at least tell richer stories about how the endeavors of the weakest and most abject have at times reshaped the world. The history of their social and political lives lies between resistance and oblivion, not in the nature of their condition but in their continuous struggles to remake it. Those struggles are slavery’s bequest to us.

**LINK—their assumption of ontological blackness essentializes blackness as a racial category subservient to whiteness**

**Welcome 2004** – completing his PhD at the sociology department of the City University of New York's Graduate Center (H. Alexander, "White Is Right": The Utilization of an Improper Ontological Perspective in Analyses of Black Experiences, Journal of African American Studies, Summer-Fall 2004, Vol. 8, No. 1 & 2, pp. 59-73)

In many of the studies of blacks, the experiences of whites, not blacks, are used as the backing for the construction of the warrants/rules that are employed to evaluate black experiences, delimiting the "concepts and relationships that can exist" in the black community. The life histories of whites are used as the standard against which black experiences are measured and as the goals to which blacks are encouraged to strive. The employment of this ontology fallaciously limits the range of black agency, producing deceitful narratives where the navigation of the social environment by blacks is dictated by either a passive response to, or a passive adoption of, white scripts. This ontology erroneously limits descriptions and evaluations of black experiences, excluding viable causal determinants of the socio-economic status of blacks and constructing restricted descriptions of black agency. The utilization of whiteness to determine and/or evaluate blackness begins when whiteness and white life histories come to represent what is "right." "White is right" is a sarcastic phrase that was an extremely popular slur during the Black Power movement in the mid-1960s to the early 1970s; the utilization of this phrase represents a form of social critique that takes exception to both the privileging of white biographies as accurate descriptions of history and the reconstitution of these histories as a template that blacks and other people of color should follow for navigating social environments and achieving positive social mobility. Part of the prominence of the "white is right" perspective comes from the numerical superiority of whites. As a group, whites have been in the majority throughout the history of the United States and the prominence of the white experience has been used to argue that white experiences should be used as a social template. It has been used as such in the works of Robert Park (1939) and Gunnar Myrdal (1944), both of whom suggested that by copying the patterns of whites, blacks would achieve positive social mobility. However, use of the numerical superiority of whites to support claims about the "rightness" of white experiences relies on the equation of quantitative dominance with qualitative dominance and the employment of the fallacious argumentum ad populum. The actual source of the dominance of the "white is right" perspective lies in the dynamics of power. The location of the origins of the dominant ideology in power relations is conceptualized in the work of Michel Foucault (1980), who theorized that power is imbricated with discourse: We must make allowance for the complex and unstable process whereby discourse can be both an instrument and an effect of power, but also a hindrance, a stumbling-block, a point of resistance and a starting point for an opposing strategy. Discourse transmits and produces power; it reinforces it, but also undermines and exposes it, renders it fragile and makes it possible to thwart it (p. 101). Key to the deployment of discourses is an underlying strategy. As such, the prominence of the "white is right" perspective can be traced to attempts to create an "order,"or a way of thinking. Foucault's theoretical lens supports the hypothesis that the privileging of white experiences and the use of these experiences as an ontological framework for the analyses of black experiences is an effect of power imbalances.

**The impact – with the analyst in a position of authority, those being analyzed are treating as raw material. The affirmative replaces material exploitation with psychic exploitation – turns case.**

Brickman ‘3 [Celia (Center for Religion and Psychotherapy of Chicago, PhD in Religion and the Human Sciences at the University of Chicago); Aboriginal Populations in the Mind: Race and Primitivity in Psychoanalysis; Columbia University Press; New York; p. 201-2 //nick]

The authority of early anthropologists and psychoanalysis alike had been bolstered by the attempts of their respective disciplines to model themselves along scientific lines as a way of placing their new forms of knowledge within a recognizable framework of legitimacy. Contemporary anthropology now distances itself not only from its colonial ancestry but from the positivism of earlier social science approaches—attempts to ground knowledge of social worlds in the observation, measurement, and quantification of elements of human behavior; while certain trends in contemporary psychoanalysis have begun to distance themselves from the model of the natural sciences, which attempts to ground knowledge of the natural world by studying phenomena in laboratory conditions that ensure an uncontaminated source of data. Both these models presupposed a scientific observer, the integrity of whose observations and conclusions depended on his or her detachment and separation from the subjects under investigation. They presupposed a separate and preexisting anthropological or psychological reality that would be decoded by the neutral and unimplicated scientist, assisted by universalizing theories and undisturbed by any consideration of the political processes governing these encounters.6 Such models allowed practitioners of anthropology to ignore not only the embeddedness of both members of the anthropological encounter within historically constructed and politically interacting contexts but also the domination of their own world views through their interpretations and representations of the subjects they attempted to describe. Similarly, by rendering the unconscious as the pristine object of a scientific investigation, psychoanalysts hid their domination of the psychoanalytic subject, replacing recognition (a mutual act) with observation (a unilateral act) and camouflaging their influence as disinterested interpretation. The psychoanalyst, like the anthropologist, was hailed as the agent who would make authoritative interpretations and judgments concerning the passive human objects of investigation whose own knowledge was treated as the raw material, rather than part of the final product, of the investigation.

**Alt can’t change consumptive practices**

**Jackson**, 20**12** (Tim, Fairly bright guy, *Prosperity Without Growth: Economics for a Finite Planet*, Kindle Locations 2803-2854)

The downshifting movement now has a surprising allegiance across a number of developed economies. A recent survey on downshifting in Australia found that 23 per cent of respondents had engaged in some form of downshifting in the five years prior to the study. A staggering 83 per cent felt that Australians are too materialistic. An earlier study in the US found that 28 per cent had taken some steps to simplify and 62 per cent expressed a willingness to do so. Very similar results have been found in Europe.23 Research on the success of these initiatives is quite limited. But the findings from studies that do exist are interesting. In the first place, the evidence confirms that ‘simplifiers’ appear to be happier. Consuming less, voluntarily, can improve subjective well-being – completely contrary to the conventional model.24 At the same time, intentional communities remain marginal. The spiritual basis for them doesn’t appeal to everyone, and the secular versions seem less resistant to the incursions of consumerism. Some of these initiatives depend heavily on having sufficient personal assets to provide the economic security needed to pursue a simpler lifestyle. More importantly, even those in the vanguard of social change turn out to be haunted by conflict – internal and external.25 These conflicts arise because people find themselves at odds with their own social world. Participation in the life of society becomes a challenge in its own right. People are trying to live, quite literally, in opposition to the structures and values that dominate society. In the normal course of events, these structures and values shape and constrain how people behave. They have a profound influence on how easy or hard it is to behave sustainably.26 The Role of Structural Change Examples of the perverse effect of dominant structures are legion: private transport is incentivized over public transport; motorists are prioritized over pedestrians; energy supply is subsidized and protected, while demand management is often chaotic and expensive; waste disposal is cheap, economically and behaviourally; recycling demands time and effort: ‘bring centres’ are few and far between and often overflowing with waste. Equally important are the subtle but damaging signals sent by government, regulatory frameworks, financial institutions, the media and our education systems: business salaries are higher than those in the public sector, particularly at the top; nurses and those in the caring professions are consistently less well paid; private investment is written down at high discount rates making longterm costs invisible; success is counted in terms of material status (salary, house size and so on); children are brought up as a ‘shopping generation’ – hooked on brand, celebrity and status.27 Policy and media messages about the recession underline this point. Opening a huge new shopping centre at the height of the financial crisis in October 2008, Mayor of London Boris Johnson spoke of persuading people to come out and spend their money, despite the credit crunch. Londoners had made a ‘prudent decision to give Thursday morning a miss and come shopping’, he said of the huge crowds who attended the opening.28 George W. Bush’s infamous call for people to ‘go out shopping’ in the wake of the 9/11 disaster is one of the most staggering examples of the same phenomenon. Little wonder that people trying to live more sustainably find themselves in conflict with the social world around them. These kinds of asymmetry represent a culture of consumption that sends all the wrong signals, penalizing pro-environmental behaviour, and making it all but impossible even for highly motivated people to act sustainably without personal sacrifice. It’s important to take this evidence seriously. As laboratories for social change, intentional households and communities are vital in pointing to the possibilities for flourishing within ecological limits. But they are also critical in highlighting the limits of voluntarism. Simplistic exhortations for people to resist consumerism are destined to failure. Particularly when the messages flowing from government are so painfully inconsistent. People readily identify this inconsistency and perceive it as hypocrisy. Or something worse. Under current conditions, it’s tantamount to asking people to give up key capabilities and freedoms as social beings. Far from being irrational to resist these demands, it would be irrational not to, in our society. Several lessons flow from this. The first is the obvious need for government to get its message straight. **Urging people to Act on CO2**, to insulate their homes, turn down their thermostat, put on a jumper, drive a little less, walk a little more, holiday at home, buy locally produced goods (and so on) **will either go unheard or be rejected as manipulation for as long as all the messages about high-street consumption point in the opposite direction**.29 Equally, **it’s clear that changing the social logic of consumption cannot simply be relegated to the realm of individual choice. In spite of a growing desire for change, it’s almost impossible for people to simply choose sustainable lifestyles, however much they’d like to. Even highly-motivated individuals experience conflict as they attempt to escape consumerism. And the chances of extending this behaviour across society are negligible without changes in the social structure**.

Opening up space for new ways of knowing won't affect international violence

O'Callaghan ‘2 ( Lecturer in IR, 02 (Terry , lecturer in the school of International Relations at the University of South Australia, International Relations and the third debate, ed: Jarvis, 2002, p. 80-81)

There are also a host of technological and logistical questions that plague George's scheme and make problematic his recommendations. For example, through what medium are those on the fringes of the international system going to speak to the world? Although it may be true that the third world has now been integrated into the global polity via the advent of technological innovations in communications, allowing for remote access to information sources and the Internet, it also remains true that the majority of those on the fringes continue to be disenfranchised from such mediums, whether as a result of a lack of economic resources, the prevalence of illiteracy, or social, cultural and political circumstances that systemically exclude, women (among others) from economic resources and certain political and social freedoms. Need we remind George that social, political, and individual autonomy is at a minimum in these parts of the world, and an intellectual approach as controversial as postmodernism is not likely to achieve the sorts of goals that George optimistically foreshadows. Indeed, on practical questions such as these, matters otherwise central to the success of postmodern visions, George prefers to be vague, suggesting instead that the intricacies of such details will somehow work themselves out in a manner satisfactory to all. Such a position reveals George's latent idealism and underscores how George's schema is an intellectual one: a theory of international politics written for other theorists of international politics. George's audience is thus a very limited and elite audience and begs the question of whether a senior, middle-class scholar in the intellectual heartland of Australia can do anything of real substance to aid the truly marginalized and oppressed. How is it possible to put oneself in the shoes of the "other," to advocate on his or her behalf, when such is done from a position of affluence, unrelated to and far removed from the experiences of those whom George otherwise champions? Ideals are all good and well, but it is hard to imagine that the computer keyboard is mightier than the sword, and hard to see how a small, elite, affluent assortment of intellectuals is going to generate the type of political momentum necessary to allow those on the fringes to speak and be heard! 1 . Moreover, why should we assume that states and individuals want to listen and will listen to what the marginalized and the oppressed have to say? There is precious little evidence to suggest that "listening" is something the advanced capitalist countries do very well at all. Indeed, one of the allegations so forcefully alleged by Muslim fundamentalists as justification for the terrorist attacks of September I I is precisely that the West, and America in particular, are deaf to the disenfranchised and impoverished in the world. Certainly, there are agencies and individuals who are sensitive to the needs of the "marginalized" and who champion institutional forums where indigenous voices can be heard. But on even the most optimistic reckoning, such forums and institutions represent the exception, not the rule, and remain in the minority if not dwarfed by those institutions that represent Western, first world interests. To be sure, this is a realist power-political image of the current configuration of the global polity, but one apparently, and ironically, endorsed by George if only because it speaks to the realities of the marginalized, the imposed silences, and the multitude of oppressions on which George founds his call for a postmodern ethic. Recognizing such realities, however, does not explain George's penchant for ignoring them entirely, especially in terms of the structural rigidities they pose for meaningful reform. Indeed, George's desire to move to a new "space beyond International Relations" smacks of wishful idealism, ignoring the current configuration of global political relations and power distribution; of the incessant ideological power of hyperindividualism, consumerism, advertising, Hollywood images, and fashion icons; and of the innate power bestowed on the (institutional) barons of global finance, trade, and transnational production. George seems to have little appreciation of the structural impediments such institutions pose for radical change of the type he so fiercely advocates. Revolutionary change of the kind desired by George ignores that fact that many individuals are not disposed to concerns beyond their family, friends, and daily work lives. And institutional, structural transformation requires organized effort, mass popular support, and dogged single-mindedness if societal norms are to be challenged, institutional reform enacted, consumer tastes altered, and political sensibilities reformed. Convincing Nike that there is something intrinsically wrong with paying Indonesian workers a few dollars a week to manufacture shoes for the global market requires considerably more effort than postmodern platitudes and/or moral indignation. The cycle of wealth creation and distribution that sees Michael Jordan receive multimillion dollar contracts to inspire demand for Nike products, while the foot soldiers in the factory eke out a meager existence producing these same products is not easily, or realistically, challenged by pronouncements of moving beyond International Relations to a new, nicer, gentler nirvana. More generally, of course, what George fails to consider is the problem of apathy and of how we get people to care about the plight of others. What do we with the CEOs of multinational corporations, stockbrokers, accountants, ctory workers, and the unemployed, who, by and large, fail to consider the omeless and destitute in their own countries, let alone in places they have never isited and are never likely to visit? Moral indignation rarely translates into action, and apathy about the plight of others is a structural impediment as strong any idea, theory, or writing. What George's treatise thus fails to consider is how we overcome this, and how we get others to listen. He needs to explain how the social, political, psychological, and moral structures that define the parameters of existence for the many millions of ordinary citizens in the first world, and that deflects attention from the marginalized and the oppressed can be broken down. Unfortunately, there is little to indicate that George has thought much about this, suggesting that his commitment to postmodern theory is not likely to make much difference. In fact, in the academy the postmodern light is already beginning to dim in certain quarters, having registered scarcely a glimmer in the broader polity, where, if change was to ensue, it needed to burn brightly. Even among those versed in the nomenclature of scholarly debate, theorists of international politics remain skeptical of the value of postmodern discourse, by and large rejecting it. This does not portend well for postmodern visionaries and the future of postmodern discourse. But can George really be surprised by this? After all, his discourse indicts the "backward discipline" for complicity in crimes against humanity, calling for a repudiation of realism and with it a repudiation of the lifelong beliefs and writings of eminent theorists like Kenneth Waltz, Robert Gilpin, and Stephen Krasner who have otherwise defined the parameters of the discipline, its projects, and research agendas. Can George really expect discipline-wide capitulation to an intellectual diaspora that would see theorists repudiate their beliefs and works in order to take up the creed of postmodernism, as vague, open-ended, and indeterminate as it is? Without a clear and credible plan of how to get from "incarceration and closure" to intellectual freedom, creativity, and openness, George's postmodern musings have understandably attracted few disciples.

**Policy relevance is key and turns their impacts- engaging the state is key**

**Gunning ‘7** (Government and Opposition Volume 42 Issue 3, Pages 363 - 393 Published Online: 21 Jun 2007 A Case for Critical Terrorism Studies?1 Jeroen Gunning.

The notion of emancipation also crystallizes the need for policy engagement. For, unless a 'critical' field seeks to be policy relevant, which, as Cox rightly observes, means combining 'critical' and 'problem-solving' approaches, **it does not fulfil its 'emancipatory' potential**.94 One of the temptations of 'critical' approaches is to remain mired in critique and deconstruction **without moving beyond this to reconstruction and policy relevance.**95 Vital as such critiques are, the challenge of a critically constituted field is also to engage with policy makers – and 'terrorists'– and work towards the realization of new paradigms, new practices, and a transformation, however modestly, of political structures. That, after all, is the original meaning of the notion of 'immanent critique' that has historically underpinned the 'critical' project and which, in Booth's words, involves 'the discovery of the latent potentials in situations on which to build political and social progress', as opposed to putting forward utopian arguments that are not realizable. Or, as Booth wryly observes, 'this means building with one's feet firmly on the ground, not constructing castles in the air' and asking 'what it means for real people in real places'.96 Rather than simply critiquing the status quo, or noting the problems that come from an un-problematized acceptance of the state, a 'critical' approach must, in my view, also concern itself with offering concrete alternatives. Even while historicizing the state and oppositional violence, and challenging the state's role in reproducing oppositional violence, it must wrestle with the fact that **'the concept of the modern state and sovereignty embodies a coherent response to many of the central problems** of political life', **and** in particular to 'the place of **violence** in political life'. Even while 'de-essentializing and deconstructing claims about security', it must concern itself with 'howsecurity is to be redefined', and in particular on what theoretical basis.97 Whether because those critical of the status quo are wary of becoming co-opted by the structures of power (and their emphasis on instrumental rationality),98 or because policy makers have, for obvious reasons (including the failure of many 'critical' scholars to offer policy relevant advice), a greater affinity with 'traditional' scholars, the role of 'expert adviser' is more often than not filled by 'traditional' scholars.99 The result is that policy makers are insufficiently challenged to question the basis of their policies and develop new policies based on immanent critiques. A notable exception is the readiness of European Union officials to enlist the services of both 'traditional' and 'critical' scholars to advise the EU on how better to understand processes of radicalization.100 But this would have been impossible if more critically oriented scholars such as Horgan and Silke had not been ready to cooperate with the EU. Striving to be policy relevant does not mean that one has to accept the validity of the term 'terrorism' or stop investigating the political interests behind it. Nor does it mean that each piece of research must have policy relevance or that one has to limit one's research to what is relevant for the state, since the 'critical turn' implies a move beyond state-centric perspectives. End-users could, and should, thus include both state and non-state actors such as the Foreign Office and the Muslim Council of Britain and Hizb ut-Tahrir; the zh these fragmented voices can converge, there are two further reasons for retaining the term 'terrorism'. One of the key tasks of a critically constituted field is to investigate the political usage of this term. For that reason alone, it should be retained as a central marker. But, even more compellingly, the term 'terrorism' is currently so dominant that a critically constituted field cannot afford to abandon it. Academia does not exist outside the power structures of its day. However problematic the term, it dominates public discourse and as such **needs to be engaged with, deconstructed and challenged, rather than abandoned and left to those who use it without problematization** or purely for political ends. Using the term also increases the currency and relevance of one's research in both funding and policy circles, as well as among the wider public. It is because of this particular constellation of power structures that a 'critical' field cannot afford, either morally or pragmatically, to abandon the term 'terrorism'. This leads to the twin problems of policy relevance and cultural sensitivity. A critically conceived field cannot afford to be policy irrelevant while remaining true to the 'emancipatory' agenda implicit in the term 'critical', nor can it be uncritically universalist without betraying its 'critical' commitment.

**The plan is the United States federal government taking responsibility for its actions**

Claussen 6 (Eileen, October 5, “Climate Change: The State of The Question and The Search For The Answer”, President of the PEW center for climate change, http://www.pewclimate.org/press\_ room/speech\_transcripts/stjohns2of2.cfm)

But Africa produces just 2 to 3 percent of worldwide emissions of greenhouse gases. The United States, by contrast, with just 5 percent of the global population, is responsible for more than 20 percent of worldwide emissions. And there is also the issue of cumulative emissions. The fact is that climate change is a problem that has been decades in the making as carbon dioxide and other gases have accumulated in the atmosphere over time. These gases have a long life and can remain in the atmosphere for decades or even centuries. And, in the span of the last century or so, it was the United States and other already developed countries that were producing the lion’s share of these emissions. Looking only at carbon dioxide, the United States was responsible for more than 30 percent of global emissions between 1850 and 2000. The comparable figure for China: just 7 or 8 percent. Even considering the high rates of projected growth in China’s and India’s emissions, the cumulative contributions of developed and developing countries to climate change will not reach parity until sometime between 2030 and 2065. Clearly all of the major emitting countries need to be a part of the solution to climate change. But saying that all of today’s big emitters should be equally responsible for reducing their emissions is like going to a restaurant and having a nice dinner and then running into a friend who joins you for coffee. And, when the check comes, you make your friend who only had the coffee split the cost of the entire dinner. Yes, developing countries need to do their part, but there is no denying that the developed world, including the United States, has a moral and ethical responsibility to act first. We also have a responsibility to help developing nations adapt to a warming world. No matter what we do, some amount of global warming already is built into the climate system. There will be impacts; there already are impacts. And it is people living in poverty in the developing world who will face the most serious consequences. So it really comes down, again, to a question of responsibility. What is our responsibility? And it is not just our responsibility to our fellow man (or woman). There is also our responsibility to the natural world, to the earth. Beyond human societies, the natural world also will suffer from the effects of climate change. In fact, we are already seeing changes in the natural world due to climate change. Coral reefs are at risk because of warmer and more acidic ocean waters. Polar bears are threatened by declines in sea ice. Species already are disappearing because of new diseases connected to climate change. In short, climate change holds the potential of inflicting severe damage on the ecosystems that support all life on earth. So why, then, have we failed to take responsibility? Why has there been such an absence of political will?

**Engaging the state is key- can’t solve environmental destruction without it**

**Eckersly ‘4** (Robyn Eckersly, professor of political science at the School of Social and Political Sciences, University of Melbourne, Australia, 2004 the green state: rethinking democracy and sovereignty, p.5-6

While acknowledging the basis for this antipathy toward the nation-state, and the limitations of state-centric analyses of global ecological degradation, I seek to draw attention to the positive role that states have played, and might increasingly play, in global and domestic politics. Writing more than twenty years ago, Hedley Bull (a proto-constructivist and leading writer in the English school) outlined the state’s positive role in world affairs, and his argument continue to provide a powerful challenge to those who somehow seek to “get beyond the state,” as if such a move would provide a more lasting solution to the threat of armed conflict or nuclear war, social and economic injustice, or environmental degradation.10 As Bull argued, given that the state is here to stay whether we like it or not, then the call to “get beyond the state a counsel of despair, at all events if it means that we have to begin by abolishing or subverting the state, rather than that there is a need to build upon it.”11 In any event, rejecting the “statist frame” of world politics ought not prohibit an inquiry into the emancipatory potential of the state as a crucial “node” in any future network of global ecological governance. This is especially so, given that one can expect states to persist as major sites of social and political power for at least the foreseeable future and that any green transformations of the present political order will, short of revolution, necessarily be state-dependent. Thus, like it or not, those concerned about ecological destruction must contend with existing institutions and, where possible, seek to “rebuild the ship while still at sea.” And if states are so implicated in ecological destruction, than an inquiry into the potential for their transformation or even their modest reform into something that is at least more conducive to ecological sustainability would be compelling. Of course, it would be unhelpful to become singularly fixated on the redesign of the state at the expense of other institutions of governance. States are not the only institutions that limit, condition, shape, and direct political power, and it is necessary to keep in view the broader spectrum of formal and informal institutions of governance (e.g., local, national, regional, and international) that are implicated in global environmental change. Nonetheless, while the state constitutes only one modality of political power, it is an especially significant one because its historical claims to exclusive rule over territory and peoples – as expressed in the principle of state sovereignty. As Gianfranco Poggi explains, the political power concentrated in the state “is a momentous, pervasive, critical phenomenon. Together with other forms of social power, it constitutes an indispensable medium for constructing and shaping larger social realities, for establishing, shaping and maintaining all broader and more durable collectivities”12 States play, in varying degrees, significant roles in structuring life chances, in distributing wealth, privilege, information, and risks, in upholding civil and political rights, and in securing private property rights and providing the legal/regulatory framework for capitalism. Every one of these dimensions of state activity has, for good or ill, a significant bearing on the global environmental crisis. Given that the green political project is one that demands far-reaching chances to both economies and societies, it is difficult to imagine how such changes might occur on the kind of scale that is needed without the active support of states. While it is often observed that stats are too big to deal with local ecological problems and too small to deal with global ones, the state nonetheless holds, as Lennart Lundqvist puts it, “a unique position in the constitutive hierarchy from individuals through villages, regions and nations all the way to global organizations. The state is inclusive of lower political and administrative levels, and exclusive in speaking for its whole territory and population in relation to the outside world.”13 In short, it seems to me inconceivable to advance ecological emancipation without also engaging with and seeking to transform state power.

Relying on individual-level strategies in the context of warming fails

George Monbiot, journalist, academic, and political and environmental activist, 2004, Manifesto for a New World Order, p. 11-13

The quest for global solutions is difficult and divisive. Some members of this movement are deeply suspicious of all institutional power at the global level, fearing that it could never be held to account by the world’s people. Others are concerned that a single set of universal prescriptions would threaten the diversity of dissent. A smaller faction has argued that all political programmes are oppressive: our task should not be to replace one form of power with another, but to replace all power with a magical essence called ‘anti-power’.  But most of the members of this movement are coming to recognize that if we propose solutions which can be effected only at the local or the national level, we remove ourselves from any meaningful role in solving precisely those problems which most concern us. Issues such as climate change, international debt, nuclear proliferation, war, peace and the balance of trade between nations can be addressed only globally or internationally. Without global measures and global institutions, it is impossible to see how we might distribute wealth from rich nations to poor ones, tax the mobile rich and their even more mobile money, control the shipment of toxic waste, sustain the ban on landmines, prevent the use of nuclear weapons, broker peace between nations or prevent powerful states from forcing weaker ones to trade on their terms. If we were to work only at the local level, we would leave these, the most critical of issues, for other people to tackle. Global governance will take place whether we participate in it or not. Indeed, it must take place if the issues which concern us are not to be resolved by the brute force of the powerful. That the international institutions have been designed or captured by the dictatorship of vested interests is not an argument against the existence of international institutions, but a reason for overthrowing them and replacing them with our own. It is an argument for a global political system which holds power to account. In the absence of an effective global politics, moreover, local solutions will always be undermined by communities of interest which do not share our vision. We might, for example, manage to persuade the people of the street in which we live to give up their cars in the hope of preventing climate change, but unless everyone, in all communities, either shares our politics or is bound by the same rules, we simply open new road space into which the neighbouring communities can expand. We might declare our neighbourhood nuclear-free, but unless we are simultaneously working, at the international level, for the abandonment of nuclear weapons, we can do nothing to prevent ourselves and everyone else from being threatened by people who are not as nice as we are. We would deprive ourselves, in other words, of the power of restraint. By first rebuilding the global politics, we establish the political space in which our local alternatives can flourish. If, by contrast, we were to leave the governance of the necessary global institutions to others, then those institutions will pick off our local, even our national, solutions one by one. There is little point in devising an alternative economic policy for your nation, as Luis Inacio ‘Lula’ da Silva, now president of Brazil, once advocated, if the International Monetary Fund and the financial speculators have not first been overthrown. There is little point in fighting to protect a coral reef from local pollution, if nothing has been done to prevent climate change from destroying the conditions it requires for its survival.

# 2ac Virillio

**Nuclear technocracy’s key to solve**

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

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

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

**Perm**

**Fast tech key – brink of warming**

**Speed makes us net resilient to accident**

**Thrift 4**, HEAD OF THE DIVISION OF LIFE AND ENVIRONMENTAL SCIENCES AND A PROFESSOR OF GEOGRAPHY AT THE UNIVERSITY OF OXFORD, (Nigel, But Malice Aforethought: Cities and the Natural History of Hatred Centre of Contemporary Culture of Barcelona, <http://www.cccb.org/rcs_gene/malice_aforethought.pdf>)

Recently, this general hum of activity has been powered up by information technology. True, the speed and interconnectedness of information and communications technology may have produced new vulnerabilities but, generally speaking, information and communications technology has probably made cities more robust by adding more degrees of redundancy. Simple things like risk analysis and other institutionalised forms of diligence, booking systems, etc. have made the business of maintenance and repair easier to carry out and, indeed, is beginning to automate at least some of this activity (as in, for example, the instance of machines that send messages that they are breaking down). More to the point, in situations of breakdown, whether epic or mundane, the humble mobile phone has extended the city’s interactivity and adaptability in all kinds of ways and may well have been the most significant device to add to a city’s overall resilience by adding an extra thread to the urban knot. In addition, all kinds of knowledges of maintenance and repair which are heavily dependent upon information and communications technologies are coming to the fore, all the way from logistics to disaster planning itself (which, in certain senses, is a branch of logistics).

I want to argue that this activity constitutes an urban technological unconscious which helps to keep cities as predictable objects in which things turn up as they are meant to, regularly and predictably (THRIFT, 2004a). Modern Western cities are in many ways mass engineerings of time and space and this engineering increasingly involves working with very small spaces (of the order of millimetres) and times (of the order of milliseconds). At this scale, this means working on the structure of anticipation, producing a comforting sense of regularity and a corresponding (and probably amplified historically) sense of annoyance when things do not play out exactly as it is intended that they should. In a sense, speed has produced a new landscape of anticipation. Some commentators see this landscape as a threat, likely to institute a new «dromocracy». I am more ambivalent. It seems to me that it offers possibilities too, and not least in providing rapid reaction to problems large and small. Indeed, as information technology systems come in which are based on continuous updating of information, some degree of capacity to track and trace and the ability to forecast forward in a very limited way (for example, through profiling systems), so it seems to me that cities will add another landscape to their repertoire, one which works a few seconds or minutes or, in extreme cases, hours ahead of the present and which will add markedly to their resilience. Of course, there is a new repertoire of risk associated with this landscape of foresight but whether it is that much larger than many other developments remains to be seen. Computer systems are vulnerable to attack just like any other system but it is also important to remember the continuous amount of repair and maintenance which goes into these systems anyway and reactions to attacks by worms or viruses are rapidly being incorporated into this burgeoning structure.

**Alt doesn’t solve – their evidence concedes accidents are inevitable – individual framing doesn’t solve anything**

**State of panic is good – warming reps**

**Matthew 2**, Richard A, associate professor of international relations and environmental political at the University of California at Irvine, Summer (ECSP Report 8:109-124)

In addition, **environmental security's language** and findings can benefit conservation and sustainable development."' Much environmental security literature emphasizes the importance of development assistance, sustainable livelihoods, fair and reasonable access to environmental goods, and conservation practices as the vital upstream measures that in the long run will contribute to higher levels of human and state security. The Organization for Economic Cooperation and Development (OECD) and the International Union for the Conservation of Nature (IUCN) are examples of bodies that have been quick to recognize how the language of environmental security can help them. The scarcity/conflict thesis has alerted these groups to prepare for the possibility of working on environmental rescue projects in regions that are likely to exhibit high levels of related violence and conflict. These groups are also aware that an **association with security can expand** their **acceptance and constituencies** in some countries in which the military has political control, For the first time in its history; the contemporary environmental movement can regard military and intelligence agencies as potential **allies in the struggle** to contain or reverse humangenerated environmental change. (In many situations, of course, the political history of the military--as well as its environmental record-raise serious concerns about the viability of this cooperation.) Similarly, **the language of security has provided a basis for** some **fruitful discussions** between environmental groups and representatives of extractive industries. In many parts of the world, mining and petroleum companies have become embroiled in conflict. These companies have been accused of destroying traditional economies, cultures, and environments; of political corruption; and of using private militaries to advance their interests. They have also been targets of violence, Work is now underway through the environmental security arm of the International Institute for Sustainable Development (IISD) to address these issues with the support of multinational corporations. Third, the general conditions outlined in much environmental security research can help organizations such as USAID, the World Bank, and IUCN identify priority cases--areas in which investments are likely to have the greatest ecological and social returns. For all these reasons, IUCN elected to integrate environmental security into its general plan at the Amman Congress in 2001. Many other environmental groups and development agencies are taking this perspective seriously (e.g. Dabelko, Lonergan& Matthew, 1999). However, for the most part these efforts remain preliminary.'

Conclusions **Efforts to dismiss environment and security research and policy activities on the grounds that they have been unsuccessful are premature and misguided**. This negative criticism has all too often been based on an excessively simplified account of the research findings of Homer-Dixon and a few others. Homer-Dixon’s scarcity-conflict thesis has made important and highly visible contributions to the literature, but it is only a small part of a larger and very compelling theory. This broader theory has roots in antiquity and speaks to the pervasive conflicts and security implications of complex nature-society relationships. The theory places incidents of violence in larger structural and historical contexts while also specifying contemporarily significant clusters of variables. From this more generalized and inclusive perspective, violence and conflict are revealed rarely as a society’s endpoint and far more often as parts of complicated adaptation processes. The contemporary research on this classical problematic has helped to revive elements of security discourse and analysis that were marginalized during the Cold War. It has also made valuable contributions to our understanding of the requirements of human security, the diverse impacts of globalization, and the nature of contemporary transnational security threats. Finall,y environmental security research has been valuable in myriad ways to a range of academics, policymakers, and activists, although the full extent of these contributions remains uncertain, rather than look for reasons to abandon this research and policy agenda, **now is the time** to recognize and **to build on the** remarkable **achievements** of the entire environmental security field.

**Slowing down tech doesn’t work and kills value to life**

**Bostrum 12** – prof at Oxford, interviewed by Ross Anderson – freelance writer and *Atlantic* correspondent based in Washington, D.C. (Nick, March 6, “We're Underestimating the Risk of Human Extinction” <http://www.theatlantic.com/technology/archive/2012/03/were-underestimating-the-risk-of-human-extinction/253821/>) Jacome

Bostrom**:** Well, again I think the definition of an existential risk goes beyond just extinction, in that it also includes the permanent destruction of our potential for desirable future development. Our permanent failure to develop the sort of technologies that would fundamentally improve the quality of human life would count as an existential catastrophe. I think there are vastly better ways of being than we humans can currently reach and experience. We have fundamental biological limitations, which limit the kinds of values that we can instantiate in our life---our lifespans are limited, our cognitive abilities are limited, our emotional constitution is such that even under very good conditions we might not be completely happy. And even at the more mundane level, the world today contains a lot of avoidable misery and suffering and poverty and disease, and I think the world could be a lot better, both in the transhuman way, but also in this more economic way. The failure to ever realize those much better modes of being would count as an existential risk if it were permanent.

Another reason I haven't emphasized or advocated the retardation of technological progress as a means of mitigating existential risk is that it's a very hard lever to pull. There are so many strong forces pushing for scientific and technological progress in so many different domains---there are economic pressures, there is curiosity, there are all kinds of institutions and individuals that are invested in technology, so shutting it down is a very hard thing to do.

**Their authors aren’t climate experts – that means you reject them**

**Wolchover 12**, Natalie, writer at Livescience, citing David Dunning, a psychologist at Cornell University, who did a decade-long study on the whether people overestimate their own intelligence, [“Incompetent People Too Ignorant to Know It,” February 27th, <http://news.yahoo.com/incompetent-people-too-ignorant-know-175402902.html>]

If only we knew ourselves better. Dunning believes people's inability to assess their own knowledge is the cause of many of society's ills, including climate change denialism. "Many people don't have training in science, and so they may very well misunderstand the science. But because they don't have the knowledge to evaluate it, they don't realize how off their evaluations might be," he said. Moreover, even if a person has come to a very logical conclusion about whether climate change is real or not based on their evaluation of the science, "they're really not in a position to evaluate the science."

**condo**

**SMRs solve Mars colonization**

**O’Neil 11**, Ian, PhD from University of Wales, founder and editor of Astroengine, space producer for Discovery News [“'Suitcase' Nuclear Reactors to Power Mars Colonies,” August 30th, http://news.discovery.com/space/mars-colonies-powered-by-mini-nuclear-reactors-110830.html]

Nuclear power is an emotive subject -- particularly in the wake of the Fukushima power plant disaster after Japan's March earthquake and tsunami -- but in space, it may be an essential component of spreading mankind beyond terrestrial shores. On Monday, at the 242nd National Meeting and Exposition of the American Chemical Society (ACS) in Denver, Colo., the future face of space nuclear power was described. You can forget the huge reactor buildings, cooling towers and hundreds of workers; the first nuclear reactors to be landed on alien worlds to support human settlement will be tiny. Think less "building sized" and more "suitcase sized." "People would never recognize the fission power system as a nuclear power reactor," said James E. Werner, lead of the Department of Energy's (DOE) Idaho National Laboratory. "The reactor itself may be about 1 feet wide by 2 feet high, about the size of a carry-on suitcase. There are no cooling towers. A fission power system is a compact, reliable, safe system that may be critical to the establishment of outposts or habitats on other planets. Fission power technology can be applied on Earth's Moon, on Mars, or wherever NASA sees the need for continuous power." The joint NASA/DOE project is aiming to build a demonstration unit next year. Obviously, this will be welcome news to Mars colonization advocates; to have a dependable power source on the Martian surface will be of paramount importance. The habitats will need to have a constant power supply simply to keep the occupants alive. This will be "climate control" on an unprecedented level. Water extraction, reclamation and recycling; food cultivation and storage; oxygen production and carbon dioxide scrubbing; lighting; hardware, tools and electronics; waste management -- these are a few of the basic systems that will need to be powered from the moment humans set foot on the Red Planet, 24 hours 39 minutes a day (or "sol" -- a Martian day), 669 sols a year. Fission reactors can provide that. However, nuclear fission reactors have had a very limited part to play in space exploration up until now. Russia has launched over 30 fission reactors, whereas the US has launched only one. All have been used to power satellites. Radioisotope thermoelectric generators (RTGs), on the other hand, have played a very important role in the exploration of the solar system since 1961. These are not fission reactors, which split uranium atoms to produce heat that can then be converted into electricity. RTGs depend on small pellets of the radioisotope plutonium-238 to produce a steady heat as they decay. NASA's Pluto New Horizons and Cassini Solstice missions are equipped with RTGs (not solar arrays) for all their power needs. The Mars Science Laboratory (MSL), to be launched in November 2011, is powered by RTGs for Mars roving day or night. RTGs are great, but to power a Mars base, fission reactors would be desirable because they deliver more energy. And although solar arrays will undoubtedly have a role to play, fission reactors will be the premier energy source for the immediate future. "The biggest difference between solar and nuclear reactors is that nuclear reactors can produce power in any environment," said Werner. "Fission power technology doesn't rely on sunlight, making it able to produce large, steady amounts of power at night or in harsh environments like those found on the Moon or Mars. A fission power system on the Moon could generate 40 kilowatts or more of electric power, approximately the same amount of energy needed to power eight houses on Earth." "The main point is that nuclear power has the ability to provide a power-rich environment to the astronauts or science packages anywhere in our solar system and that this technology is mature, affordable and safe to use." Of course, to make these "mini-nuclear reactors" a viable option for the first moon and Mars settlements, they'll need to be compact, lightweight and safe. Werner contends that once the technology is validated, we'll have one of the most versatile and affordable power resources to support manned exploration of the solar system.

**extinction**

**Schulze-Makuch and Davies 2010** (Dirk Schulze-Makuch, Ph.D., School of Earth and Environmental Sciences, Washington State University and Paul Davies, Ph.D., Beyond Center, Arizona State University, “To Boldly Go: A One-Way Human Mission to Mars”, <http://journalofcosmology.com/Mars108.html>)

There are several reasons that motivate the establishment of a permanent Mars colony. We are a vulnerable species living in a part of the galaxy where cosmic events such as major asteroid and comet impacts and supernova explosions pose a significant threat to life on Earth, especially to human life. There are also more immediate threats to our culture, if not our survival as a species. These include global pandemics, nuclear or biological warfare, runaway global warming, sudden ecological collapse and supervolcanoes (Rees 2004). Thus, the colonization of other worlds is a must if the human species is to survive for the long term. The first potential colonization targets would be asteroids, the Moon and Mars. The Moon is the closest object and does provide some shelter (e.g., lava tube caves), but in all other respects falls short compared to the variety of resources available on Mars. The latter is true for asteroids as well. Mars is by far the most promising for sustained colonization and development, because it is similar in many respects to Earth and, crucially, possesses a moderate surface gravity, an atmosphere, abundant water and carbon dioxide, together with a range of essential minerals. Mars is our second closest planetary neighbor (after Venus) and a trip to Mars at the most favorable launch option takes about six months with current chemical rocket technology.

**Plan solves military oil entanglement**

Buis ’12 (Tom Buis, CEO, Growth Energy, Co-written by Buis and Growth Energy Board Co-Chair Gen. Wesley K. Clark (Ret.), “American Families Need American Fuel”, <http://energy.nationaljournal.com/2012/05/powering-our-military-whats-th.php>, May 23, 2012, LEQ)

Our nation is dangerously dependent on foreign oil. We import some 9 million barrels per day, or over 3 billion barrels per year; the U.S. military itself comprises two percent of the nation’s total petroleum use, making it the world’s largest consumer of energy and oil imports. Of U.S. foreign oil imports, one out of five barrels comes from unfriendly nations and volatile areas, including at least 20 percent stemming from the Persian Gulf, including Bahrain, Iraq, Iran, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates. Further, our nation heavily relies on hot-beds of extremism, as Saudi Arabia, Venezuela, Nigeria are our third, fourth, and fifth, respectively, largest exporters of oil. How dangerous is this? Very! Not only does America’s huge appetite for oil entangle us into complicated relationships with nations marred by unstable political, economic, and security situations, it also gravely impacts our military, who risk their lives daily to protect foreign energy supply routes. Because of our addiction to oil, we have been in almost constant military conflict, lost more than 6,500 soldiers and created a whole new class of wounded warriors, thousands of whom will need long-term care funded by our government. One in eight soldiers killed or wounded in Iraq from 2003-2007 were protecting fuel convoys, with a total of 3,000 Army casualties alone. We maintain extra military forces at an annual cost of about $150 billion annually, just to assure access to foreign oil - because we know that if that stream of 9 million barrels per day is seriously interrupted, our economy will crash. That's what I call dangerously dependent. Even worse, according to a new Bloomberg Government analysis, Pentagon spending on fuel is dramatically increasing. This will force the military to dedicate even more funds toward energy costs, at the expense of other priorities, like training and paying soldiers. In fact, every $.25 increase in the cost of jet fuel makes a $1 billion difference in the Department of Defense’s bottom line – a debt that will be passed along to the American taxpayer. And if that's not enough to make you want to avoid foreign oil, then consider this: every dollar hike in the international, politically-rigged price of oil hands Iran about $3 million more per day, that their regime can use to sow mischief, fund terrorism, and develop missiles and nuclear weapons. Enough is enough! We have domestic alternatives that can protect American interests, and promote prosperity and security – including, more domestic oil production, using natural gas and biofuels, like ethanol, as fuel, converting coal to liquid fuel, and moving as rapidly as possible to vehicles powered by green energy. By introducing clean energy and fuel alternatives, this would rapidly reduce both the strain of securing foreign energy supply routes in unstable regions, as well as unnecessary economic and political entanglement with volatile regimes. It is imperative the U.S. military leverage its position as a leader and enact pertinent energy policies to best enhance American energy – and national – security.

**These will risk wars that will escalate**

Collina 5 (Executive Director of 20-20 Vision, Tom Z. Collina, Executive Director of 20-20Vision; testimony in front of Committee on Foreign Relations Subcommittee on Near Eastern and South Asian Affairs United States Senate “Oil Dependence and U.S. Foreign Policy: Real Dangers, Realistic Solutions”. October 19, 2005 <http://www.globalsecurity.org/military/library/congress/2005_hr/051020-collina.pdf>)

More conflicts in the Middle East America imports almost 60% of its oil today and, at this rate, we’ll import 70% by 2025. Where will that oil come from? Two-thirds of the world’s oil is in the Middle East, primarily in Saudi Arabia, Iran and Iraq. The United States has less than 3% of global oil. The Department of Energy predicts that North American oil imports from the Persian Gulf will double from 2001 to 2025.i Other oil suppliers, such as Venezuela, Russia, and West Africa, are also politically unstable and hold no significant long-term oil reserves compared to those in the Middle East. Bottom line: our economy and security are increasingly dependent on one of the most unstable regions on earth. Unless we change our ways, we will find ourselves even more at the mercy of Middle East oil and thus more likely to get involved in future conflicts. The greater our dependence on oil, the greater the pressure to protect and control that oil. The growing American dependence on imported oil is the primary driver of U.S. foreign and military policy today, particularly in the Middle East, and motivates an aggressive military policy now on display in Iraq. To help avoid similar wars in the future and to encourage a more cooperative, responsible, and multilateral foreign policy the United States must significantly reduce its oil use. Before the Iraq war started, Anthony H. Cordesman of the Center for Strategic and International Studies said: “Regardless of whether we say so publicly, we will go to war, because Saddam sits at the center of a region with more than 60 percent of all the world's oil reserves.” Unfortunately, he was right. In fact, the use of military power to protect the flow of oil has been a central tenet of U.S. foreign policy since 1945. That was the year that President Franklin D. Roosevelt promised King Abdul Aziz of Saudi Arabia that the United States would protect the kingdom in return for special access to Saudi oil—a promise that governs U.S. foreign policy today. This policy was formalized by President Jimmy Carter in 1980 when he announced that the secure flow of oil from the Persian Gulf was in “the vital interests of the United States of America” and that America would use “any means necessary, including military force” to protect those interests from outside forces. This doctrine was expanded by President Ronald Reagan in 1981 to cover internal threats, and was used by the first President Bush to justify the Gulf War of 1990-91, and provided a key, if unspoken rationale for the second President Bush’s invasion of Iraq in 2003.ii The Carter/Reagan Doctrine also led to the build up of U.S. forces in the Persian Gulf on a permanent basis and to the establishment of the Rapid Deployment Force and the U.S. Central Command (CENTCOM). The United States now spends over $50 Billion per year (in peacetime) to maintain our readiness to intervene in the Gulf.iii America has tried to address its oil vulnerability by using our military to protect supply routes and to prop up or install friendly regimes. But as Iraq shows the price is astronomical—$200 Billion and counting. Moreover, it doesn’t work—Iraq is now producing less oil than it did before the invasion. While the reasons behind the Bush administration’s decision to invade Iraq may be complex, can anyone doubt that we would not be there today if Iraq exported coffee instead of oil? It is time for a new approach. Americans are no longer willing to support U.S. misadventures in the Persian Gulf. Recent polls show that almost two-thirds of Americans think the Iraq war was not worth the price in terms of blood and treasure. Lt. Gen William Odom, director of the National Security Agency during President Reagan's second term, recently said: "The invasion of Iraq will turn out to be the greatest strategic disaster in U.S. history." The nation is understandably split about what to do now in Iraq, but there appears to be widespread agreement that America should not make the same mistake again—and we can take a giant step toward that goal by reducing our dependence on oil.

**SMRs solve North Korean prolif**

**Goodby and Heiskanen 12**¸ James, former arms control negotiator and a Hoover Institution Fellow, Markku, Associate and Program Director of The Asia Institute at the Kyung Hee University in Seoul [“The Seoul Nuclear Security Summit: New Thinking in Northeast Asia?” March 20th, <http://nautilus.org/napsnet/napsnet-policy-forum/the-seoul-nuclear-security-summit-new-thinking-in-northeast-asia/>]

The nuclear crises in the Middle East and Northeast Asia and the stalled promise of a nuclear renaissance in civil nuclear power could all be solved by a more rational approach to the generation of electric power. Although it will take years before the current, outdated system is replaced, the Seoul meeting could provide a political impetus. The new system would rest on three legs: small modular reactors (“mini-reactors”), internationally managed nuclear fuel services, and increasing reliance on the distributed (local) generation of electricity. After the disaster in Fukushima, there has been an understandable retreat from plans for large-scale reactors, with their inevitable safety issues. A vivid example of this reaction is found in Germany, which has cancelled its plans to increase the generation of electricity from nuclear reactors even though they are cleaner and more dependable than most other sources currently available. Vulnerabilities and inefficiencies of long-distance transmission lines point to a paradigm for generation and distribution of electric power that is more local – connected to national grids, to be sure, but able to operate independently of them. This is an ideal situation for mini-reactors, which are safer and less prone to encourage the spread of nuclear weapons. Internationally managed nuclear fuel services already exist and the security of supply can be assured by policies that foster more fuel service centers in Asia and elsewhere, including in the United States. These factors would enable suppliers of mini-reactors to expand their business to nations like North Korea and Iran under IAEA safeguards. The relevance of this energy paradigm to resolving the issues in North Korea and Iran is evident: both nations could develop civil nuclear programs with assured supplies of nuclear fuel from multiple internationally managed fuel service centers in Russia, China, and Western Europe while avoiding the ambiguity of nationally operated plutonium reprocessing and uranium enrichment. Reliance on distributed generation of electricity would be more efficient and less prone to blackouts. And the presence of a level playing field should be apparent from the fact that similar arrangements would be the 21st-century way of generating electricity from nuclear energy in the developed economies as well as in energy-starved economies such as India and China.

**Nuclear war**

**Hayes & Hamel-Green ’10** [\*Victoria University AND \*\*Executive Director of the Nautilus Institute (Peter and Michael, “-“The Path Not Taken, the Way Still Open: Denuclearizing the Korean Peninsula and Northeast Asia”, 1/5, http://www.nautilus.org/fora/security/10001HayesHamalGreen.pdf]

The consequences of failing to address the proliferation threat posed by the North Korea developments, and related political and economic issues, are serious, not only for the Northeast Asian region but for the whole international community. At worst, there is the possibility of nuclear attack1, whether by intention, miscalculation, or merely accident, leading to the resumption of Korean War hostilities. On the Korean Peninsula itself, key population centres are well within short or medium range missiles. The whole of Japan is likely to come within North Korean missile range. Pyongyang has a population of over 2 million, Seoul (close to the North Korean border) 11 million, and Tokyo over 20 million. Even a limited nuclear exchange would result in a holocaust of unprecedented proportions. But the catastrophe within the region would not be the only outcome. New research indicates that even a limited nuclear war in the region would rearrange our global climate far more quickly than global warming. Westberg draws attention to new studies modelling the effects of even a limited nuclear exchange involving approximately 100 Hiroshima-sized 15 kt bombs2 (by comparison it should be noted that the United States currently deploys warheads in the range 100 to 477 kt, that is, individual warheads equivalent in yield to a range of 6 to 32 Hiroshimas).The studies indicate that the soot from the fires produced would lead to a decrease in global temperature by 1.25 degrees Celsius for a period of 6-8 years.3 In Westberg’s view: That is not global winter, but the nuclear darkness will cause a deeper drop in temperature than at any time during the last 1000 years. The temperature over the continents would decrease substantially more than the global average. A decrease in rainfall over the continents would also follow...The period of nuclear darkness will cause much greater decrease in grain production than 5% and it will continue for many years...hundreds of millions of people will die from hunger...To make matters even worse, such amounts of smoke injected into the stratosphere would cause a huge reduction in the Earth’s protective ozone.4 These, of course, are not the only consequences. Reactors might also be targeted, causing further mayhem and downwind radiation effects, superimposed on a smoking, radiating ruin left by nuclear next-use. Millions of refugees would flee the affected regions. The direct impacts, and the follow-on impacts on the global economy via ecological and food insecurity, could make the present global financial crisis pale by comparison. How the great powers, especially the nuclear weapons states respond to such a crisis, and in particular, whether nuclear weapons are used in response to nuclear first-use, could make or break the global non proliferation and disarmament regimes. There could be many unanticipated impacts on regional and global security relationships5, with subsequent nuclear breakout and geopolitical turbulence, including possible loss-of-control over fissile material or warheads in the chaos of nuclear war, and aftermath chain-reaction affects involving other potential proliferant states. The Korean nuclear proliferation issue is not just a regional threat but a global one that warrants priority consideration from the international community

**Quick commercialization of SMRs key to displace Russian reactors in Latin America**

Charles D. Ferguson, President, Federation of American Scientists, 5/19/2010, http://www.fas.org/press/\_docs/05192010\_Testimony\_HouseScienceCommHearing%20.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 selling 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 United States has yet to license such reactors for domestic use, it has placed itself at an additional market disadvantage. By the time the United States 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 United States 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.”

**Solves escalatory instability**

Christopher Sabatini, editor-in-chief of Americas Quarterly and senior director of policy at Americas Society/Council of the Americas, and Ryan Berger, policy associate at the Americas Society/Council of the Americas, 6/13/2012, Why the U.S. can't afford to ignore Latin America, globalpublicsquare.blogs.cnn.com/2012/06/13/why-the-u-s-cant-afford-to-ignore-latin-america/

Speaking in Santiago, Chile, in March of last year, President Obama called Latin America “a region on the move,” one that is “more important to the prosperity and security of the United States than ever before.” Somebody forgot to tell the Washington brain trust. The Center for a New American Security, a respected national security think tank a half-mile from the White House, recently released a new series of policy recommendations for the next presidential administration. The 70-page “grand strategy” report only contained a short paragraph on Brazil and made only one passing reference to Latin America. Yes, we get it. The relative calm south of the United States seems to pale in comparison to other developments in the world: China on a seemingly inevitable path to becoming a global economic powerhouse, the potential of political change in the Middle East, the feared dismemberment of the eurozone, and rogue states like Iran and North Korea flaunting international norms and regional stability. But the need to shore up our allies and recognize legitimate threats south of the Rio Grande goes to the heart of the U.S.’ changing role in the world and its strategic interests within it. Here are three reasons why the U.S. must include Latin America in its strategic calculations: 1. Today, pursuing a global foreign policy requires regional allies. Recently, countries with emerging economies have appeared to be taking positions diametrically opposed to the U.S. when it comes to matters of global governance and human rights. Take, for example, Russia and China’s stance on Syria, rejecting calls for intervention. Another one of the BRICS, Brazil, tried to stave off the tightening of U.N. sanctions on Iran two years ago. And last year, Brazil also voiced its official opposition to intervention in Libya, leading political scientist Randall Schweller to refer to Brazil as “a rising spoiler.” At a time of (perceived) declining U.S. influence, it’s important that America deepens its ties with regional allies that might have been once taken for granted. As emerging nations such as Brazil clamor for permanent seats on the U.N. Security Council and more representatives in the higher reaches of the World Bank and the International Monetary Fund, the U.S. will need to integrate them into global decision-making rather than isolate them. If not, they could be a thorn in the side of the U.S. as it tries to implement its foreign policy agenda. Worse, they could threaten to undermine efforts to defend international norms and human rights. 2. Latin America is becoming more international. It’s time to understand that the U.S. isn’t the only country that has clout in Latin America. For far too long, U.S. officials and Latin America experts have tended to treat the region as separate, politically and strategically, from the rest of the world. But as they’ve fought battles over small countries such as Cuba and Honduras and narrow bore issues such as the U.S.-Colombia free-trade agreement, other countries like China and India have increased their economic presence and political influence in the region. It’s also clear that countries such as Brazil and Venezuela present their own challenges to U.S. influence in the region and even on the world forum. The U.S. must embed its Latin America relations in the conceptual framework and strategy that it has for the rest of the world, rather than just focus on human rights and development as it often does toward southern neighbors such as Cuba. 3. There are security and strategic risks in the region. Hugo Chavez’s systematic deconstruction of the Venezuelan state and alleged ties between FARC rebels and some of Chavez’s senior officials have created a volatile cocktail that could explode south of the U.S. border. FARC, a left-wing guerrilla group based in Colombia, has been designated as a “significant foreign narcotics trafficker” by the U.S. government. At the same time, gangs, narcotics traffickers and transnational criminal syndicates are overrunning Central America. In 2006, Mexican President Felipe Calderón launched a controversial “war on drugs” that has since resulted in the loss of over 50,000 lives and increased the levels of violence and corruption south of the Mexican border in Guatemala, El Salvador, Honduras and even once-peaceful Costa Rica. Increasingly, these already-weak states are finding themselves overwhelmed by the corruption and violence that has come with the use of their territory as a transit point for drugs heading north. **Given** their **proximity and close historical and political connections with Washington**, the U.S. will find it increasingly difficult not to be drawn in. Only this case, it won’t be with or against governments — as it was in the 1980s — but in the far more complex, sticky situation of failed states. There are many other reasons why **Latin America is important to U.S. interests**. It is a market for more than 20% of U.S. exports. With the notable exception of Cuba, it is nearly entirely governed by democratically elected governments — a point that gets repeated ad nauseum at every possible regional meeting. The Western Hemisphere is a major source of energy that has the highest potential to seriously reduce dependence on Middle East supply. And through immigration, Latin America has close personal and cultural ties to the United States. These have been boilerplate talking points since the early 1990s. But the demands of the globe today are different, and they warrant a renewed engagement with Latin America — a strategic pivot point for initiatives the U.S. wants to accomplish elsewhere. We need to stop thinking of Latin America as the U.S. “backyard” that is outside broader, global strategic concerns.

# Quarters

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#### Iran will achieve “breakout capacity” this year- Israel will strike before then- draw in America

**Diehl 12/23** (Jackson, editorial writer specializing in foreign affairs for the Washington post, “Will 2013 see action on Iran’s nuclear program?”, <http://articles.washingtonpost.com/2012-12-23/opinions/36016926_1_breakout-capacity-nuclear-program-supreme-leader-ali-khamenei>, December 23, 2012)

Back at the beginning of 2006, Sens. John McCain (R-Ariz.) and Joe Lieberman (I-Conn.) made waves in Washington by predicting that the United States could ultimately have to choose between allowing Iran to go nuclear and taking military action to stop it. Pretty much every year since then, someone’s New Year’s forecast has had that fateful choice finally coming before the president. For seven years, it hasn’t happened. But will 2013 be different? The conventional wisdom I’ve heard from diplomats in Washington this month says probably not. Most likely, it goes, next year will look like previous years: Negotiations will limp along inconclusively. Iran will make incremental progress on uranium enrichment, while stopping short of steps that would provoke a U.S. or Israeli attack. But there’s a good case to be made that next year will finally bring a break in the Iranian standoff — by means of a military confrontation, the appearance of an Iranian bomb or a diplomatic deal of some kind. And interestingly, one of the people making that case is President Obama’s first-term adviser on Iran, Dennis Ross, who has worked on the Middle East in five administrations. Ross, who left the Obama White House at the end of 2011, concedes that prognosticators of an Iran crisis have a long losing streak. His reasons that next year will be different boil down to three: an approaching Iranian “breakout” capacity; Obama’s stated determination to prevent it; and the slow emergence of an economic and political climate in Iran that could prompt Supreme Leader Ali Khamenei to change course. What is a “breakout capacity?” As Ross points out, Obama himself defined it in the third presidential debate in October. It “means that we would not be able to intervene in time to stop their nuclear program,” the president said. In other words, Iran would have acquired enough nuclear infrastructure and stockpiles of medium-enriched uranium that it could manufacture a bomb in a matter of a few weeks — before it could be detected by Western intelligence agencies or international inspectors. “That clock is ticking,” Obama said. Ross contends that statement was deliberate, and reflected a carefully-drawn red line. In his first year in office, Obama presided over an internal debate about whether an Iranian nuclear bomb could be tolerated and contained; he eventually decided that it must be prevented, by military action if necessary. Before a meeting with Israeli Prime Minister Benjamin Netanyahu last March, Obama publicly said “it is unacceptable for Iran to have a nuclear weapon.” A further series of public and private exchanges with Netanyahu this fall, Ross says, prompted Obama to define “breakout capacity” — a step that may have contributed to Israel’s decision to postpone military action of its own. Netanyahu has signaled that Israel now sees the middle of 2013 as the time when Iran may acquire enough medium-enriched uranium to cross the “breakout” line. Ross puts it this way: “By the end of 2013, if nothing changes, you won’t know if they [Israel] will move very quickly and present us with a fait accompli.”

#### 2013 is the final straw – Israel will act alone - new sanctions irrelevant

Reuters 12/10 (Reuters, Posted on JPost, “Report: Israel leaking Iranian nuclear information”, <http://www.jpost.com/IranianThreat/News/Article.aspx?id=295379>, December 10, 2012)

Western diplomats believe Israel has been leaking sensitive information about Iran's nuclear program in a bid to rally the international community to action, The Guardian reported Monday. The report came as Israel renewed calls against the Iranian program, as Prime Minister Binyamin Netanyahu said Monday the problem would have to be confronted in 2013. According to the Guardian report, Western diplomats suspect the Israeli moves have backfired, and have instead jeopardized the International Atomic Energy Agency's investigation into the Iranian nuclear program. Diplomats said Israel was leaking the information because of an "impatience" over international delays to confront Iran. The report cited a leaked diagram allegedly showing Iranian advances in nuclear technology as the latest example of the Israeli strategy. The diagram, published by the Associated Press’s correspondent in Vienna and widely distributed around the world, comprises a single line chart plotting power and energy in kilotons against time. The diagram also has a caption in Persian, which reads “Figure (5): Changes in power and energy released versus time during power pulse.” The axes of the graph are labeled in English. The head of Iran’s Atomic Energy Organization dismissed claims that the diagram proved anything about Iran's program. Speaking to foreign journalists on Monday, Netanyahu said Israel was sticking to the red line he laid down in September, when he told the United Nations Iran should not have enough enriched uranium to make even a single warhead. "I made clear that once Iran crosses that enrichment threshold, the chances of us effectively stopping Iran's nuclear weapons program would be reduced dramatically," he said. "Iran is two and a half months closer to crossing this line and there is no doubt that this will be a major challenge that will have to be addressed next year." Israeli experts have said Iran could have enriched enough uranium to produce just one bomb by the spring or summer of 2013. In an effort to deter Tehran, Western powers have imposed increasingly tough economic sanctions on the Islamic Republic. "The sanctions on Iran are hurting the Iranian economy. There is no question about that. But we have not seen any evidence that sanctions have stalled Iran's nuclear weapons program," Netanyahu said. "Israel is more capable of addressing this challenge than it was when I took office four years ago," said Netanyahu, who looks on course to win re-election in a January 22 national ballot. Iran's nuclear facilities are well protected and dotted around the vast country, posing a massive challenge to the Israeli military which does not have the reach of the United States or as powerful conventional munitions.

#### Iran proliferation ensnares Israel-Iran into nuclear war through proxies

**Robb 10/10** (Charles, B.A. from the University of Wisconsin–Madison, J.D. at the University of Virginia Law School, Charles Wald, Master of Political Science degree in international relations, Troy State University, Bipartisan Policy Center Board Member “The Price of Inaction: Analysis of Energy and Economic Effects of a Nuclear Iran,” October 10th, 2012, <http://bipartisanpolicy.org/sites/default/files/PriceofInaction.pdf>)

A nuclear Iran would immediately encounter another nuclear state—even if an undeclared one—in the region: Israel. Compared with the relative stability of the Cold War, an initial stalemate between Israel and Iran would be highly precarious at best and would also threaten the entirety of Gulf exports, although for a more limited duration. Were Iran to become nuclear, the frequency of crises and proxy conflicts between Iran and Israel would likely increase, as would the probability of such confrontations spiraling into a nuclear exchange, with horrendous humanitarian consequences. There could be an Israeli-Iranian nuclear exchange through miscalculation and/or miscommunication. There could also be a calculated nuclear exchange, as the Israeli and Iranian sides would each have incentives to strike the other first. Tehran would likely have the ability to produce only a small handful of weapons, whereas Israel is already estimated to possess more than 100 devices, including thermonuclear warheads far beyond the destructive power of any Iranian fission weapon. Under such circumstances, Iran’s vulnerability to a bolt-from-the-blue Israeli nuclear strike would actually increase its incentive to launch its own nuclear attack, lest its arsenal be obliterated. Israel’s small territorial size reduces the survivability of its second-strike capability and, more importantly, the survivability of the country itself, despite its vastly larger and more advanced arsenal. Thus, Israeli leaders might feel the need to act preventatively to eliminate the Iranian arsenal before it can be used against them, just as American military planners contemplated taking out the fledgling Soviet arsenal early in the Cold War, except that as a much smaller country Israel has far less room for maneuver. Xxvi

**Israeli strikes escalate- success irrelevant**

**Goldberg ‘10** (Jeffrey Goldberg, National correspondent for the Atlantic, “The Point of No Return,” <http://www.theatlantic.com/magazine/archive/2010/09/the-point-of-no-return/8186/>, September 2010)

When the Israelis begin to bomb the uranium-enrichment facility at Natanz, the formerly secret enrichment site at Qom, the nuclear-research center at Esfahan, and possibly even the Bushehr reactor, along with the other main sites of the Iranian nuclear program, a short while after they depart en masse from their bases across Israel—regardless of whether they succeed in destroying Iran’s centrifuges and warhead and missile plants, or whether they fail miserably to even make a dent in Iran’s nuclear program—they stand a good chance of changing the Middle East forever; of sparking lethal reprisals, and even a full-blown regional war that could lead to the deaths of thousands of Israelis and Iranians, and possibly Arabs and Americans as well; of creating a crisis for Barack Obama that will dwarf Afghanistan in significance and complexity; of rupturing relations between Jerusalem and Washington, which is Israel’s only meaningful ally; of inadvertently solidifying the somewhat tenuous rule of the mullahs in Tehran; of causing the price of oil to spike to cataclysmic highs, launching the world economy into a period of turbulence not experienced since the autumn of 2008, or possibly since the oil shock of 1973; of placing communities across the Jewish diaspora in mortal danger, by making them targets of Iranian-sponsored terror attacks, as they have been in the past, in a limited though already lethal way; and of accelerating Israel’s conversion from a once-admired refuge for a persecuted people into a leper among nations.

#### MAD doesn’t apply to Iranian prolif – no second strike capability and diplomatic isolation- nuclear terrorism exchange

Henzel 12/29 (John is a Masters’ candidate at the Whitehead School of Diplomacy and International relations. He is specializing in international security and foreign policy analysis. Deconstructing Policy Responses to the Iranian Nuclear Program, The Whitehead Journal of Diplomacy (At Senton Hall University).<http://blogs.shu.edu/diplomacy/2012/12/deconstructing-policy-responses-to-the-iranian-nuclear-program/>, December 29, 2012)

Of foremost concern, is the question of if Iran should be allowed to acquire nuclear weapons in the first place. The most persuasive arguments for allowing Iran to develop a nuclear arsenal propose that, not only are nuclear weapons an indelible sovereign right for nations that desire them, nuclear weapons structurally promote peace. The purported evidence is obvious; the era of nuclear weapons that evolved into the Cold War’s ‘Mutually Assured Destruction’ ended serious conflict between nuclear powers. States with nuclear weapons must tread lightly with one another out of mutual fear, which paves over years of conflict to pacify the most intense rivalries. By this logic, Iran’s main strategic deficit, and the core of its bellicosity, is its lack of nuclear strength – and thus an effective deterrent – relative to its perceived adversaries, Israel and the United States. Once you solve this deficit, by allowing Tehran access to a nuclear deterrent, tensions will lessen.¶ However, this position is overly simplistic and ignores key differences between the cases presented. While it is plausible that an Israel/US-Iran peace could be forced through nuclear parity, in actuality, that parity will not exist overnight. In order to have a strong MAD-style nuclear deterrent, a state’s nuclear capability must be able to absorb or evade an opponent’s attack (such as with silos, SLBMs, etc) and deliver an attack of one’s own (requiring miniaturization of warheads, advanced missile design and targeting systems, and extensive personnel training). Iran would not have many of these requisite capabilities for an indefinite interim period that would be characterized by constant fear of first-strike – possibly leading to an Iranian first-strike to jump ahead of the perceived course of events. If Iran lacks the requisite capabilities to weather an Israeli or American strike, the logic of nuclear balance falls apart.¶ Furthermore, the ‘nuclear peace’ argument has not considered the effects external to the dyadic rivalry between Iran and Israel that will be seen in the region if Iran obtains nuclear weapons. The primary instigating factor for a state seeking nuclear weapons is when it faces a threat of nuclear weapons itself. If Iran gets the bomb, so too must Saudi Arabia, then Egypt, then Lebanon, and Syria, and so on. This cascade of security deficits could effectively break the NPT norm apart throughout the region and have spillover effects to other regions.¶ The final nail in the nuclear peace thesis is the impact of non-state actors and illicit proliferation rings. While realist theorists suggest that states will never provide the state’s ultimate source of military might to an uncontrollable third party, when states are isolated they seek out similarly isolated groups and states to compensate for their strategic deficits. It is probable that Iran would continue to be diplomatically isolated from the international community even after securing nuclear weapons, so its incentives to participate in proliferation rings would increase. While they may not directly supply third parties with full-fledged nuclear weapons, simple materials and technology in exchange for other goods could substantially support a third party’s nuclear terrorism endeavors. However, this thinking assumes there is a stable, rational, and non-corrupt regime – Tehran’s government officials may have far less scruples in handling its nuclear materials than in other nuclear states.

#### Nuclear terrorism causes extinction

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

But these two nuclear worlds—a non-state actor nuclear attack and a catastrophic interstate nuclear exchange—are not necessarily separable. It is just possible that some sort of terrorist attack, and especially an act of nuclear terrorism, could precipitate a chain of events leading to a massive exchange of nuclear weapons between two or more of the states that possess them. In this context, today’s and tomorrow’s terrorist groups might assume the place allotted during the early Cold War years to new state possessors of small nuclear arsenals who were seen as raising the risks of a catalytic nuclear war between the superpowers started by third parties. These risks were considered in the late 1950s and early 1960s as concerns grew about nuclear proliferation, the so-called n+1 problem. It may require a considerable amount of imagination to depict an especially plausible situation where an act of nuclear terrorism could lead to such a massive inter-state nuclear war. For example, in the event of a terrorist nuclear attack on the United States, it might well be wondered just how Russia and/or China could plausibly be brought into the picture, not least because they seem unlikely to be fingered as the most obvious state sponsors or encouragers of terrorist groups. They would seem far too responsible to be involved in supporting that sort of terrorist behavior that could just as easily threaten them as well. Some possibilities, however remote, do suggest themselves. For example, how might the United States react if it was thought or discovered that the fissile material used in the act of nuclear terrorism had come from Russian stocks,40 and if for some reason Moscow denied any responsibility for nuclear laxity? The correct attribution of that nuclear material to a particular country might not be a case of science fiction given the observation by Michael May et al. that while the debris resulting from a nuclear explosion would be “spread over a wide area in tiny fragments, its radioactivity makes it [is] detectable, identifiable and collectable, and a wealth of information can be obtained from its analysis: the efficiency of the explosion, the materials used and, most important … some indication of where the nuclear material came from.”41 Alternatively, if the act of nuclear terrorism came as a complete surprise, and American officials refused to believe that a terrorist group was fully responsible (or responsible at all) suspicion would shift immediately to state possessors. Ruling out Western ally countries like the United Kingdom and France, and probably Israel and India as well, authorities in Washington would be left with a very short list consisting of North Korea, perhaps Iran if its program continues, and possibly Pakistan. But at what stage would Russia and China be definitely ruled out in this high stakes game of nuclear Cluedo? In particular, if the act of nuclear terrorism occurred against a backdrop of existing tension in Washington’s relations with Russia and/or China, and at a time when threats had already been traded between these major powers, would officials and political leaders not be tempted to assume the worst? Of course, the chances of this occurring would only seem to increase if the United States was already involved in some sort of limited armed conflict with Russia and/or China, or if they were confronting each other from a distance in a proxy war, as unlikely as these developments may seem at the present time. The reverse might well apply too: should a nuclear terrorist attack occur in Russia or China during a period of heightened tension or even limited conflict with the United States, could Moscow and Beijing resist the pressures that might rise domestically to consider the United States as a possible perpetrator or encourager of the attack? Washington’s early response to a terrorist nuclear attack on its own soil might also raise the possibility of an unwanted (and nuclear aided) confrontation with Russia and/or China. For example, in the noise and confusion during the immediate aftermath of the terrorist nuclear attack, the U.S. president might be expected to place the country’s armed forces, including its nuclear arsenal, on a higher stage of alert. In such a tense environment, when careful planning runs up against the friction of reality, it is just possible that Moscow and/or China might mistakenly read this as a sign of U.S. intentions to use force (and possibly nuclear force) against them. In that situation, the temptations to preempt such actions might grow, although it must be admitted that any preemption would probably still meet with a devastating response. As part of its initial response to the act of nuclear terrorism (as discussed earlier) Washington might decide to order a significant conventional (or nuclear) retaliatory or disarming attack against the leadership of the terrorist group and/or states seen to support that group. Depending on the identity and especially the location of these targets, Russia and/or China might interpret such action as being far too close for their comfort, and potentially as an infringement on their spheres of influence and even on their sovereignty. One far-fetched but perhaps not impossible scenario might stem from a judgment in Washington that some of the main aiders and abetters of the terrorist action resided somewhere such as Chechnya, perhaps in connection with what Allison claims is the “Chechen insurgents’ … long-standing interest in all things nuclear.”42 American pressure on that part of the world would almost certainly raise alarms in Moscow that might require a degree of advanced consultation from Washington that the latter found itself unable or unwilling to provide.

#### SMR’s are a diplomatic tool- we can give them to Iran

Mandel ‘9 (Jenny – Scientific American, Environment & Energy Publishing, LLC, “Less Is More for Designers of "Right-Sized" Nuclear Reactors” September 9, 2009, <http://www.scientificamerican.com/article.cfm?id=small-nuclear-power-plant-station-mini-reactor>)

Tom Sanders, president of the American Nuclear Society and manager of Sandia National Laboratories' Global Nuclear Futures Initiative, has been stumping for small rectors for more than a decade. American-made small reactors, Sanders insists, can play a central role in global nonproliferation efforts. "Our role at Sandia is the national security-driven notion that it's in the interests of the U.S. to be one of the dominant nuclear suppliers," Sanders said. While U.S. companies have been exiting the industry over the past decades as government and popular support for new construction has waned, Sanders maintains that strong U.S. participation in thenuclear energymarketplace would give diplomats a new tool to use with would-be nuclear powers. "It's hard to tell Iran what to do if you don't have anything Iran wants," he explained. Sanders said mini-reactors are ideal to sell to developing countries that want to boost their manufacturing might and that would otherwise look to other countries for nuclear technologies. If the United States is not participatinginthat market, he said, it becomes hard to steer buyers away fromtechnologies that pose greater **prolif**eration **risks.** Sanders been promoting this view since the 1990s, he said, when he realized "we were no longer selling nuclear goods and services, so we could no longer write the rules." The domestic nuclear industry had basically shut down, with no new construction in decades and a flight of talent and ideas overseas. There is a silver lining in that brain drain, though, he believes, in that U.S. companies getting back into the game now are less tied to the traditional, giant plants and are freer to innovate. A feature that several of the new product designs share is that the power plants could be mass-produced in a factory to minimize cost, using robots to ensure consistency. Also, with less design work for each installation, the time to complete an order would be shortened and some of the capital and other costs associated with long lead times avoided, Sanders said. Another feature he favors is building the plants with a lifetime supply of fuel sealed inside. Shipped loaded with fuel, such reactors could power a small city for 20 years without the host country ever handling it. Once depleted, the entire plant would be packed back up and shipped back to the United States, he said, with the sensitive spent fuel still sealed away inside. Sanders is working on a reactor design hatched by the lab with an undisclosed private partner. He believes it is feasible to build a prototype modular reactor -- including demonstration factory components and a mockup of the reactor itself -- as early as 2014, for less than a billion dollars. A mini-reactor could ring up at less than $200 million, he said, or at $300 million to $400 million with 20 years of fuel. At $3,000 to $4,000 per kilowatt, he said, that would amount to significant savings over estimates of $4,000 to $6,000 per kilowatt for construction alone with traditional plant designs. To get a design ready to build, Sanders is urging a partnership between the government and the private sector. "If it's totally a government research program, labs can take 20 to 30 years" to finish such projects, he said. "If it becomes a research science project, it could go on forever." New approach, old debates So far, there is no sign that the government's nuclear gatekeeper, NRC, is wowed by the small-reactor designs. NRC's Office of New Reactors warned Babcock & Wilcox in June that the agency "will need to limit interactions with the designers of small power reactors to occasional meetings or other nonresource-intensive activities" over the next two years because of a crowded schedule of work on other proposals. Meanwhile, opponents of nuclear technologies are not convinced that small reactors are an improvement over traditional designs. Arjun Makhijani, who heads the Institute for Energy and Environmental Research, a think tank that advocates against nuclear power, sees disseminating the technology as incompatible with controlling it. "A lot of the proliferation issue is not linked to having or not having plutonium or highly enriched uranium, but who has the expertise to have or make bombs," Makhijani said. "In order to spread nuclear technologies, you have to have the people who have the expertise in nuclear engineering, who know about nuclear materials and chain reactions and things like that -- the same expertise for nuclear bombs. That doesn't suffice for you to make a bomb, but then if you clandestinely acquire the materials, then you can make a bomb." Peter Wilk, acting program director for safe energy with Physicians for Social Responsibility, an anti-nuclear group, argues that expanding nuclear power use runs counter to the goal of nonproliferation. "The whole proposition presupposes an ... international economy in which more and more fuel is produced and more and more waste must be dealt with, which only makes those problems that are still unsolved larger," he said. "It may or may not do a better job of preventing the host country from literally getting their hands on it, but it doesn't reduce the amount of fuel in the world or the amount of waste in the world," Wilk added. And then there is the issue of public opinion. "Imagine that Americans would agree to take the waste that is generated in other countries and deal with it here," Makhijani said. "At the present moment, it should be confined to the level of the fantastic, or even the surreal. If [the technology's backers] could come up with a plan for the waste, then we could talk about export." Makhijani pointed to a widely touted French process for recycling nuclear waste as a red herring (ClimateWire, May 18). "It's a mythology that it ameliorates the waste problem," he said. According to Makhijani's calculations, the French recycling process generates far more radioactive waste than it cleans up. One category of highly radioactive material, which ends up stored in glass "logs" for burial, is reduced, he said. But in processing the waste, about six times the original volume of waste is produced, he said. Much of that must be buried deep underground, and the discharge of contaminated wastewater used in recycling has angered neighboring countries, he said. Operational risk, of course, is another major concern. "One has reduced the amount of unnecessary risk," Wilke said, "but it's still unnecessary risk." He added, "I get the theory that smaller, newer, ought to be safer. The question is: Why pursue this when there are so many better alternatives?" To Sandia's Sanders, Wilke is asking the wrong question. With the governments of major economies like China, Russia and Japan putting support and cash into nuclear technologies, the power plants are here to stay, he believes. "There's going to be a thousand reactors built over the next 50 years," he said. "The question is: Are we building them, or are we just importing them?"

#### SMRs solve Iran nuclear desires

**Goodby and Heiskanen ‘12** (James, former arms control negotiator and a Hoover Institution Fellow, Markku, Associate and Program Director of The Asia Institute at the Kyung Hee University in Seoul [“The Seoul Nuclear Security Summit: New Thinking in Northeast Asia?” March 20th, <http://nautilus.org/napsnet/napsnet-policy-forum/the-seoul-nuclear-security-summit-new-thinking-in-northeast-asia/>)

The nuclear crises in the Middle East and Northeast Asia and the stalled promise of a nuclear renaissance in civil nuclear power could all be solved by a more rational approach to the generation of electric power. Although it will take years before the current, outdated system is replaced, the Seoul meeting could provide a political impetus. The new system would rest on three legs: small modular reactors (“mini-reactors”), internationally managed nuclear fuel services, and increasing reliance on the distributed (local) generation of electricity. After the disaster in Fukushima, there has been an understandable retreat from plans for large-scale reactors, with their inevitable safety issues. A vivid example of this reaction is found in Germany, which has cancelled its plans to increase the generation of electricity from nuclear reactors even though they are cleaner and more dependable than most other sources currently available. Vulnerabilities and inefficiencies of long-distance transmission lines point to a paradigm for generation and distribution of electric power that is more local – connected to national grids, to be sure, but able to operate independently of them. This is an ideal situation for mini-reactors, which are safer and less prone to encourage the spread of nuclear weapons. Internationally managed nuclear fuel services already exist and the security of supply can be assured by policies that foster more fuel service centers in Asia and elsewhere, including in the United States. These factors would enable suppliers of mini-reactors to expand their business to nations like North Korea and Iran under IAEA safeguards. The relevance of this energy paradigm to resolving the issues in North Korea and Iran is evident: both nations could develop civil nuclear programs with assured supplies of nuclear fuel from multiple internationally managed fuel service centers in Russia, China, and Western Europe while avoiding the ambiguity of nationally operated plutonium reprocessing and uranium enrichment. Reliance on distributed generation of electricity would be more efficient and less prone to blackouts. And the presence of a level playing field should be apparent from the fact that similar arrangements would be the 21st-century way of generating electricity from nuclear energy in the developed economies as well as in energy-starved economies such as India and China.

#### The offer exposes Iran’s intent- solves proliferation and checks Israeli strikes

**Ross ‘12** (Dennis, counselor at The Washington Institute, previously served as special assistant to President Obama and senior director for the central region at the National Security Council. “Calling Iran’s Bluff: It’s Time to Offer Tehran a Civilian Nuclear Program,” June 15th, <http://www.tnr.com/article/politics/104085/calling-iran%E2%80%99s-bluff-its-time-offer-iran-civilian-nuclear-program?page=0,0>)

It's clear what the diplomacy around such a comprehensive proposal would entail: We would offer Iran a civil nuclear power capability—and if they reject the proposal, it would be presented to the public as a declaration that the Iranians want a nuclear weapons capability not civil nuclear power. Abandoning incremental step-by-step negotiations for a more direct end-state proposal of this sort offers obvious and not-so-obvious diplomatic advantages. First, the Israelis are much more likely to hold off if they know that this is the aim of the talks. Determining the end-state of Iran’s nuclear program matters much more to them than stopping the clock temporarily, particularly because they fear the price for producing the latter would be the easing of pressure on Iran. Second, and more importantly, we need a credible basis for using force if it comes to it. Context matters. It matters because the use of force is a means not an end. Iran has the know-how and the engineering capability to reconstitute its nuclear program, so it will be critical to maintain sanctions even after force has been used—and that requires that much of the international community accepts that the use of force was justified. If we or the Israelis use force, it is essential that we be seen as first having tried everything short of force and that the Iranians effectively brought this on themselves. The point is that we can only demonstrate that diplomacy was tried and failed—that we and/or the Israelis were left with no choice but to use force—if we first directly offer to Iran the possibility of a civilian nuclear program. The irony is that the best way to give diplomacy a chance to succeed is for the Iranians to know we are not afraid of diplomacy failing and we are prepared to use force if it does. Indeed, history shows that nothing concentrates the Iranian government's mind like the real prospect of force being used against it. When, in 2003, the Iranians thought they were next after the U.S. military defeated the Iraqi army in three weeks—an army the Iranians could not defeat in eight-and-a-half years—they altered their position and agreed to suspend uranium enrichment. Ultimately, Ali Khamenei’s most important objective is to die in office of natural causes. But the first step for the 5+1 will be to move away from the step-by-step approach and to begin focusing on outcomes rather than interim steps. The current incrementalism is a trap that could either force us to walk away from talks prematurely, or continue them in a way that will leave the Israelis believing the 5+1 is dragging out talks to pre-empt the Israeli use of force—a perception that will make it more likely Israel will feel compelled to act, not less. A process geared to clarifying whether a real deal is possible with Iran will require putting a credible proposal on the table. It may take some time to reach agreement with the other members of the 5+1, but once that's done, it will have the benefit of clarifying the actual state of our negotiations with Iran. Best of all, it will signal that we are ready for either outcome: a diplomatic deal, or a diplomatic failure—with all that implies about our readiness to use force.

#### Iran says yes- only stopping Iranian uranium production matters

**Takeyh 12/21** (Ray, Senior Fellow at the Council on Foreign Relations, “Iran's Conservatives Push for a Deal,” <http://nationalinterest.org/commentary/will-khamenei-compromise-7894>, December 21, 2012)

As Washington contemplates another round of diplomacy with Iran, an intense debate is gripping the Islamic Republic’s corridors of power. An influential and growing segment of Iran’s body politic is calling for a negotiated settlement of the nuclear issue. Such calls have transcended the circle of reformers and liberals and are increasingly being voiced by conservative oligarchs. In the midst of this melodrama stands the Supreme Leader Ali Khamenei, whose instincts for resistance are being challenged by some of his loyal supporters. The international community can play an important role in nudging this discussion in the right direction. Pursuing a deliberate arms-control process that initially focuses on stopping Iran’s more dangerous enrichment activities will both ease tensions and press this debate in the right direction. In a sense, the sanctions policy that the United States has pursued over the past decade is beginning to bear fruit. Sanctions and pressure were never going to provoke an Iranian capitulation, but they have seemingly succeeded in convincing influential sectors of the theocracy to reconsider their options. The notions of talks with the United States and compromise solutions are not new in Iran, but had previously been embraced by largely inconsequential actors such as President Mahmoud Ahmadinejad and his two predecessors, Hashemi Rafsanjani and Muhammad Khatami. In recent days, however, that chorus has been gingerly joined by some hardliners. In November, Mohsen Rezai, the former head of the Revolutionary Guard, stressed that given Iran’s strength, it is now in a position to address the United States on a more equal footing. In a similar vein, General Muhammad Reza Naqdi, the head of the Basij militia, who had previously acclaimed the virtues of sanctions as empowering domestic production, now claims that “if the United States behaves properly we can negotiate with it.” All this is not to imply that the Islamic Republic and its complex maze of decision-making has arrived at a consensus on resolving the nuclear issue. The chief proponent of resisting such gestures remains Khamenei. In recent weeks, in a subtle and indirect manner, the Supreme Leader has rebuked those calling for concessions on the nuclear front. It was, after all, Khamenei’s representative to the Revolutionary Guard, Ali Saeedi, who castigated proposals for direct talks with the United States as a trick to get Iran to relinquish its nuclear ambitions. A remarkable article in the Keyhan newspaper, long seen as Khamenei’s mouthpiece, warned the “tired revolutionaries” that “by offering wrong analyses and relating all of the country’s problems to external sanctions, they want to make the social atmosphere inflamed and insecure and agitate the public sentiment so that the exalted Leader is forced to give in to their demands in order to protect the country’s interests and the revolution’s gains.” It is inconceivable that such an article would have been written without Khamenei’s approbation. Despite his stern and forbidding presence, Khamenei can be coaxed into compromise—one that concedes aspects of the program but not its entirety. At this juncture, the Islamic Republic’s contentious and divided system can only countenance a limited deal, one that addresses the hard edges of its program. Khamenei is too invested in his enmities and too attached to his nuclear apparatus to accept its dismantlement. An accord that curtails Iran’s production of 20 percent enriched uranium can still reduce tensions and potentially pave the way for further arms-control measures. A circumscribed agreement would not end Iran’s nuclear challenge, but it may empower more reasonable actors and inject a measure of pragmatism into Iran’s nuclear calculus. For the United States, such an accord has the advantage of delaying Iran’s nuclear timelines and putting some indispensable time back on the clock.

solvency

#### First is Small Modular Nuclear Reactor solves-

#### SMR’s are an energy game changer- but purchasing agreements are key to jump-start the industry

Madia (Chairman of the Board of Overseers and Vice President for the NAL at Stanford and was the Laboratory Director at the Oak Ridge National Laboratory and the Pacific Northwest National Laboratory) ‘12 (William Madia, Stanford Energy Journal, Dr. Madia serves as Chairman of the Board of Overseers and Vice President for the SLAC National Accelerator Laboratory at Stanford University. Previously, he was the Laboratory Director at the Oak Ridge National Laboratory from 2000-2004 and the Pacific Northwest National Laboratory from 1994-1999., “SMALL MODULAR REACTORS: A POTENTIAL GAME-CHANGING TECHNOLOGY”, <http://energyclub.stanford.edu/index.php/Journal/Small_Modular_Reactors_by_William_Madia>, Spring 2012, LEQ)

There is a new type of nuclear power plant (NPP) under development that has the potential to be a game changer in the power generation market: the small modular reactor (SMR). Examples of these reactors that are in the 50-225 megawatt electric (MW) range can be found in the designs being developed and advanced by Generation mPower (http://generationmpower.com/), NuScale (http://nuscale.com/), the South Korean SMART reactor (http://smart.kaeri.re.kr/) and Westinghouse (http://www.westinghousenuclear.com/smr/index.htm/). Some SMR concepts are up to 20 times smaller than traditional nuclear plants Today’s reactor designers are looking at concepts that are 5 to 20 times smaller than more traditional gigawatt-scale (GW) plants. The reasons are straightforward; the question is, “Are their assumptions correct?” The first assumption is enhanced safety. GW-scale NPPs require sophisticated designs and cooling systems in case of a total loss of station power, as happened at Fukushima due to the earthquake and tsunami. These ensure the power plant will be able to cool down rapidly enough, so that the nuclear fuel does not melt and release dangerous radioactive fission products and hydrogen gas. SMRs are sized and designed to be able to cool down without any external power or human actions for quite some time without causing damage to the nuclear fuel. The second assumption is economics. GW-scale NPPs cost $6 billion to $10 billion to build. Very few utilities can afford to put this much debt on their balance sheets. SMRs offer the possibility of installing 50-225 MW of power per module at a total cost that is manageable for most utilities. Furthermore, modular configurations allow the utilities to deploy a more tailored power generation capacity, and that capacity can be expanded incrementally. In principle, early modules could be brought on line and begin producing revenues, which could then be used to fund the addition of more modules, if power needs arise. The third assumption is based on market need and fit. Utilities are retiring old fossil fuel plants. Many of them are in the few hundred MW range and are located near load centers and where transmission capacity currently exists. SMRs might be able to compete in the fossil re-power markets where operators don’t need a GW of power to serve their needs. This kind of “plug and play” modality for NPPs is not feasible with many of the current large-scale designs, thus giving carbon-free nuclear power an entry into many of the smaller markets, currently not served by these technologies. There are numerous reasons why SMRs might be viable today. Throughout the history of NPP development, plants grew in size based on classic “economies of scale” considerations. Bigger was cheaper when viewed on a cost per installed kilowatt basis. The drivers that caused the industry to build bigger and bigger NPPs are being offset today by various considerations that make this new breed of SMRs viable. Factory manufacturing is one of these considerations. Most SMRs are small enough to allow them to be factory built and shipped by rail or barge to the power plant sites. Numerous industry “rules of thumb” for factory manufacturing show dramatic savings as compared to “on-site” outdoor building methods.

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Significant schedule advantages are also available because weather delay considerations are reduced. Of course, from a total cost perspective, some of these savings will be offset by the capital costs associated with building multiple modules to get the same total power output. Based on analyses I have seen, overnight costs in the range of $5000 to $8000 per installed kilowatt are achievable. If these analyses are correct, it means that the economies of scale arguments that drove current designs to GW scales could be countered by the simplicity and factory-build possibilities of SMRs. No one has yet obtained a design certification from the Nuclear Regulatory Commission (NRC) for an SMR, so we must consider licensing to be one of the largest unknowns facing these new designs. Nevertheless, since the most developed of the SMRs are mostly based on proven and licensed components and are configured at power levels that are passively safe, we should not expect many new significant licensing issues to be raised for this class of reactor. Still, the NRC will need to address issues uniquely associated with SMRs, such as the number of reactor modules any one reactor operator can safely operate and the size of the emergency planning zone for SMRs. To determine if SMRs hold the potential for changing the game in carbon-free power generation, it is imperative that we test the design, engineering, licensing, and economic assumptions with some sort of public-private development and demonstration program. Instead of having government simply invest in research and development to “buy down” the risks associated with SMRs, I propose a more novel approach. Since the federal government is a major power consumer, it should commit to being the “first mover” of SMRs. This means purchasing the first few hundred MWs of SMR generation capacity and dedicating it to federal use. The advantages of this approach are straightforward. The government would both reduce licensing and economic risks to the point where utilities might invest in subsequent units, thus jumpstarting the SMR industry. It would then also be the recipient of additional carbon-free energy generation capacity. This seems like a very sensible role for government to play without getting into the heavy politics of nuclear waste, corporate welfare, or carbon taxes. If we want to deploy power generation technologies that can realize near-term impact on carbon emissions safely, reliably, economically, at scale, and at total costs that are manageable on the balance sheets of most utilities, we must consider SMRs as a key component of our national energy strategy.

#### And a purchase-power agreement solves best- generates learning benefits - the most qualified studies go aff- this comes from a 140 page U of Chicago economic study with over 100 authors that took 6 years

Rosner, Goldberg, and Hezir et. al. ‘11 (Robert Rosner, Robert Rosner is an astrophysicist and founding director of the Energy Policy Institute at Chicago. He was the director of Argonne National Laboratory from 2005 to 2009, and Stephen Goldberg, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, Joseph S. Hezir, Principal, EOP Foundation, Inc., Many people have made generous and valuable contributions to this study. Professor Geoff Rothwell, Stanford University, provided the study team with the core and supplemental analyses and very timely and pragmatic advice. Dr. J’Tia Taylor, Argonne National Laboratory, supported Dr. Rothwell in these analyses. Deserving special mention is Allen Sanderson of the Economics Department at the University of Chicago, who provided insightful comments and suggested improvements to the study. Constructive suggestions have been received from Dr. Pete Lyons, DOE Assistant Secretary of Nuclear Energy; Dr. Pete Miller, former DOE Assistant Secretary of Nuclear Energy; John Kelly, DOE Deputy Assistant Secretary for Nuclear Reactor Technologies; Matt Crozat, DOE Special Assistant to the Assistant Secretary for Nuclear Energy; Vic Reis, DOE Senior Advisor to the Under Secretary for Science; and Craig Welling, DOE Deputy Office Director, Advanced Reactor Concepts Office, as well as Tim Beville and the staff of DOE’s Advanced Reactor Concepts Office. The study team also would like to acknowledge the comments and useful suggestions the study team received during the peer review process from the nuclear industry, the utility sector, and the financial sector. Reviewers included the following: Rich Singer, VP Fuels, Emissions, and Transportation, MidAmerican Energy Co.; Jeff Kaman, Energy Manager, John Deere; Dorothy R. Davidson, VP Strategic Programs, AREVA; T. J. Kim, Director—Regulatory Affairs & Licensing, Generation mPower, Babcock & Wilcox; Amir Shahkarami, Senior Vice President, Generation, Exelon Corp.; Michael G. Anness, Small Modular Reactor Product Manager, Research & Technology, Westinghouse Electric Co.; Matthew H. Kelley and Clark Mykoff, Decision Analysis, Research & Technology, Westinghouse Electric Co.; George A. Davis, Manager, New Plant Government Programs, Westinghouse Electric Co.; Christofer Mowry, President, Babcock & Wilcox Nuclear Energy, Inc.; Ellen Lapson, Managing Director, Fitch Ratings; Stephen A. Byrne, Executive Vice President, Generation & Transmission Chief Operating Officer, South Carolina Electric & Gas Company; Paul Longsworth, Vice President, New Ventures, Fluor; Ted Feigenbaum, Project Director, Bechtel Corp.; Kennette Benedict, Executive Director, Bulletin of the Atomic Scientist; Bruce Landrey, CMO, NuScale; Dick Sandvik, NuScale; and Andrea Sterdis, Senior Manager of Strategic Nuclear Expansion, Tennessee Valley Authority. The authors especially would like to acknowledge the discerning comments from Marilyn Kray, Vice-President at Exelon, throughout the course of the study, “Small Modular Reactors – Key to Future Nuclear Power”, <http://epic.uchicago.edu/sites/epic.uchicago.edu/files/uploads/SMRWhite_Paper_Dec.14.2011copy.pdf>, November 2011, LEQ)

6.2 GOVERNMENT SPONSORSHIP OF MARKET TRANSFORMATION INCENTIVES Similar to other important energy technologies, such as energy storage and renewables, “market pull” activities coupled with the traditional “technology push” activities would significantly increase the likelihood of timely and successful commercialization. Market transformation incentives serve two important objectives. They facilitate demand for the off-take of SMR plants, thus reducing market risk and helping to attract private investment without high risk premiums. In addition, if such market transformation opportunities could be targeted to higher price electricity markets or higher value electricity applications, they would significantly reduce the cost of any companion production incentives. There are three special market opportunities that may provide the additional market pull needed to successfully commercialize SMRs: the federal government, international applications, and the need for replacement of existing coal generation plants. 6.2.1 Purchase Power Agreements with Federal Agency Facilities Federal facilities could be the initial customer for the output of the LEAD or FOAK SMR plants. The federal government is the largest single consumer of electricity in the U.S., but its use of electricity is widely dispersed geographically and highly fragmented institutionally (i.e., many suppliers and customers). Current federal electricity procurement policies do not encourage aggregation of demand, nor do they allow for agencies to enter into long-term contracts that are “bankable” by suppliers. President Obama has sought to place federal agencies in the vanguard of efforts to adopt clean energy technologies and reduce greenhouse gas emissions. Executive Order 13514, issued on October 5, 2009, calls for reductions in greenhouse gases by all federal agencies, with DOE establishing a target of a 28% reduction by 2020, including greenhouse gases associated with purchased electricity. SMRs provide one potential option to meet the President’s Executive Order. One or more federal agency facilities that can be cost effectively connected to an SMR plant could agree to contract to purchase the bulk of the power output from a privately developed and financed LEAD plant. 46 A LEAD plant, even without the benefits of learning, could offer electricity to federal facilities at prices competitive with the unsubsidized significant cost of other clean energy technologies. Table 4 shows that the LCOE estimates for the LEAD and FOAK-1plants are in the range of the unsubsidized national LCOE estimates for other clean electricity generation technologies (based on the current state of maturity of the other technologies). All of these technologies should experience additional learning improvements over time. However, as presented earlier in the learning model analysis, the study team anticipates significantly greater learning improvements in SMR technology that would improve the competitive position of SMRs over time. Additional competitive market opportunities can be identified on a region-specific, technology-specific basis. For example, the Southeast U.S. has limited wind resources. While the region has abundant biomass resources, the estimated unsubsidized cost of biomass electricity is in the range of $90-130 per MWh (9-13¢/kWh), making LEAD and FOAK plants very competitive (prior to consideration of subsidies). 47

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Competitive pricing is an important, but not the sole, element to successful SMR deployment. A bankable contractual arrangement also is required, and this provides an important opportunity for federal facilities to enter into the necessary purchase power arrangements. However, to provide a “bankable” arrangement to enable the SMR project sponsor to obtain private sector financing, the federal agency purchase agreement may need to provide a guaranteed payment for aggregate output, regardless of actual generation output. 48 Another challenge is to establish a mechanism to aggregate demand among federal electricity consumers if no single federal facility customer has a large enough demand for the output of an SMR module. The study team believes that highlevel federal leadership, such as that exemplified in E.O. 13514, can surmount these challenges and provide critical initial markets for SMR plants.

#### And United States creates a massive export market for SMR’s – latent nuclear capability ensures speed- significant reduction of emissions

Rosner, Goldberg, and Hezir et. al. ‘11 (Robert Rosner, Robert Rosner is an astrophysicist and founding director of the Energy Policy Institute at Chicago. He was the director of Argonne National Laboratory from 2005 to 2009, and Stephen Goldberg, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, Joseph S. Hezir, Principal, EOP Foundation, Inc., Many people have made generous and valuable contributions to this study. Professor Geoff Rothwell, Stanford University, provided the study team with the core and supplemental analyses and very timely and pragmatic advice. Dr. J’Tia Taylor, Argonne National Laboratory, supported Dr. Rothwell in these analyses. Deserving special mention is Allen Sanderson of the Economics Department at the University of Chicago, who provided insightful comments and suggested improvements to the study. Constructive suggestions have been received from Dr. Pete Lyons, DOE Assistant Secretary of Nuclear Energy; Dr. Pete Miller, former DOE Assistant Secretary of Nuclear Energy; John Kelly, DOE Deputy Assistant Secretary for Nuclear Reactor Technologies; Matt Crozat, DOE Special Assistant to the Assistant Secretary for Nuclear Energy; Vic Reis, DOE Senior Advisor to the Under Secretary for Science; and Craig Welling, DOE Deputy Office Director, Advanced Reactor Concepts Office, as well as Tim Beville and the staff of DOE’s Advanced Reactor Concepts Office. The study team also would like to acknowledge the comments and useful suggestions the study team received during the peer review process from the nuclear industry, the utility sector, and the financial sector. Reviewers included the following: Rich Singer, VP Fuels, Emissions, and Transportation, MidAmerican Energy Co.; Jeff Kaman, Energy Manager, John Deere; Dorothy R. Davidson, VP Strategic Programs, AREVA; T. J. Kim, Director—Regulatory Affairs & Licensing, Generation mPower, Babcock & Wilcox; Amir Shahkarami, Senior Vice President, Generation, Exelon Corp.; Michael G. Anness, Small Modular Reactor Product Manager, Research & Technology, Westinghouse Electric Co.; Matthew H. Kelley and Clark Mykoff, Decision Analysis, Research & Technology, Westinghouse Electric Co.; George A. Davis, Manager, New Plant Government Programs, Westinghouse Electric Co.; Christofer Mowry, President, Babcock & Wilcox Nuclear Energy, Inc.; Ellen Lapson, Managing Director, Fitch Ratings; Stephen A. Byrne, Executive Vice President, Generation & Transmission Chief Operating Officer, South Carolina Electric & Gas Company; Paul Longsworth, Vice President, New Ventures, Fluor; Ted Feigenbaum, Project Director, Bechtel Corp.; Kennette Benedict, Executive Director, Bulletin of the Atomic Scientist; Bruce Landrey, CMO, NuScale; Dick Sandvik, NuScale; and Andrea Sterdis, Senior Manager of Strategic Nuclear Expansion, Tennessee Valley Authority. The authors especially would like to acknowledge the discerning comments from Marilyn Kray, Vice-President at Exelon, throughout the course of the study, “Small Modular Reactors – Key to Future Nuclear Power”, <http://epic.uchicago.edu/sites/epic.uchicago.edu/files/uploads/SMRWhite_Paper_Dec.14.2011copy.pdf>, November 2011, LEQ)

As stated earlier, SMRs have the potential to achieve significant greenhouse gas emission reductions. They could provide alternative base load 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.

#### Second- the Department of Defense is key - a demonstration project coupled with purchasing is best

Andres and Breetz ‘11 (Richard B. Andres is 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 is a doctoral candidate in the Department of Political Science at the Massachusetts Institute of Technology, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications”, February 16, 2011, LEQ)

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 mar- ketplace.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 nuclear 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 pre- vailing fear of first-of-a-kind designs.”31 In addition, Massachusetts Institute of Technology 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 nuclear 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.

#### DOD implementation is vital to get optimal capabilities- key to solvency- this takes out any free market or States counterplans

Andres and Breetz ‘11 (Richard B. Andres is 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 is a doctoral candidate in the Department of Political Science at the Massachusetts Institute of Technology, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications”, February 16, 2011, LEQ)

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 demonstration 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 market. 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 designs. On one hand, Matthew Bunn and Martin Malin 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 settings in which they can be used, and it is quite possible 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.

#### Third is the licensing process-

#### A DOD Power-Purchase Agreement is key to resolve NRC’s lack of licensing experience- this shapes the global future for nuclear power

Cunningham 10/16 (Nick, Policy Analyst for Energy and Climate at the American Security Project, “Small Modular Reactors: A Possible Path Forward for Nuclear Power,” October 16th, <http://americansecurityproject.org/ASP%20Reports/Ref%200087%20-%20Small%20Modular%20Reactors.pdf>)

The most difficult challenge currently facing SMRs is the institutional barriers. Currently, the Nuclear Regulatory Commission has not certified a single SMR design. Despite the variety of SMR designs from several nuclear vendors, the NRC has lacked sufficient human and technical capacity to license small modular reactors in the past. 33 Even as policymakers have expressed greater interest in SMRs in recent years, the licensing process for a new design takes several years at a cost of hundreds of millions of dollars. 34 Also, many regulations create a difficult environment for small reactors and favor large reactors. For example, the NRC requires 10 mile emergency planning zones around nuclear power plants, making it difficult to site a small reactor near urban centers where it could be used for energy applications other than centralized electricity generation. 35 SMRs will need to overcome this long history of institutional bias towards large reactors. As the most prominent licensing body for the nuclear industry worldwide, the NRC to a certain degree, shapes the global future for nuclear power. If the NRC does not lead on small modular reactors, it may be an uphill battle for the SMR industry No Performance History The nuclear industry has maintained a high performance standard with its fleet of large light water reactors, and SMRs would need to demonstrate the same high performance. However, as with any new technology, SMRs have no track record to prove their performance. The industry lacks a credible demonstration project that would inform future projects and inspire confidence. 36 SMRS need to demonstrate advantages over conventional plants, including advantages in cost, safety and flexibility. Looking forward, this creates a “chicken and egg” problem. In order to bring costs down, nuclear vendors will need a high-tech manufacturing facility to mass produce small reactors. However, in order to justify the construction of such a facility, the industry estimates it will need to book dozens of orders upfront. It cannot book these orders without proof of cost, safety and performance. Industry leaders are hesitant to be the “first-mover” in an uncertain market, and governments are reluctant to provide incentives or invest in unproven products. Safety Concerns While there are real safety benefits of SMRs, critics site new safety concerns with SMRs that are not associated with conventional nuclear plants. The owner of small modular reactors would need to manage, inspect, and maintain more reactors for the same amount of power output as a single large reactor. 37 The industry needs to prove that the inherent safety benefits of SMRs over large reactors outweigh the downsides. Nuclear Waste Disposal of spent nuclear fuel has confounded the nuclear industry for decades and the problem of waste disposal will still need to be dealt with for SMRs. While large reactors suffer from the same problem, expanding the use of SMRs would mean waste from more reactor sites would need to be coordinated. 38 The quantity of waste may not change, but a given amount of waste is easier to manage from one site, rather than multiple. The problem of disposing nuclear waste is a serious one, and the lack of a solution despite 30 years of debate is troubling. In January 2010, President Obama setup a Blue Ribbon Commission (BRC) to study the problem and to recommend actions to finally address the nuclear waste problem. The BRC recommended the establishment of a consent-based approach to siting a waste facility, the development of interim storage facilities, the creation of a separate government entity tasked only with addressing nuclear waste, as well as several other recommendations. 39 The recommendations will be difficult to pass through Congress, but until resolved, the nuclear waste problem will bedevil the entire nuclear industry, including SMRs. Low Natural Gas Prices Another problem that is not unique to SMRs, but plagues the nuclear industry as a whole, is the current low prices of natural gas. Due to major advances in hydraulic fracturing and horizontal drilling, the U.S. is awash in natural gas. Prices have plummeted, and the Energy Information Administration (EIA) estimates that prices will rise very slowly over the next two decades. For example, in their 2012 Annual Energy Outlook, the EIA predicts that natural gas prices will not rise back above $6 per million Btu until around 2030. 40 SMRs may need natural gas prices to reach $7 or $8 per million Btu to be competitive. 41 This makes any new nuclear power plant, including an SMR, uneconomical compared to natural gas. Unless natural gas prices rise more quickly than expected, or Congress implements a price on carbon, nuclear power may struggle to compete. Progress in Rolling Out SMRs In recent years, the government has tried to provide incentives to kick-start the moribund nuclear industry. As part of the Energy Policy Act of 2005, loan guarantees and risk insurance were extended to new nuclear power plants. 42 However, although loan guarantees have provided enough support to help four new reactors move forward, these have proven to be the exception. Looking foward, it will be exceedingly difficult to build additional large nuclear power plants. Policymakers have become increasingly interested in making SMRs a reality as an alternative to large plants. In January 2012, the Department of Energy announced a new initiative to support SMR development. DOE plans on spending $452 million over the next five years (subject to congressional appropriations) to help nuclear vendors through the design and licensing process. 43 The program will provide 50% of the cost in the form of a grant while the industry would need to pay for the other half. DOE stated that it is looking for designs that can be licensed and up and running by 2022. Several companies have applied for the funding. More Needs To Be Done Several of the issues discussed above – difficult in licensing, unproven projects, and a “first-mover” problem – present a role for the government. The NRC can work with nuclear vendors through the licensing process to reduce the time required for licenses to be issued. Reducing the time and cost for design licensing will accelerate the development of SMRs. Also, the NRC and other agencies can devise ways to support the first wave of demonstration projects. For example, the Department of Defense, with its large procurement budget, can purchase SMRs for its military installations. Government entities can establish long-term power purchasing agreements (PPAs) to provide a minimum level of demand for SMRs. This will allow the industry to book early orders, prove the concept and bring down costs.

#### That builds NRC expertise

CSPO ’10 (Consortium for Science, Policy and Outcomes at ASU, “four policy principles for energy innovation & climate change: a synthesis”, June, <http://www.catf.us/resources/publications/files/Synthesis.pdf>)

Government purchase of new technologies is a powerful way to accelerate innovation through increased demand (Principle 3a). We explore how this principle can be applied by considering how the DoD could purchase new nuclear reactor designs to meet electric power needs for DoD bases and operations. Small modular nuclear power reactors (SMRs), which generate less than 300 MW of power (as compared to more typical reactors built in the 1000 MW range) are often listed as a potentially transformative energy technology. While typical traditional large-scale nuclear power plants can cost five to eight billion dollars, smaller nuclear reactors could be developed at smaller scale, thus not presenting a “bet the company” financial risk. SMRs could potentially be mass manufactured as standardized modules and then delivered to sites, which could significantly reduce costs per unit of installed capacity as compared to today’s large scale conventional reactor designs. It is likely that some advanced reactors designs – including molten salt reactors and reactors utilizing thorium fuels – could be developed as SMRs. Each of these designs offers some combination of inherently safe operation, very little nuclear proliferation risk, relatively small nuclear waste management needs, very abundant domestic fuel resources, and high power densities – all of which are desirable attributes for significant expansion of nuclear energy. Currently, several corporations have been developing small nuclear reactors. Table 2 lists several of these companies and their reactor power capacities, as well as an indication of the other types of reactor innovations that are being incorporated into the designs. Some of these technologies depend on the well-established light water reactor, while others use higher energy neutrons, coolants capable of higher temperature operation, and other innovative approaches. Some of these companies, such as NuScale, intend to be able to connect as many as 24 different nuclear modules together to form one larger nuclear power plant. In addition to the different power ranges described in Table 2, these reactors vary greatly in size, some being only 3 to 6 feet on each side, while the NuScale reactor is 60 feet long and 14 feet in diameter. Further, many of these reactors produce significant amounts of high-temperature heat, which can be harnessed for process heating, gas turbine generators, and other operations. One major obstacle is to rapid commercialization and development are prolonged multi-year licensing times with the Nuclear Regulatory Commission. Currently, the NRC will not consider a reactor for licensing unless there is a power utility already prepared to purchase the device. Recent Senate legislation introduced by Senator Jeff Bingaman (D-NM) has pushed for DOE support in bringing down reactor costs and in helping to license and certify two reactor designs with the NRC. Some additional opportunities to facilitate the NRC licensing process for innovative small modular reactors would be to fund NRC to conduct participatory research to get ahead of potential license applications (this might require ~$100million/year) and potentially revise the current requirement that licensing fees cover nearly all NRC licensing review costs. One option for accelerating SMR development and commercialization, would be for DOD to establish SMR procurement specifications (to include cost) and agree to purchase a sufficient amount of SMR’s to underwrite private sector SMR development. Of note here may be that DARPA recently (3/30/10) issued a “Request for Information (RFI) on Deployable Reactor Technologies for Generating Power and Logistic Fuels”2 that specifies may features that would be highly desirable in an advanced commercial SMR. While other specifications including coproduction of mobility fuel are different than those of a commercial SMR power reactor, it is likely that a core reactor design meeting the DARPA inquiry specifications would be adaptable to commercial applications. While nuclear reactors purchased and used by DOD are potentially exempt from many NRC licensing requirements3, any reactor design resulting from a DOD procurement contract would need to proceed through NRC licensing before it could be commercially offered. Successful use of procured SMR’s for DOD purposes could provide the knowledge and operational experience needed to aid NRC licensing and it might be possible for the SMR contractor to begin licensing at some point in the SMR development process4. Potential purchase of small modular nuclear reactors would be a powerful but proven way in which government procurement of new energy technologies could encourage innovation. Public procurement of other renewable energy technologies could be similarly important.

#### Fourth is waste-

#### Small modular reactors are built underground- solves waste, cost, and safety

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There is an innovative solution to both the perception and safety problems—a solution that offers many other technical advantages. The concept is to place new nuclear reactors in integrated underground facilities. In addition to bringing substantial increases in safety and security, underground nuclear complexes would also greatly reduce the capital and operating costs and essentially eliminate the concerns of the public with high—level nuclear waste transportation. Co—locating reactors with reprocessing and fuel manufacturing fàcilities—all underground—would reduce proliferation risks associated with transportation of nuclear materials over long distances. Changing the industry’s conception of what a power plant should look like won’t be easy. And the biggest practical hurdle to building underground nuclear parks is the common perception that it would be excessively complicated and prohibitively expensive to construct something as complex as a nuclear power plant deep underground. We have looked into those objections, and have discovered that they are not as formidable as first thought. A nuclear power plant can be thought of as three domains: the reactor area, the electricity generation area, and auxiliary areas. For example, assuming a Genlil light water reactor design, the reactor area includes all the equipment for generating steam, from the heat exchangers or moisture separa tors (depending on whether the water is pressurized or boiled) to the reactor vessels to the containment struc ture. This is an area that is unique to a nuclear power plant. It’s also the domain that is under the most strict requirements for the arrangement of its components. The electricity generation equipment includes high and low pressure turbines, condensers, a moisture separator heater, and the generator. The turbines and generator are typically aligned in a ro’ with other equipment located in the surrounding space. The entire electricity generation equipment could prob ably he placed in a volume approximately 35 tèet high by 35 feet wide by 200 fet long, with the exception of condensers, which take up significant space beneath low—pressure turbines. Auxiliary areas of a nuclear power plant include such facilities as control rooms, emergency power systems. fuel storage, chemical and volume control systems, and waste heat removal systems. In general. the auxiliary facilities can be laid out in the manner that’s most convenient, with the exception of the spent fuel pool, which must be accessible from the reactor room. With nuclear power plants typically being sited on large parcels of land, designers have not had to concern themselves to a great extent with the volume of the var ious components. But to propose placing such facilities deep underground changes the C21CLIIUS. Underground spaces are, by their very nature, limited in volume that can be economically excavated. As excavation volumes increase, the costs of construction and of support for the excavation increases rapidly. It’s important, then, to get a sense for the minimun volume a functional nuclear power plant could occupy. The pressure vessel for a boiling water reactor is typically around 80 feet tall and 24 feet in dianieter; comparable dimensions for a pressurized water reactor are around 40 feet tall and 18 feet in diameter. The interior volumes of sorne containment structures can be more than 3 million cubic fiet. Sonic of this volume is “empty space” that would not need to be incorporated into an underground nuclear plant. There are designs for very small, modular reactors that cut this volume down considerably: the NuS— cale reactor calls for a containment inner volume of just 11,000 cubic feet, about the size of an apartment. ‘ We have estimated that the volume needed for a single full—size (1,000 MWe) nuclear reactor together with all the generating and auxiliary equiprneiit is approximate ly 2 million cubic feet. While that seems large—it’s the volume of a 12-story cube—tunneling technology has advanced to make such spaces relatively routine to construct, especially when innovative excavation methods are employed. Specialized construction companies use large tunnel boring machines that are capable of driving under ground openings up to 47 feet in diameter through granite-like rock at rates of between 50 and lOO feet per day. (Tunnel lengths should be at least 2,000 feet to take full advantage of tunnel boring machines.) Costs for excavation by tunnel boring machines vary widely based on ground type, lining requirements, and project specifications. Boring through good ground that requires minimal support can cost about $2 per cubic foot, while more challenging conditions may cost upwards of $3.50 per cubic foot. Such costs represent excavation and support alone, and do not include costs for tunnel lining, finishing, or contingency. These additional requirements may be expected to multiply the total cost of excavation by about a factor of three. It would be expected that an underground nuclear plant would be constructed in only the most favorable areas, so excavation may he accomplished for around $6 per cubic foot. So it would be expected that excavation for underground nuclear plants would add millions of dollars to the up-front cost of a nuclear power plant. Do the advantages outweigh those costs? Siting nuclear reactors underground is not a new idea. It can be argued that the first nuclear reactor—the sustained chain reaction devised by a team of scientists and engineers led by Enrico Fermi at the University of Chicago—was effectively underground: the bottom of the pile tinder the bleachers at Stagg Field was a few feet below grade. During the 1950s and 1960s special-purpose and small research reactors were built into excavated sites in Russia. Norway, Sweden, France, and Switzerland, and thus proved by demon stration the overall feasibility of underground reactor placement. However, studies in the 1970s that evaluated underground placement of a large power reactor suggested that the increase in safety and security would not compensate for the additional time and money needed to construct the required chambers, tunnels, and other openings. Instead of installing a single nuclear reactor and its attendant equipment underground, we propose something larger that can make the investment in excavation cost-effective. We propose building several reactors on one site, creating what we call an underground nuclear park that’s analogous to a research or office park. Several reactors would be built into the bedrock some 300 to l,000 feet below the surface. These reactors would share heat rejection systems and storage areas for spent fuel as well as long—term repositories for radioactive waste, which could be built on site. The co—location of so much infrastructure would more than compensate for the costs of excavation. Underground nuclear parks have many advantages over conventional nuclear power plant designs. Locating the reactors a few hundred feet underground in bedrock at a suitable site eliminates the need for containment structures, and the site would be largely impervious to physical attack from terrorists. (Indeed, it would be far easier to secure the few access points to an underground nuclear park than it is to protect the large perimeter of an isolated nuclear power plant.) A properly constructed underground facility would also be less subject to weather—related construction delays or the eflicts of hurricanes, tornadoes, flooding, or heat waves. Also, if designers were careful in the site selection. an underground nuclear park could virtually eliminate the transportation of hazardous nuclear waste material. Spent nuclear fuel could be moved via tunnel from the reactors to an array of storage tunnels; high—level vaste could he permanently stored in another set of tunnels. What’s more, when the reactors reach the end of their productive life, they can be decommissioned in place— essentially buried in their chamber along with the low—level waste produced by those reactors during their decades of operation. That solution would be safer and more cost—effective than conventional decontamination and decommissioning ola surface-sited reactor. There are many differentt ways an underground nuclear park could be built. Perhaps tue most efficient method from an excavation and support standpoint would be to make a single pass with a tunnel horing machine, creating a circular passageway 50 feet wide and a few thousand feet long. Into this tunnel, several reactors and gen erator sets could be constructed, each one occupying one segment along one side of the rectangle. We expect that almost all the components of a nuclear power plant can travel through a tunnel of this diameter. To create more headroom for the reactors themselves, the bottom of the excavation could be lowered by drill and blast methods. Because drill and blast methods are more expensive and time—consuming per unit of rock volume than are tunnel boring machine methods, excavation beyond the initial tunnel should be kept to a minimum. A second smaller diameter tunnel is bored parallel to the nuclear chambers and connected to it with adits to provide independent access to the nuclear facilities. After excavation and the removal of the tunnel bor ing machines, the tunnel opening is further excavated by drill and blast methods to the required dimensions. Each straight-line section would then be subdivided into a minimum of three nuclear reactor chambers that would contain all the elements needed to generate electric power except for waste heat rejection. Removal otcondenser waste heat would be accomplished at the surface by cooling towers or a surface water body SUCh as a lake or river displaced laterally from the under ground facility. At least 10 nuclear generating units could be built within the initial rectangular area. Tunnel segments could be used along with subsequently excavated spaces to install fuel reprocessing and manufacturing ficiIities, and for storage and disposal of low-level and high—level radioactive wastes. Using the expected cost for tunnels excavated by a tunnel boring machine, the main 1.6—mile tunnel for an underground nuclear park would cost approximately $100 million. The excavation of shafts and construction of systems for facility access and ventilation would add roughly an additional $l00 million to the total excavation Cost. Excavation of additional access tunnels and openings for auxiliary areas and power plant components that could not fit within the main tunnel would also cost roughly $100 million. The total cost—$300 million—must be compared to the costs of constructing a dozen conventional nuclear plants on the surface. Nuclear power plant construction is estimated to cost $4,000 per kilowatt of electric capacity, so an underground nuclear park with 12 plants, each with a capacity of about 1,000 MWe, would cost about $48 billion in power plants alone. The excavation of an underground facility would account for less than 1 percent of the total construction cost of the nuclear facilities. The cost of siting a large nuclear complex underground is negligible compared to the overall cost of the facility. Couple that to the significant political, safety, and security advantages, and the case for underground nuclear parks is strong. To be sure, there are sorne issues left to be resolved—such as designing ventilation systems, allowing for access and egress under emergency conditions, and resolving electricity transmission issues for such a large generating facility—but it seems certain that those matters can be settled satisfactorily. Perhaps the best opportunity for demonstrating the advantages of this concept will come with the introduction of the so-called Generation IV reactors. These designs. which are being researched by an international collaboration of nuclear engineers, mark a break with the types of reactors that have dominated nuclear power’s first 50 years. The fresh approach for reactor design easily could be coupled with a new concept in power plant infrastructure, Such as the underground nuclear park.

Hydrogen advantage

#### SMR development allows hydrogen fuel cell transition—spills over to military transportation

Alt Energy Today ‘12 (“Alternative Energy The Ways that the Military is Using,” <http://www.alternative-energy-today.com/the-ways-that-the-military-is-using-alternative-energy/>, October 25, 2012)

One thing that the military leaders stress is the desire for the forces deployed in the theater to be able to be more alternative energy-independent. Currently the US military has policies and procedures in place to interact with allies or sympathetic local populaces to help its forces in the field get their needed energy and clean water when engaged in a foreign military campaign. However, this is not wholly reliable, as the US might well find itself facing unilateral military activities, or have itself in a situation where its allies cannot help it with the resources it needs to conduct its military actions successfully. The US military is very interested in certain alternative energy that, with the right research and development technologically, can make it energy independent, or at least a great deal more so, on the battlefield. One of the things that greatly interests the military along these lines is the development of small nuclear reactors, which could be portable, for producing theater-local electricity. The military is impressed with how clean-burning nuclear reactors are and how energy efficient they are. Making them portable for the typical warfare of today’s highly mobile, small-scaled military operations is something they are researching. The most prominent thing that the US military thinks these small nuclear reactors would be useful for involves the removal of hydrogen (for fuel cell) from seawater. It also thinks that converting seawater to hydrogen fuel in this way would have less negative impact on the environment than its current practices of remaining supplied out in the field. Seawater is, in fact, the military’s highest interest when it comes to the matter of alternative energy supply. Seawater can be endlessly “mined” for hydrogen, which in turn powers advanced fuel cells. Using OTEC, seawater can also be endlessly converted into desalinated, potable water. Potable water and hydrogen for power are two of the things that a near-future deployed military force will need most of all. In the cores of nuclear reactors—which as stated above are devices highly interesting, in portable form, to the US military—we encounter temperatures greater than 1000 degrees Celsius. When this level of temperature is mixed with a thermo-chemical water-splitting procedure, we have on our hands the most efficient means of breaking down water into its component parts, which are molecular hydrogen and oxygen. The minerals and salts that are contained in seawater would have to be extracted via a desalination process in order to make the way clear for the water-splitting process. These could then be utilized, such as in vitamins or in salt shakers, or simply sent back to the ocean (recycling). Using the power of nuclear reactors to extract this hydrogen from the sea, in order to then input that into fuel cells to power advanced airplanes, tanks, ground vehicles, and the like, is clearly high on the R & D priority list of the military.

#### Hydrogen fuel infrastructure is vital to effective power projection

Pfeffer ‘1 (Physical Scientist- Army Nuclear and Chemical Agency, MS-Physics at Johns Hopkins, “Nuclear Power: An option for the Army’s Future,” <http://www.almc.army.mil/alog/issues/SepOct01/MS684.htm>)

So, as we consider future Army energy sources, we foresee a more mobile Army that must deploy rapidly and sustain itself indefinitely anywhere in the world as part of a coalition force. In addition, this future Army will have to depend on other nations to provide at least some critical logistics support. An example of such a cooperative effort was Operation Desert Storm, where coalition forces (including the United States) relied on some countries to supply potable water and other countries to provide fuel. This arrangement allowed U.S. cargo ships to concentrate on delivering weapon systems and ammunition. But consider the following scenario. The U.S. military is called on to suppress armed conflict in a far-off region. The coalition forces consist of the United States and several Third World countries in the region that have a vested interest in the outcome of the conflict. Our other allies are either unwilling or unable to support the regional action, either financially or militarily. The military effort will be a challenge to support over time, especially with such basic supplies as fuel and water. How can the United States sustain its forces? One way to minimize the logistics challenge is for the Army to produce fuel and potable water in, or close to, the theater. Small nuclear power plants could convert seawater into hydrogen fuel and potable water where needed, with less impact on the environment than caused by the current production, transportation, and use of carbon-based fuels. Seawater: The Ultimate Energy Source Industrial nations are seeing severe energy crises occur more frequently worldwide, and, as world population increases and continues to demand a higher standard of living, carbon-based fuels will be depleted even more rapidly. Alternative energy sources must be developed. Ideally, these sources should be readily available worldwide with minimum processing and be nonpolluting. Current options include wind, solar, hydroelectric, and nuclear energy, but by themselves they cannot satisfy the energy demands of both large, industrial facilities and small, mobile equipment. While each alternative energy source is useful, none provides the complete range of options currently offered by oil. It is here that thinking "outside the box" is needed. As difficult as the problem seems, there is one energy source that is essentially infinite, is readily available worldwide, and produces no carbon byproducts. The source of that energy is seawater, and the method by which seawater is converted to a more direct fuel for use by commercial and military equipment is simple. The same conversion process generates potable water. Seawater Conversion Process Temperatures greater than 1,000 degrees Celsius, as found in the cores of nuclear reactors, combined with a thermochemical water-splitting process, is probably the most efficient means of breaking down water into its component parts: molecular hydrogen and oxygen. The minerals and salts in seawater would have to be removed by a desalination process before the water-splitting process and then burned or returned to the sea. Sodium iodide (NaI) and other compounds are being investigated as possible catalysts for high-temperature chemical reactions with water to release the hydrogen, which then can be contained and used as fuel. When burned, hydrogen combines with oxygen and produces only water and energy; no atmospheric pollutants are created using this cycle. Burning coal or oil to generate electricity for production of hydrogen by electrolysis would be wasteful and counterproductive. Nuclear power plants, on the other hand, can provide safe, efficient, and clean power for converting large quantities of seawater into usable hydrogen fuel. For the military, a small nuclear power plant could fit on a barge and be deployed to a remote theater, where it could produce both hydrogen fuel and potable water for use by U.S. and coalition forces in time of conflict. In peacetime, these same portable plants could be deployed for humanitarian or disaster relief operations to generate electricity and to produce hydrogen fuel and potable water as necessary. Such dual usage (hydrogen fuel for equipment and potable water for human consumption) could help peacekeepers maintain a fragile peace. These dual roles make nuclear-generated products equally attractive to both industry and the military, and that could foster joint programs to develop modern nuclear power sources for use in the 21st century. So What's Next? The Army must plan for the time when carbon-based fuels are no longer the fuel of choice for military vehicles. In just a few years, oil and natural gas prices have increased by 30 to 50 percent, and, for the first time in years, the United States last year authorized the release of some of its oil reserves for commercial use. As the supply of oil decreases, its value as a resource for the plastics industry also will increase. The decreasing supply and increasing cost of carbon-based fuels eventually will make the hydrogen fuel and nuclear power combination a more attractive alternative. One proposed initiative would be for the Army to enter into a joint program with private industry to develop new engines that would use hydrogen fuel. In fact, private industry already is developing prototype automobiles with fuel cells that run on liquefied or compressed hydrogen or methane fuel. BMW has unveiled their hydrogen-powered 750hL sedan at the world's first robotically operated public hydrogen fueling station, located at the Munich, Germany, airport. This prototype vehicle does not have fuel cells; instead, it has a bivalent 5.4-liter, 12-cylinder engine and a 140-liter hydrogen tank and is capable of speeds up to 140 miles per hour and a range of up to 217.5 miles. Another proposed initiative would exploit previous Army experience in developing and using small, portable nuclear power plants for the future production of hydrogen and creation of a hydrogen fuel infrastructure. Based on recent advances in small nuclear power plant technology, it would be prudent to consider developing a prototype plant for possible military applications. The MH-1A Sturgis floating nuclear power plant, a 45-MW pressurized water reactor, was the last nuclear power plant built and operated by the Army. The Army Nuclear Power Program The military considered the possibility of using nuclear power plants to generate alternate fuels almost 50 years ago and actively supported nuclear energy as a means of reducing logistics requirements for coal, oil, and gasoline. However, political, technical, and military considerations forced the closure of the program before a prototype could be built. The Army Corps of Engineers ran a Nuclear Power Program from 1952 until 1979, primarily to supply electric power in remote areas. Stationary nuclear reactors built at Fort Belvoir, Virginia, and Fort Greeley, Alaska, were operated successfully from the late 1950s to the early 1970s. Portable nuclear reactors also were operated at Sundance, Wyoming; Camp Century, Greenland; and McMurdo Sound in Antarctica. These small nuclear power plants provided electricity for remote military facilities and could be operated efficiently for long periods without refueling. The Army also considered using nuclear power plants overseas to provide uninterrupted power and defense support in the event that U.S. installations were cut off from their normal logistics supply lines. In November 1963, an Army study submitted to the Department of Defense (DOD) proposed employing a military compact reactor (MCR) as the power source for a nuclear-powered energy depot, which was being considered as a means of producing synthetic fuels in a combat zone for use in military vehicles. MCR studies, which had begun in 1955, grew out of the Transportation Corps' interest in using nuclear energy to power heavy, overland cargo haulers in remote areas. These studies investigated various reactor and vehicle concepts, including a small liquid-metal-cooled reactor, but ultimately the concept proved impractical. The energy depot, however, was an attempt to solve the logistics problem of supplying fuel to military vehicles on the battlefield. While nuclear power could not supply energy directly to individual vehicles, the MCR could provide power to manufacture, under field conditions, a synthetic fuel as a substitute for conventional carbon-based fuels. The nuclear power plant would be combined with a fuel production system to turn readily available elements such as hydrogen or nitrogen into fuel, which then could be used as a substitute for gasoline or diesel fuel in cars, trucks, and other vehicles. Of the fuels that could be produced from air and water, hydrogen and ammonia offer the best possibilities as substitutes for petroleum. By electrolysis or high- temperature heat, water can be broken down into hydrogen and oxygen and the hydrogen then used in engines or fuel cells. Alternatively, nitrogen can be produced through the liquefaction and fractional distillation of air and then combined with hydrogen to form ammonia as a fuel for internal-combustion engines. Consideration also was given to using nuclear reactors to generate electricity to charge batteries for electric-powered vehicles—a development contingent on the development of suitable battery technology. By 1966, the practicality of the energy depot remained in doubt because of questions about the cost-effectiveness of its current and projected technology. The Corps of Engineers concluded that, although feasible, the energy depot would require equipment that probably would not be available during the next decade. As a result, further development of the MCR and the energy depot was suspended until they became economically attractive and technologically possible. Other efforts to develop a nuclear power plant small enough for full mobility had been ongoing since 1956, including a gas-cooled reactor combined with a closed- cycle gas-turbine generator that would be transportable on semitrailers, railroad flatcars, or barges. The Atomic Energy Commission (AEC) supported these developments because they would contribute to the technology of both military and small commercial power plants. The AEC ultimately concluded that the probability of achieving the objectives of the Army Nuclear Power Program in a timely manner and at a reasonable cost was not high enough to justify continued funding of its portion of projects to develop small, stationary, and mobile reactors. Cutbacks in military funding for long-range research and development because of the Vietnam War led the AEC to phase out its support of the program in 1966. The costs of developing and producing compact nuclear power plants were simply so high that they could be justified only if the reactor had a unique capability and filled a clearly defined objective backed by DOD. After that, the Army's participation in nuclear power plant research and development efforts steadily declined and eventually stopped altogether. Nuclear Technology Today The idea of using nuclear power to produce synthetic fuels, originally proposed in 1963, remains feasible today and is gaining significant attention because of recent advances in fuel cell technology, hydrogen liquefaction, and storage. At the same time, nuclear power has become a significant part of the energy supply in more than 20 countries—providing energy security, reducing air pollution, and cutting greenhouse gas emissions. The performance of the world's nuclear power plants has improved steadily and is at an all-time high. Assuming that nuclear power experiences further technological development and increased public acceptance as a safe and efficient energy source, its use will continue to grow. Nuclear power possibly could provide district heating, industrial process heating, desalination of seawater, and marine transportation. Demand for cost-effective chemical fuels such as hydrogen and methanol is expected to grow rapidly. Fuel cell technology, which produces electricity from low-temperature oxidation of hydrogen and yields water as a byproduct, is receiving increasing attention. Cheap and abundant hydrogen eventually will replace carbon-based fuels in the transportation sector and eliminate oil's grip on our society. But hydrogen must be produced, since terrestrial supplies are extremely limited. Using nuclear power to produce hydrogen offers the potential for a limitless chemical fuel supply with near-zero greenhouse gas emissions. As the commercial transportation sector increasingly moves toward hydrogen fuel cells and other advanced engine concepts to replace the gasoline internal combustion engine, DOD eventually will adopt this technology for its tactical vehicles. The demand for desalination of seawater also is likely to grow as inadequate freshwater supplies become an urgent global concern. Potable water in the 21st century will be what oil was in the 20th century—a limited natural resource subject to intense international competition. In many areas of the world, rain is not always dependable and ground water supplies are limited, exhausted, or contaminated. Such areas are likely to experience conflict among water-needy peoples, possibly prompting the deployment of U.S. ground forces for humanitarian relief, peacekeeping, or armed intervention. A mobile desalination plant using waste heat from a nuclear reactor could help prevent conflicts or provide emergency supplies of freshwater to indigenous populations, and to U.S. deployed forces if necessary. Promising Technology for Tomorrow Compact reactor concepts based on high-temperature, gas-cooled reactors are attracting attention worldwide and could someday fulfill the role once envisioned for the energy depot. One proposed design is the pebble bed modular reactor (PBMR) being developed by Eskom in South Africa. Westinghouse, BNFL Instruments Ltd., and Exelon Corporation currently are supporting this project to develop commercial applications. A similar design is the remote site-modular helium reactor (RS-MHR) being developed by General Atomics. If proven feasible, this technology could be used to replace retiring power plants, expand the Navy's nuclear fleet, and provide mobile electric power for military or disaster relief operations. Ideally, modular nuclear power plants could be operated by a small staff of technicians and monitored by a central home office through a satellite uplink. The technology of both the PBMR and the RS-MHR features small, modular, helium-cooled reactors powered by ceramic-coated fuel particles that are inherently safe and cannot melt under any scenario. This results in simpler plant design and lower capital costs than existing light water reactors. The PBMR, coupled with a direct-cycle gas turbine generator, would have a thermal efficiency of about 42 to 45 percent and would produce about 110 megawatts of electricity (MWe). The smaller RS-MHR would produce about 10 to 25 MWe, which is sufficient for powering remote communities and military bases. Multiple modules can be installed on existing sites and refueling can be performed on line, since the fuel pebbles recycle through the reactor continuously until they are expended. Both designs also feature coolant exit temperatures high enough to support the thermochemical water-splitting cycles needed to produce hydrogen. For military applications, RS-MHR equipment could be transported inland by truck or railroad, or single modules could be built on barges and deployed as needed to coastal regions. The Army's nuclear reactor on the barge Sturgis, which provided electric power to the Panama Canal from 1968 to 1976, demonstrated the feasibility of this concept. In fact, the military previously used several power barges (oil-fired, 30-MWe power plants) during World War II and in Korea and Okinawa as emergency sources of electric power. Research teams around the world also are examining other reactor concepts based on liquid-metal-cooled reactor systems with conventional sodium or lead-alloy coolants and advanced water-cooled systems. The Department of Energy (DOE) is supporting research and development of innovative concepts that are based on ultra-long-life reactors with cartridge cores. These reactors would not require refueling, and they could be deployed in the field, removed at the end of their service life, and replaced by a new system. The proposed international reactor innovative and secure (IRIS) design, funded by DOE's Nuclear Energy Research Initiative, would have a straight burn core lasting 8 years and may be available by 2010. Based on increasing costs of fossil fuels, a growing consensus that greenhouse gas emissions must be reduced, and a growing demand for energy, there is little doubt that we will continue to see significant advances in nuclear energy research and development. Nuclear power is expected to grow in the 21st century, with potential benefits applicable to the military. Small, modular nuclear power reactors in mobile or portable configurations, coupled with hydrogen production and desalination systems, could be used to produce fuel and potable water for combat forces deployed in remote areas and reduce our logistics requirements. Assuming the inevitability of hydrogen fuel replacing fossil fuels, a clearly defined objective that was missing in 1966 now exists. The partnership between DOD and the former AEC to develop Army nuclear reactors contributed to the technology of both military and small commercial power plants. This historical relationship should be renewed based on recent technological advances and projected logistics requirements. DOD logistics planners should reconsider military applications of nuclear power and support ongoing DOE research and development initiatives to develop advanced reactors such as RS-MHR, IRIS, and others. For the Army to fight and win on tomorrow's distant battlefields, nuclear power will have to play a significant role.

#### DOD SMR’s are key- alternatives fail

**Butler ‘10** (LtCol Butler is currently assigned to Headquarters, North American Air Defense Command-U.S. Northern Command/J594 (Strategy, Policy, and Plans Directorate), Security Cooperation Integration Branch, “Not Green Enough Why the Marine Corps should lead the environmental and energy way forward and how to do it” <http://www.mca-marines.org/gazette/not-green-enough>)

Consider Nuclear Power On 16 March 1979, The China Syndrome opened in theaters across the country, depicting a fictitious story about a reporter witnessing an accident at the Ventanna nuclear plant outside Los Angeles and the subsequent evil plot to suppress the truth. Twelve days later the Three Mile Island partial core meltdown in Pennsylvania helped propel The China Syndrome to theatrical success and permanently scarred the American psyche. The nail in the nuclear energy coffin was the nuclear disaster 7 years later at Chernobyl, in the Ukrainian Soviet Socialist Republic.17 But despite these stains on the nuclear power industry, the time has never been better for the Marine Corps (and Navy) to dive in than now. Here’s why. First, the political climate, though still tenuous, is shifting to favorable, with the change coming from the top down. During his 27 January 2010 State of the Union address, President Barack Obama echoed themes from his campaign trail by clearly voicing his intention to include nuclear power in American’s playbook of energy security options.18 Similarly, as the Department of Energy’s (DoE’s) Secretary of Energy, Steven Chu has articulated similar sentiments, declaring that “President Obama and I are committed to restarting the nuclear industry in the United States.”19 Many other political leaders and policymakers indeed support a true “nuclear renaissance,”20 and the growing momentum stands a chance to bury the ghosts of Chernobyl once and for all. Second, with our well-replicated but limited pursuit of the standard renewable energies,21 we’re putting all energy eggs in one basket, a vessel unlikely to hold a sufficient load for success. Currently pursued renewable energy sources do have limitations.22 More importantly, with military installations relying almost exclusively on external sources for energy, and those sources largely unpredictable, unsecured, and reliant on foreign-based oil,23 if energy security is truly a national security issue, then nuclear power should be considered. Solar demonstrations at Miramar and Barstow are not enough. Third, nuclear technology today has advanced well beyond the days of Three Mile Island. Specifically, small modular reactors (SMRs) offer great potential to safely and effectively provide energy island/net zero capabilities to Marine Corps and Navy installations across the country.24 SMRs have relatively low plant cost, can replace aging fossil plants, and do not emit greenhouse gasses. Some are as small as a “hot tub” and can be stored underground, dramatically increasing safety and security from terrorist threats.25 Encouragingly, in fiscal year 2010 (FY10) the DoE allocated $0 to the U.S. SMR Program; in FY11, they’ve requested $38.9 million. This funding is to support two main activities—public/private partnerships to advance SMR designs and research and development and demonstrations. According to the DoE’s website, one of the planned program accomplishments for FY11 is to “collaborate with the Department of Defense (DoD) . . . to assess the feasibility of SMR designs for energy resources at DoD installations.”26 The Marine Corps should vigorously seek the opportunity to be a DoD entity providing one platform for this feasibility assessment.27 Fourth, SMR technology offers the Marine Corps another unique means to lead from the front—not just of the other Services but also of the Nation, and even the world.28 This potential Pete Ellis moment should be seized. There are simple steps we could take,29 and others stand ready to lead if we are not.30 But the temptation to “wait and see” and “let the others do it; then we’ll adopt it” mentality is not always best. Energy security demands boldness, not timidity. To be fair, nuclear technology comes with challenges, of course, and with questions that have been kicked around for decades. An April 1990 Popular Science article asked, “Next Generation Nuclear Reactors—Dare we build them?” and included some of the same verbiage heard in similar discussions today.31 Compliance with National Environment Policy Act requirements necessitates lengthy and detailed preaction analyses, critical community support must be earned, and disposal challenges remain. Still, none of these hurdles are insurmountable.32 Yet despite the advances in safety, security, and efficiency in recent years, nuclear in the energy equation remains the new “n-word” for most military circles. And despite the fact that the FY10 National Defense Authorization Act called on the DoD to “conduct a study [of] the feasibility of nuclear plants on military installations,” the Office of the Secretary of Defense has yet to fund the study.33 Fifth, the cumbersome, bureaucratic certification process of the Nuclear Regulatory Commission (NRC), often enough to scare away potential entrepreneurs and investors, is not necessarily a roadblock to success. The NRC is “responsible for licensing and regulating the operation of commercial nuclear power plants in the United States.” Military installations offer unique platforms that could likely bypass an extended certification process. With established expertise and a long safety record in nuclear reactor certification, operations, training, and maintenance, the Naval Nuclear Propulsion Program comprises the civilian and military personnel who: . . . design, build, operate, maintain, and manage the nuclear-powered ships and the many facilities that support the U.S. nuclear-powered naval fleet.”34 Bypassing the NRC and initiating SMR experimentation under ADM Hyman Rickover’s legacy umbrella of naval reactors could shorten the process to a reasonable level for Marine and naval installations.35 Finally, Marine Corps-SMR technology opens the pathway for related endeavors and synergetic undertakings. The Army has several smart and influential individuals poised to partner in nuclear energy endeavors, and our naval brethren enjoy a long history of nuclear reactor expertise. Partnerships and enhanced use leases to support SMR deployments should be leveraged.36 As the collective military expertise in SMR technology grows, additional capabilities, such as expeditionary and vehicular power sources, could be explored. And related technologies, such as hybrid/electric vehicle power storage and recharging facilities and water desalination plants, could collocate with nuclear plants on installations to both use the energy.37

#### Navy developing new underwater capabilities now

Szoldra 1/17 (Paul Szoldra, Business Insider, 1/17/13, The Pentagon Wants To Scatter Weapons Under The World's Oceans To Activate On Demand, www.businessinsider.com/navy-darpa-develop-underwater-weapon-upward-falling-payloads-ufp-2013-1)

The U.S. Navy is attempting to develop a stealth underwater system capable of providing worldwide "operational support and situational awareness," according to a Jan. 11 release from the Defense Advanced Research Projects Agency (DARPA). The announcement, called "Falling Up", cites cost and complexity that limits the Navy from operating over vast areas. That makes a lot of sense, considering the cost of ships, which are expensive and limited in scope -keep going up. And as the technology of unmanned systems has been realized in Iraq & Afghanistan with the use of drones, the Navy wants to get in on the action. The concept of DARPA's Upward Falling Payloads (UFP) would be "deployable, unmanned, distributed systems that lie on the deep-ocean floor in special containers for years at a time." They can then be woken up remotely and recalled to the surface to send back data.

#### Hydrogen fuel cell critical to naval effectiveness

Cai et al ‘7 (Cai, Browning, Brett, Brandona, Department of Earth Science and Engineering, Imperial College London, 2007, Hybrid Fuel Cell / Battery Power Systems for Underwater Vehicles, http://www.seasdtc.com/events/2008\_conference/downloads/pdf/propulsion\_power\_generation\_and\_energy\_management/PPEM003\_paper.pdf)

A system-level design and analysis of the power system for a lightweight unmanned underwater vehicle (UUV) is presented with recommendations of viable technologies that can meet the UUV mission requirements. A hybrid fuel cell / battery system is designed to power the UUV as it has advantages over a pure fuel cell or battery system. The power system is designed to use a lithium-ion battery hybridised with a polymer electrolyte fuel cell. The analysis is focused on the mass, size, and the energy balance of the system components. It is shown that hydrogen and oxygen storage systems dominate the mass and volume of the energy system compared to the fuel cell and battery. Liquid oxygen is recommended for oxidant storage based on the mission length requirement. Unmanned underwater vehicles (UUVs) are ideally suited to provide surveillance, remote sensing and communication relay capabilities for both military and civilian applications. Practical examples include oceanographic data gathering, environmental monitoring, mine detecting and coastal defence. The power system of a UUV has long been a major consideration in designing and manufacturing these vehicles for particular missions. This is because the power system usually determines the ultimate performance (e.g. **endurance, cruising speed and distance**) of a UUV. The work reported here aims to investigate viable power system architectures that meet the requirement of UUVs. Stealth is the highest design priority of a UUV as it enables the UUV to operate anywhere, at any time, without being detected. Besides helping to avoid detection, stealth enhances a submarine’s ability (by eliminating / reducing selfnoise) to detect targets. To meet the stealth requirement, an air independent power (AIP) system is beneficial to UUVs. The ideal AIP source for a submarine will be quiet, have a low thermal signature, will not need to discharge anything from the submarine system, and will of course be capable of operating without atmospheric air. In its simplest form, the AIP power source is a battery. However, batteries alone encounter technology difficulties for use as the power source of UUVs, as current battery technologies cannot provide sufficient endurance to allow for large area coverage and short turnaround time between missions. Hybrid fuel cell / battery systems have a number of advantages over either stand-alone fuel cells or batteries. For example, the battery would enable instant cold-start operation whilst the fuel cell was initiating. The battery, as the dynamic energy storage device, would supply peak and pulse power and power for start-up of the hybrid system. The fuel cell, as the device that converts the energy from the fuel, supplies base-load power and recharges the battery. A hybrid system would allow both components to be of smaller dimensions and operate with higher efficiency, since neither would have to provide the full load power.

#### UUVs are critical to maintaining naval power—ISR and communications key to unlock all other capabilities

Vandenberg ’10 (Troy Vandenberg, Naval Postgraduate School, 2010, Manning and maintainability of a submarine Unmanned Undersea Vehicle (UUV) program a systems engineering case study, https://calhoun.nps.edu/public/bitstream/handle/10945/5226/10Sep\_Vandenberg.pdf?sequence=1

Future naval battles will rely heavily on advantages gained through the combination of strategies, tactics, procedures, and technologies called network-centric warfare and implemented through the strategy of ForceNet. These ideas rely heavily on Joint Force assets working together with common communication nodes. Large-scale undersea networks, like those adhering to ForceNet, will be used heavily in the future of USW, with UUVs acting as crucial communication nodes to and from submarine and surface assets. The following subsections will outline three different submarine missions and the future involvement UUVs will have with those missions. Each of the three missions (ISR, Communications, and ASW) can be evaluated as part of the overall ForceNet image. Many missions may require the submarine to have the ability to launch and recover a UUV, but this is not a necessary factor in analyzing the possible mission sets. Currently, launch and recovery efforts have been possible via torpedo tubes and vertical launch tubes, but none of the missions discussed in this thesis require this to happen. Moving forward in the militarization of UUVs, it is important to remove the “platformcentric” thinking of programs and analyze how systems can interact with other systems. 1. Intelligence, Surveillance, and Reconnaissance One of the many examples of applying ForceNet to ISR for the submarine force is through a program titled Persistent Littoral Undersea Surveillance Network (PLUSNet), a multi-institution effort combining key government assets via ONR and Space and Naval Warfare Systems Command (SPAWAR). PLUSNet is an unmanned systems approach to undersea surveillance that involves the use of mature technologies. The system involved an autonomously processed cable-free nested communication network with fixed and mobile sensor nodes (Martin, 2005). In any ISR example, including PLUSNet, there are four fundamental tasks necessary to complete the mission: collect, communicate, process, and act. These tasks are performed in various different ways by a number of unique systems (both manned and unmanned). In the case of UUVs, however, one vessel has the ability—given the appropriate payloads—to perform all four tasks on board. One UUV can include sensors that collect the data, a platform that communicates and processes the data, and an implementer on board that takes action via movement, external communication, or weapon deployment (Fletcher, 2001). This concept is currently the main focus of UUV platform development for the Navy, namely a single, multi-payload UUV that can handle long (greater than 30 days) ISR missions. Figure 10. Operational concept of PLUSNet (From: Martin, 2005) However, one UUV does not have to have all three systems (sensor, platform, and implementer) on board to perform the tasks, as is the case of collaboratively networked UUV groups. Instead of having one large scale UUV with multiple payloads performing multiple missions, the groups of small UUVs would include single payloads performing individual missions. These UUVs would then communicate data amongst themselves and/or a larger node (either a separate UUV or manned vessel) to gain a common operational picture of the battlespace. Currently, DARPA has given some funding to develop grouped UUV programs, but this is not the main focus of the submarine force. In both cases, unmanned systems add a strategic advantage to the war-fighter and will allow friendly forces to gather ISR information from locations otherwise currently inaccessible or of high risk to manned systems. Possible ISR missions using these strategies include (Department of the Navy, 2004): Deployment of leave-behind surveillance sensors or sensor arrays Specialized mapping and object detection and localization could deploy one or more UUVs a safe distance from the shoreline and sit out of harm’s way while they patrol harbors, collecting ISR data and eventually returning to the host platform to refuel, upload data, and receive necessary operator level maintenance. This mission will free up valuable time for the submarine and the Special Operating Forces (SOF) on board to perform other valuable missions. Ultimately, due to the simplistic nature and emerging technologies, the submarine ISR mission-set will see the first full scale use of UUVs. 2. Communications Communication is an important aspect for all military operations. UGVs and UAVs have distinct advantages of being able to easily communicate large amounts of data over long distances in air. Underwater communications, however, are not quite as simple and pose many problems in the area of USW. One solution to the problem of undersea communication is a concept called “Seaweb.” Seaweb uses battery-limited sensor technology to set up a wide-area network with expendable network nodes. In an article entitled “Enabling Undersea ForceNET with Seaweb Acoustic Networks” in the Biennial Review 2003, author Joseph Rice of SPAWAR San Diego concluded that: Undersea, off-board, autonomous systems will enhance the war-fighting effectiveness of submarines, maritime patrol aircraft, amphibious forces, battle groups, and space satellites. Wide-area sensor grids, leave behind multi-static sonar sources, mine-hunting robots, and AUVs are just a few of the battery-powered, deployable devices that will augment space and naval platforms. (Rice, 2003)

#### The US Navy is key to heg and the global economy

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Abstract: America is a maritime power, and a strong U.S. Navy is both in America’s long-term interest and essential to the nation’s prosperity. Yet U.S. sea power is in decline. If not reversed, this decline could pass the tipping point, leaving the country economically and strategically unable to reverse course, which would have profound economic and geopolitical consequences. Members of Congress and the Navy need to work together to develop long-range technology road maps, foster innovation, and properly fund and manage shipbuilding to ensure that the future Navy has the size and capabilities needed to protect and advance U.S. interests around the world. Not since the end of World War II has America more urgently needed honest and clear thinking about its enduring national interests and a bipartisan commitment to build up the civilian and military capabilities necessary to protect them. Yet Washington is increasingly looking inward. Policymakers spend enormous energy arguing about tactics without thinking about strategy. They react to today’s events rather than planning for the future. Without a common purpose and driven by the desire to save money, they take steps that will reduce military spending in the short term but vastly increase the danger and cost to America in the long term. The margins of U.S. military superiority are narrowing for every military service and in every domain. After the Cold War, military overmatch had seemingly become an American birthright and helped to uphold the implicit contract that most Americans have had with the all-volunteer military: that U.S. forces would never be put in a “fair fight.” This is simply no longer the case, as indicated by America’s recent experience in Iraq and Afghanistan and potential challenges from Iran and China. Before some of America’s core defense capabilities disappear without discussion or debate, Congress and the services would be wise to step back and examine the costs and benefits of these long-held capabilities, many of which are fundamental to U.S. military primacy. Understanding a world without these U.S. advantages will highlight their essential role both in creating and maintaining the economic and geopolitical position that America enjoys today and in fostering U.S. prosperity in the future. Congress should use this thought exercise to inform its oversight of the services and to restore the legislative branch’s legitimate role in policymaking. Providing Security That Protects and Bolsters the U.S. Economy Modern American sea power—represented for the purposes of this paper by the U.S. Navy and its expeditionary land force, the U.S. Marine Corps—is the most flexible, adaptable, useful, and powerful naval force the world has ever known. The ascendance of American sea power since the fall of the Soviet Union has been so benign and complete that many nations have forgone traditional investments in their own naval forces,[1] confident in the peace and stability provided by the United States or convinced of the futility of trying to challenge so powerful a force head-on: [T]he strong tendency toward counterhegemonic balancing in the European system during the last five centuries has not been replicated in the global maritime system. High concentrations of naval power (and in the economic correlates of naval power) tend to generate alliances with the leading power rather than against it. The decision of many of the strongest powers in the contemporary system to ally with the United States rather than against it in the Cold War and post–Cold War periods is fully consistent with behavior in the global system for the last five centuries.[2] The overwhelming majority of world commerce moves virtually unmolested across the great expanse of the maritime commons. This is as near a “given” on the international scene as can be conjured. So engrained is this sense of security in the free flow of goods across the world’s oceans that the activities of a relatively insignificant group of brigands off the East African coast have caught the world’s attention, forcing many to consider for the first time the impact of sea power on their lives. American sea power is taken for granted. Policymakers in the United States, friendly and allied governments, executive officers of international conglomerates, and would-be competitors are all affected by the daily operations of the world’s most pervasive and successful naval power, but few ever consider what the world would be like without it. Exploring this question is the central aim of this paper. The U.S. Air Force recently considered the operational implications of a “Day Without Space.” The exercise vividly demonstrated the U.S. military’s dependence on the communications and surveillance infrastructure provided by the nation’s satellites. Out of operational necessity, forces turned to backup networks, some of which current operators had long since forgotten how to operate nimbly. This eye-opening exercise has caused military planners to think more profoundly about air operations in a space-denied environment. However, as difficult as such operations may have been, backups were available. These backups may have become technologically outmoded and may be less secure from enemy intrusion, and their operators may need to call upon skills long since atrophied, but in the end, the backups existed. Implications of the Loss of Preponderant Sea Power How the United States might replace its preponderant sea power—if that day ever comes—seems less straightforward. Indeed, the question seems almost ludicrous. The United States is a maritime nation, bordered by two oceans and for much of its history protected by them. Over the past 60 years, the oceans have been highways for worldwide trade that has helped to lift more than a billion people out of poverty,[3] and those sea lanes have been patrolled by the U.S. Navy, the world’s preeminent naval power. The U.S. Navy’s global presence has added immeasurably to U.S. economic vitality and to the economies of America’s friends and allies, not to mention those of its enemies. World wars, which destroyed Europe and much of East Asia, have become almost incomprehensible thanks to the “nuclear taboo” and preponderant American sea power. If these conditions are removed, all bets are off. For more than five centuries, the global system of trade and economic development has grown and prospered in the presence of some dominant naval power. Portugal, Spain, the Netherlands, the United Kingdom, and now the U.S. have each taken a turn as the major provider of naval power to maintain the global system. Each benefited handsomely from the investment: [These navies], in times of peace, secured the global commons and ensured freedom of movement of goods and people across the globe. They supported global trading systems from the age of mercantilism to the industrial revolution and into the modern era of capitalism. They were a gold standard for international exchange. These forces supported national governments that had specific global agendas for liberal trade, the rule of law at sea, and the protection of maritime commerce from illicit activities such as piracy and smuggling.[4] A preponderant naval power occupies a unique position in the global order, a special seat at the table, which when unoccupied creates conditions for instability. Both world wars, several European-wide conflicts, and innumerable regional fights have been fueled by naval arms races, inflamed by the combination of passionate rising powers and feckless declining powers. This thought experiment cannot go so far as to conjure “a day without the U.S. Navy,” because it strains credulity to believe the nation would ever do without one. Yet for much of its history, the country had little more than a coastal defense force. In other periods, America has maintained small, far-flung cruising squadrons that in no way compare to the combat power arrayed continuously in the Middle East and the Western Pacific for the past two decades. The relevant question is: “What would a day without preponderant American sea power be like?” Building the current level of American sea power has taken enormous resources and many decades,[5] and the size of the fleet is not likely to be dramatically reduced in the near term. More likely, incremental cuts based on faulty premises and a lack of strategic direction will, over time, diminish American sea power as the country’s vision of itself becomes more modest and its sense of destiny and centrality is reduced. While ill-considered procurement reductions will slowly reduce the number of ships and aircraft in the Navy, financial decisions could also erode the Navy’s ability to deploy credible and relevant forces persistently, regardless of how many ships the Navy may have. Today’s Navy is experiencing extreme levels of stress. [6] While the fleet has shrunk by about 15 percent since 1998,[7] the number of ships deployed overseas has remained constant at about 100. Each ship goes to sea longer and more often, resulting in problems such as the well-publicized shortfalls in surface ship condition.[8] With no surge capacity left in the fleet, each new casualty ripples through the schedules of dozens of ships. With the end of supplemental funding, Navy maintenance funding will be cut by almost 20 percent this year. In this context, a relatively small additional reduction in maintenance funding could render a Navy with 250–280 ships capable of keeping only 50 to 60 ships at sea. Even if the Navy can sustain today’s number of ships or even grow slightly over the next decade as predicted by current Navy shipbuilding plans, the fleet will increasingly be composed of smaller and less capable littoral combat ships and logistics ships, such as Joint High Speed Vessels. This trend toward a fleet for engagement and maritime security could be enabled by the country’s increasingly modest vision of itself and the erosion of its sense of destiny and centrality. With ship design times of 20 years or longer and service lives of up to 50 years, the fleet could degrade to a point at which the country will be economically and strategically unable to reverse course. The nation and the most versatile element of its military power would then continue to decline to second-rate status. An absolute decline in American sea power would probably span decades, but the examples of the Soviet Union and previous naval powers unable to deploy and maintain a robust fleet demonstrate how rapidly a navy can become hollow and unable to influence events abroad. As the U.S. fleet evolves toward a less capable mix and the costs of maintaining aging submarines, destroyers, and carriers mount, the U.S. Navy could easily find itself with an effectively smaller fleet in the future. Newer, smaller ships would ply waters abroad, while the combat power that helped to win two world wars and deter the Soviet Union would remain at home in a reduced operating status for financial reasons. This would leave the Navy and the nation ill-prepared for a future economic and security crisis. A Thought Experiment “Advancing the clock,” a construct used in wargaming, is a useful method for evaluating the effects of a decline in sea power.

#### Hegemony is the meta-impact

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A core premise of deep engagement is that it prevents the emergence of a far more dangerous global security environment. For one thing, as noted above, the United States’ overseas presence gives it the leverage to restrain partners from taking provocative action. Perhaps more important, its core alliance commitments also deter states with aspirations to regional hegemony from contemplating expansion and make its partners more secure, reducing their incentive to adopt solutions to their security problems that threaten others and thus stoke security dilemmas. The contention that engaged U.S. power dampens thebalefuleffects of anarchy is consistent with influential variants of realist theory. Indeed, arguably the scariest portrayal of the war-prone world that would emerge absent the “American Pacifier” is provided in the works of John Mearsheimer, who forecasts dangerous multipolar regions replete with security competition, arms races, nuclear proliferation and associated preventive war temptations, regional rivalries, and even runs at regional hegemony and full-scale great power war. 72 How do retrenchment advocates, the bulk of whom are realists, discount this benefit? Their arguments are complicated, but two capture most of the variation: (1) U.S. security guarantees are not necessary to prevent dangerous rivalries and conflict in Eurasia; or (2) prevention of rivalry and conflict in Eurasia is not a U.S. interest. Each response is connected to a different theory or set of theories, which makes sense given that the whole debate hinges on a complex future counterfactual (what would happen to Eurasia’s security setting if the United States truly disengaged?). Although a certain answer is impossible, each of these responses is nonetheless a weaker argument for retrenchment than advocates acknowledge. The first response flows from defensive realism as well as other international relations theories that discount the conflict-generating potential of anarchy under contemporary conditions. 73 Defensive realists maintain that the high expected costs of territorial conquest, defense dominance, and an array of policies and practices that can be used credibly to signal benign intent, mean that Eurasia’s major states could manage regional multipolarity peacefully without the American pacifier. Retrenchment would be a bet on this scholarship, particularly in regions where the kinds of stabilizers that nonrealist theories point to—such as democratic governance or dense institutional linkages—are either absent or weakly present. There are three other major bodies of scholarship, however, that might give decisionmakers pause before making this bet. First is regional expertise. Needless to say, there is no consensus on the net security effects of U.S. withdrawal. Regarding each region, there are optimists and pessimists. Few experts expect a return of intense great power competition in a post-American Europe, but many doubt European governments will pay the political costs of increased EU defense cooperation and the budgetary costs of increasing military outlays. 74 The result might be a Europe that is incapable of securing itself from various threats that could be destabilizing within the region and beyond (e.g., a regional conflict akin to the 1990s Balkan wars), lacks capacity for global security missions in which U.S. leaders might want European participation, and is vulnerable to the influence of outside rising powers. What about the other parts of Eurasia where the United States has a substantial military presence? Regarding the Middle East, the balance begins to swing toward pessimists concerned that states currently backed by Washington— notably Israel, Egypt, and Saudi Arabia—might take actions upon U.S. retrenchment that would intensify security dilemmas. And concerning East Asia, pessimism regarding the region’s prospects without the American pacifier is pronounced. Arguably the principal concern expressed by area experts is that Japan and South Korea are likely to obtain a nuclear capacity and increase their military commitments, which could stoke a destabilizing reaction from China. It is notable that during the Cold War, both South Korea and Taiwan moved to obtain a nuclear weapons capacity and were only constrained from doing so by a still-engaged United States. 75 The second body of scholarship casting doubt on the bet on defensive realism’s sanguine portrayal is all of the research that undermines its conception of state preferences. Defensive realism’s optimism about what would happen if the United States retrenched is very much dependent on its particular—and highly restrictive—assumption about state preferences; once we relax this assumption, then much of its basis for optimism vanishes. Specifically, the prediction of post-American tranquility throughout Eurasia rests on the assumption that security is the only relevant state preference, with security defined narrowly in terms of protection from violent external attacks on the homeland. Under that assumption, the security problem is largely solved as soon as offense and defense are clearly distinguishable, and offense is extremely expensive relative to defense. Burgeoning research across the social and other sciences, however, undermines that core assumption: states have preferences not only for security but also for prestige, status, and other aims, and they engage in trade-offs among the various objectives. 76 In addition, they define security not just in terms of territorial protection but in view of many and varied milieu goals. It follows that even states that are relatively secure may nevertheless engage in highly competitive behavior. Empirical studies show that this is indeed sometimes the case. 77 In sum, a bet on a benign postretrenchment Eurasia is a bet that leaders of major countries will never allow these nonsecurity preferences to influence their strategic choices. To the degree that these bodies of scholarly knowledge have predictive leverage, U.S. retrenchment would result in a significant deterioration in the security environment in at least some of the world’s key regions. We have already mentioned the third, even more alarming body of scholarship. Offensive realism predicts that the withdrawal of the American pacifier will yield either a competitive regionalmultipolarity complete with associated insecurity, arms racing, crisis instability, nuclear proliferation, and the like, or bids for regional hegemony, which may be beyond the capacity of local great powers to contain (and which in any case would generate intensely competitive behavior, possibly including regional great power war). Hence it is unsurprising that retrenchment advocates are prone to focus on the second argument noted above: that avoiding wars and security dilemmas in the world’s core regions is not a U.S. national interest. Few doubt that the United States could survive the return of insecurity and conflict among Eurasian powers, but at what cost? Much of the work in this area has focused on the economic externalities of a renewed threat of insecurity and war, which we discuss below. Focusing on the pure security ramifications, there are two main reasons why decisionmakers may be rationally reluctant to run the retrenchment experiment. First, overall higher levels of conflict make the world a more dangerous place. Were Eurasia to return to higher levels of interstate military competition, one would see overall higher levels of military spending and innovation and a higher likelihood of competitive regionalproxy wars and arming of client states—all of which would be concerning, in part because it would promote a faster diffusion of military power away from the United States. Greater regional insecurity could well feed proliferation cascades, as states such as Egypt, Japan, South Korea, Taiwan, and Saudi Arabia all might choose to create nuclear forces. 78 It is unlikely that proliferation decisions by any of these actors would be the end of the game: they would likely generate pressure locally for more proliferation. Following Kenneth Waltz, many retrenchment advocates are proliferation optimists, assuming that nuclear deterrence solves the security problem. 79 Usually carried out in dyadic terms, the debate over the stability of proliferation changes as the numbers go up. Proliferation optimism rests on assumptions of rationality and narrow security preferences. In social science, however, such assumptions are inevitably probabilistic. Optimists assume that most states are led by rational leaders, most will overcome organizational problems and resist the temptation to preempt before feared neighbors nuclearize, and most pursue only security and are risk averse. Confidence in such probabilistic assumptions declines if the world were to move from nine to twenty, thirty, or forty nuclear states. In addition, many of the other dangers noted by analysts who are concerned about the destabilizing effects of nuclear proliferation—including the risk of accidents and the prospects that some new nuclear powers will not have truly survivable forces—seem prone to go up as the number of nuclear powers grows. 80 Moreover, the risk of “unforeseen crisis dynamics” that couldspin out of control is also higher as the number of nuclear powers increases. Finally, add to these concerns the enhanced danger of nuclear leakage, and a world with overall higher levels of security competition becomes yet more worrisome. The argument that maintaining Eurasian peace is not a U.S. interest faces a second problem. On widely accepted realist assumptions, acknowledging that U.S. engagement preserves peace dramatically narrows the difference between retrenchment and deep engagement. For many supporters of retrenchment, the optimal strategy for a power such as the United States, which has attained regional hegemony and is separated from other great powers by oceans, is offshore balancing: stay over the horizon and “pass the buck” to local powers to do the dangerous work of counterbalancing any local rising power. The United States should commit to onshore balancing only when local balancing is likely to fail and a great power appears to be a credible contender for regional hegemony, as in the cases of Germany, Japan, and the Soviet Union in the midtwentieth century. The problem is that China’s rise puts the possibility of its attaining regional hegemony on the table, at least in the medium to long term. As Mearsheimer notes, “The United States will have to play a key role in countering China, because its Asian neighbors are not strong enough to do it by themselves.” 81 Therefore, unless China’s rise stalls, “the United States is likely to act toward China similar to the way it behaved toward the Soviet Union during the Cold War.” 82 It follows that the United States should take no action that would compromise its capacity to move to onshore balancing in the future. It will need to maintain key alliance relationships in Asia as well as the formidably expensive military capacity to intervene there. The implication is to get out of Iraq and Afghanistan, reduce the presence in Europe, and pivot to Asia— just what the United States is doing. 83 In sum, the argument that U.S. **security** commitments are unnecessary **for peace** is countered by a lot of scholarship, including highly influential realist scholarship. In addition, the argument that Eurasian peace is unnecessary for U.S. security is weakened by the potential for a large number of nasty security consequences as well as the need to retain a latent onshore balancing capacity that dramatically reduces the savings retrenchment might bring. Moreover, switching between offshore and onshore balancing could well be difªcult. Bringing together the thrust of many of the arguments discussed so far underlines the degree to which the case for retrenchment misses the underlyinglogic ofthedeep engagementstrategy. By supplying reassurance, deterrence, and active management, the United States lowers security competition in the world’s key regions, thereby preventing the emergence of a hothouse atmosphere for growing new military capabilities. Alliance ties dissuade partners from ramping up and also provide leverage to prevent military transfers to potential rivals. On top of all this, the United States’ formidable military machine may deter entry by potential rivals. Current great power military expenditures as a percentage of GDP are at historical lows, and thus far other major powers have shied away from seeking to match top-end U.S. military capabilities. In addition, they have so far been careful to avoid attracting the “focused enmity” of the United States. 84 All of the world’s most modern militaries are U.S. allies (America’s alliance system of more than sixty countries now accounts for some 80 percent of global military spending), and the gap between the U.S. military capability and that of potential rivals is by many measures growing rather than shrinking. 85

#### Depression inevitably causing global warfare

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Facing the worst economic crisis since the Great Depression, analysts at the World Bank and the US Central Intelligence Agency are just beginning to contemplate the ramifications for international stability if there is not a recovery in the next year. For the most part, the focus has been on fragile states such as some in Eastern Europe. However, the Great Depression taught us that a downward global economic spiral can even have jarring impacts on great powers. It is no mere coincidence that the last great global economic downturn was followed by the most destructive war in human history. In the 1930s, economic desperation helped fuel autocratic regimes and protectionism in a downward economic-security death spiral that engulfed the world in conflict. This spiral was aided by the preoccupation of the United States and other leading nations with economic troubles at home and insufficient attention to working with other powers to maintain stability abroad. Today's challenges are different, yet 1933's London Economic Conference, which failed to stop the drift toward deeper depression and world war, should be a cautionary tale for leaders heading to next month's London Group of 20 (G-20) meeting. There is no question the US must urgently act to address banking issues and to restart its economy. But the lessons of the past suggest that we will also have to keep an eye on those fragile threads in the international system that could begin to unravel if the financial crisis is not reversed early in the Barack Obama administration and realize that economics and security are intertwined in most of the critical challenges we face. A disillusioned rising power? Four areas in Asia merit particular attention, although so far the current financial crisis has not changed Asia's fundamental strategic picture. China is not replacing the US as regional hegemon, since the leadership in Beijing is too nervous about the political implications of the financial crisis at home to actually play a leading role in solving it internationally. Predictions that the US will be brought to its knees because China is the leading holder of US debt often miss key points. China's currency controls and full employment/export-oriented growth strategy give Beijing few choices other than buying US Treasury bills or harming its own economy. Rather than creating new rules or institutions in international finance, or reorienting the Chinese economy to generate greater long-term consumer demand at home, Chinese leaders are desperately clinging to the status quo (though Beijing deserves credit for short-term efforts to stimulate economic growth). The greater danger with China is not an eclipsing of US leadership, but instead the kind of shift in strategic orientation that happened to Japan after the Great Depression. Japan was arguably not a revisionist power before 1932 and sought instead to converge with the global economy through open trade and adoption of the gold standard. The worldwide depression and protectionism of the 1930s devastated the newly exposed Japanese economy and contributed directly to militaristic and autarkic policies in Asia as the Japanese people reacted against what counted for globalization at the time. China today is similarly converging with the global economy, and many experts believe China needs at least 8% annual growth to sustain social stability. Realistic growth predictions for 2009 are closer to 5%. Veteran China hands were watching closely when millions of migrant workers returned to work after the Lunar New Year holiday last month to find factories closed and jobs gone. There were pockets of protests, but nationwide unrest seems unlikely this year, and Chinese leaders are working around the clock to ensure that it does not happen next year either. However, the economic slowdown has only just begun and nobody is certain how it will impact the social contract in China between the ruling communist party and the 1.3 billion Chinese who have come to see President Hu Jintao's call for "harmonious society" as inextricably linked to his promise of "peaceful development". If the Japanese example is any precedent, a sustained economic slowdown has the potential to open a dangerous path from economic nationalism to strategic revisionism in China too. Dangerous states It is noteworthy that North Korea, Myanmar and Iran have all intensified their defiance in the wake of the financial crisis, which has distracted the world's leading nations, limited their moral authority and sown potential discord. With Beijing worried about the potential impact of North Korean belligerence or instability on Chinese internal stability, and leaders in Japan and South Korea under siege in parliament because of the collapse of their stock markets, leaders in the North Korean capital of Pyongyang have grown increasingly boisterous about their country's claims to great power status as a nuclear weapons state. The junta in Myanmar has chosen this moment to arrest hundreds of political dissidents and thumb its nose at fellow members of the 10-country Association of Southeast Asian Nations. Iran continues its nuclear program while exploiting differences between the US, UK and France (or the P-3 group) and China and Russia - differences that could become more pronounced if economic friction with Beijing or Russia crowds out cooperation or if Western European governments grow nervous about sanctions as a tool of policy. It is possible that the economic downturn will make these dangerous states more pliable because of falling fuel prices (Iran) and greater need for foreign aid (North Korea and Myanmar), but that may depend on the extent that authoritarian leaders care about the well-being of their people or face internal political pressures linked to the economy. So far, there is little evidence to suggest either and much evidence to suggest these dangerous states see an opportunity to advance their asymmetrical advantages against the international system. Challenges to the democratic model The trend in East Asia has been for developing economies to steadily embrace democracy and the rule of law in order to sustain their national success. But to thrive, new democracies also have to deliver basic economic growth. The economic crisis has hit democracies hard, with Japanese Prime Minister Aso Taro's approval collapsing to single digits in the polls and South Korea's Lee Myung-bak and Taiwan's Ma Ying Jeou doing only a little better (and the collapse in Taiwan's exports - particularly to China - is sure to undermine Ma's argument that a more accommodating stance toward Beijing will bring economic benefits to Taiwan). Thailand's new coalition government has an uncertain future after two years of post-coup drift and now economic crisis. The string of old and new democracies in East Asia has helped to anchor US relations with China and to maintain what former secretary of state Condoleezza Rice once called a "balance of power that favors freedom". A reversal of the democratic expansion of the past two decades would not only impact the global balance of power but also increase the potential number of failed states, with all the attendant risk they bring from harboring terrorists to incubating pandemic diseases and trafficking in persons. It would also undermine the demonstration effect of liberal norms we are urging China to embrace at home. Protectionism The collapse of financial markets in 1929 was compounded by protectionist measures such as the Smoot-Hawley tariff act in 1932. Suddenly, the economic collapse became a zero-sum race for autarkic trading blocs that became a key cause of war. Today, the globalization of finance, services and manufacturing networks and the World Trade Organization (WTO) make such a rapid move to trading blocs unlikely. However, protectionism could still unravel the international system through other guises. Already, new spending packages around the world are providing support for certain industries that might be perceived by foreign competitors as unfair trade measures, potentially creating a "Smoot-Hawley 2.0" stimulus effect as governments race to prop up industries. "Buy American" conditionality in the US economic stimulus package earlier this year was watered down somewhat by the Obama administration, but it set a tempting precedent for other countries to put up barriers to close markets.

#### Statistics agree- power redistribution

Royal ‘10 (Director of CTR Jedediah, Director of Cooperative Threat Reduction – U.S. Department of Defense, “Economic Integration, Economic Signaling and the Problem of Economic Crises”, Economics of War and Peace: Economic, Legal and Political Perspectives, Ed. Goldsmith and Brauer, p. 213-215)

Less intuitive is how periods of economic decline may increase the likelihood of external conflict. Political science literature has contributed a moderate degree of attention to the impact of economic decline and the security and defence behaviour of interdependent states. Research in this vein has been considered at systemic, dyadic and national levels. Several notable contributions follow. First, on the systemic level, Pollins (2008) advances Modelski and Thompson's (1996) work on leadership cycle theory, finding that rhythms in the global economy are associated with the rise and fall of a pre-eminent power and the often bloody transition from one pre-eminent leader to the next. As such, exogenous shocks such as economic crises could usher in a redistribution of relative power (see also Gilpin. 1981) that leads to uncertainty about power balances, increasing the risk of miscalculation (Feaver, 1995). Alternatively, even a relatively certain redistribution of power could lead to a permissive environment for conflict as a rising power may seek to challenge a declining power (Werner. 1999). Separately, Pollins (1996) also shows that global economic cycles combined with parallel leadership cycles impact the likelihood of conflict among major, medium and small powers, although he suggests that the causes and connections between global economic conditions and security conditions remain unknown. Second, on a dyadic level, Copeland's (1996, 2000) theory of trade expectations suggests that 'future expectation of trade' is a significant variable in understanding economic conditions and security behaviour of states. He argues that interdependent states are likely to gain pacific benefits from trade so long as they have an optimistic view of future trade relations. However, if the expectations of future trade decline, particularly for difficult to replace items such as energy resources, the likelihood for conflict increases, as states will be inclined to use force to gain access to those resources. Crises could potentially be the trigger for decreased trade expectations either on its own or because it triggers protectionist moves by interdependent states.4 Third, others have considered the link between economic decline and external armed conflict at a national level. Blomberg and Hess (2002) find a strong correlation between internal conflict and external conflict, particularly during periods of economic downturn. They write: The linkages between internal and external conflict and prosperity are strong and mutually reinforcing. Economic conflict tends to spawn internal conflict, which in turn returns the favour. Moreover, the presence of a recession tends to amplify the extent to which international and external conflicts self-reinforce each other. (Blomberg & Hess, 2002. p. 89) Economic decline has also been linked with an increase in the likelihood of terrorism (Blomberg, Hess, & Weerapana, 2004), which has the capacity to spill across borders and lead to external tensions. Furthermore, crises generally reduce the popularity of a sitting government. "Diversionary theory" suggests that, when facing unpopularity arising from economic decline, sitting governments have increased incentives to fabricate external military conflicts to create a 'rally around the flag' effect. Wang (1996), DeRouen (1995). and Blomberg, Hess, and Thacker (2006) find supporting evidence showing that economic decline and use of force are at least indirectly correlated. Gelpi (1997), Miller (1999), and Kisangani and Pickering (2009) suggest that the tendency towards diversionary tactics are greater for democratic states than autocratic states, due to the fact that democratic leaders are generally more susceptible to being removed from office due to lack of domestic support. DeRouen (2000) has provided evidence showing that periods of weak economic performance in the United States, and thus weak Presidential popularity, are statistically linked to an increase in the use of force. In summary, recent economic scholarship positively correlates economic integration with an increase in the frequency of economic crises, whereas political science scholarship links economic decline with external conflict at systemic, dyadic and national levels.5 This implied connection between integration, crises and armed conflict has not featured prominently in the economic-security debate and deserves more attention.

#### UUVs deter Chinese submarines from encroachment- risk US-China miscalc

Robinson 1/14 (Michael Robinson, Defense and Technology Specialist, 1/14/13, moneymorning.com/2013/01/14/this-profit-play-builds-hunter-drones-to-counter-the-chinese-sub-threat/)

That's why I was glad to learn recently that SAIC is taking a leadership role in a major defense trend unmanned vehicles, usually referred to as drones. SAIC is helping the Pentagon pioneer underwater drones that can detect a new generation of ultra-quiet diesel-electric submarines that threaten U.S. security. In a moment I will share those details with you. But first, I want to make sure you know why I spend time talking to senior leaders like Beyster. See, these guys are not only big thinkers driving the Era of Radical Change, but many of them are also profit machines. They often define U.S. entrepreneurship the unique quality that makes America the perennial leader in global high tech ... and in the creation of wealth for its free-market investors. An entrepreneur himself, Beyster is known for taking two bold management steps. First, he laid the groundwork for employee ownership of a publicly traded firm. That may sound like an inherent contradiction. But not the way Beyster did it. At the time I talked with him, only the employees could own stock in SAIC. Beyster stands out today as a leader in pushing the concept of employee-owned firms. After he retired as CEO, the company launched an IPO, and its shares are publicly traded still. (In fact, to better focus on a changing market, SAIC later this year plans to split into two publicly traded firms.) Second, Beyster became the ultimate change agent. He created an atmosphere that catered to entrepreneurs which turned SAIC into an incubator for innovation. Indeed, many of Beyster's "employees" went off to start their own firms. Between 1975 and 2003 the 18-year stretch for which Beyster kept records roughly four dozen alumni started new companies. No doubt, most never became household names. You likely never heard of Michael A. Chipman. Fact is, he created a little software package called TurboTax. Shortly after going public in 1993, Intuit Inc. (NasdaqGS: INTU) acquired that firm and has gone on to return roughly 2,600% to investors. In 2004, Beyster retired from the company he'd founded back in 1969, at the height of the Vietnam War. But his focus on making sure that SAIC would remain a technical leader lives on today. That's clear from the recent news that the mid-cap firm just got a key "drone" contract with DARPA, the Pentagon's research unit. These days, most drones are airborne, and are known as "unmanned aerial vehicles," or UAVs. They represent a major trend toward pilotless military planes. But under a contract worth at least $58 million, SAIC will build and test an unmanned underwater vehicle (UUV) with a very special purpose. Simply put, DARPA wants a robotic anti-submarine vehicle a "sub-hunter" drone that can operate for extended periods, and cover thousands of miles of ocean as it does so. You see, China, North Korea and Iran between them now have 73 diesel-electric "boats," as they're known in military parlance. About half are the new, super-quiet subs. And more are on the way. In an era in which ultra-modern nuclear subs get all the headlines, here's a stunner: Diesel-electric technology which dates back to the late 1920s is one of the biggest sources of worry in the Pentagon's shadowy corridors. And for good reason. The propulsion systems of these boats are nearly silent. Diesel-electrics run on big diesel motors when running on the surface, but switch to batteries when submerged. That power system is nearly silent, making it the perfect design for the shallow waters just off our coastlines. These submarines also possess the "passive" sonar systems that make it possible for these submarines to sit and listen, submerged and quiet, just off our shores. It's a nasty package, and one that can't be ignored: We don't want the silent subs of our enemies to be able to launch a first strike on the U.S. from as little as a mile away. I believe this technology is vital, and the sooner we field these drones, known as ACTUVs, the better. It will give us an edge over China we'll be able to find their quiet subs long before they can find ours, shifting the balance of power back to the United States.

#### Chinese sub proximity key- nuclear escalation

Glosny ‘8 (Michael Glosny, Harvard John M. Olin Institute for Strategic Studies Fellow, 1/9/2008, Federal News Service, CHINA'S BOOMERS: IMPLICATIONS IF CHINA'S DETERRENT GOES TO SEA, Lexis)

The first thing I want to say is there's a lot we just don't know about the boomer force. But there are a few things we do know or know with a reasonable amount of certainty, and I want to talk about how two specific factors -missile range and geographic situation -are going to impact the way the PLA would put out a boomer force if it decides to put out a boomer force. The first thing to say is the 094 clearly a vast improvement on the Xia class, on their former SSBN, that either never went out or went out in one deterrent patrol. And the JL-2 which is the missile that will eventually go on the 094 is about probably a four-fold increase in range over the current missile. But what does that mean in practice? When a lot of people talk about what the 094 with the JL-2 means for U.S. security, there are a lot of people that talk about the Chinese in their own territory, in their own territorial waters in the Bohai Gulf or in the Yellow Sea, being able to attack the continental United States. This is in lots of newspaper articles and lots of places it shouldn't be. For instance, it's all the time it appears in Jane's which should know better. But there's a '99 piece in Jane's Missiles and Rockets that I'll pull out. It says, quote, "JL-2 has a maximum range of 8,000 kilometers. When deployed, it will allow Chinese SSBNs to target portions of the U.S. for the first time from operating areas located near the Chinese coast." I'm sure if you've read anything on 094, you've probably read that before. In order for that statement to be true, based on what we know about the range, you need to stretch one of those two key concepts. You either need to stretch what counts as waters near the Chinese coasts, or you need to stretch what means portions of the United States. After the very next sentence in this article is the SSBN, quote, "would only have to patrol just to the northeast of the Kurile Islands to put approximately 75 percent of the United States at risk." Now, that's a big difference between sitting in Chinese territorial waters and holding Washington at risk or having to go a very, very long way. We didn't bring a map, but if you look at a map, it's a very, very long way to go from Chindao out into the deep north Pacific. MR. LEWIS: Mike, if I could just interrupt you. If you picked up a copy of one of my blog posts I printed out, it actually does have a said map. MR. GLOSNY: Great. You do the self-promotion, too, I see. (Laughs.) So that is a very big difference, and I'll talk a little bit about what some of the implications of the range of the missile is. But if you leave this room knowing nothing else, know that the 094 with the JL-2 in Chinese territorial waters cannot hit the continental United States. There is a follow-on missile which is going to be the sea-based version of the DF-31A which has a much longer range which could do so. And later in the Q&A or in the discussion, we can talk about what the implications for that are either for stability or for the U.S. Navy. The second factor that we're even more sure of, right, the missile range that's based on DOD estimates of what the DF-31's range is, and it's been roundabout 8,000 kilometers. On the DF-31, it's been reduced to 7,250. But we're roughly sure that it's somewhere in that range. It would be very surprising if it came in at 10,000 kilometers or something like that. So we're pretty sure of that. One thing we're really sure of is what the geographic situation is that China faces. If you look at where China is likely to be operating these submarines from, which is near Chindao, and then you look at what these patrol areas are that I'm talking about, which are very far east, very far east of the Kurile Islands, one thing you look at when you look at a map is there are very few ways for the Chinese to get there. There are essentially two major ways to get there. One would be going up north between Japan and South Korea through the Sea of Japan and then out. The other way would be to go south of Japan, sort of through Okinawa. And what does this mean for ASW concerns? Well, it narrows the areas that these submarines could possibly be. So this serves as something of a queuing in terms of where we would be looking for these submarines. The other thing that Jeff points out in the piece that you have is it draws the comparison between that and what in the Cold War was called the Greenland-Iceland-U.K. gap, right. When the Soviet Union had to get their submarines out into the Atlantic, we set up a gap of passive sonars, of P-3s dropping sonobuoys of attack submarines, and the Soviet submarines had to get through this in order to get to the promised land on the other side. Essentially, this is what this geography presents as a possibility, that in order for the Chinese SSBN to get out into that part of the world to launch, it would need to go through a similar type of gap. And although there's been a lot of discussion about how U.S. ASW has atrophied, much of this is focused on the idea of a small, diesel electric submarine operating in the coral shallow waters. What the geography means here, what the geography and the range of the missile mean is where the SSBN would need to go is not only through these gaps, that at least in the Cold War we were very good at setting up ASW bastions, but then would need to patrol in very deep water. And for those -not to get too technical -but for those that know a little bit about Cold War anti-submarine warfare, in deep water, sound propagates a lot longer, and it's a lot easier to make detections. So the missile range and the geography together essentially put the Chinese in a situation where they are far more constrained in how they would actually put this Boomer at sea if it wanted to, right. It limits how -it sets a constraint on how quiet the submarine needs to be in terms of being survivable. If the submarine only needs to be in its own waters to launch, it doesn't need to be anywhere near as quiet as it does if it needs to go through a very long patrol through fairly good ASW barriers. And this issue also impacts lots of other things like how many submarines they would need to have in order to be able to put submarines out in that deployed area. This is what, sort of, Air Force people call "the base loss factor," right -the further you need to go, the more, overall, you need to have to get one out there at that point in time. This is also probably going to impact readiness rates and maintenance requirements. If a submarine only has to sit off its own waters, that mission is not as demanding as it is if you're having to transit as -transit that far, so there's certainly a greater chance of breakdowns happening more often. Furthermore, there's this loss of home field advantage that we hear about in terms of diesel submarines acting in the littorals and thinking of Chinese submarines acting around Taiwan. The Chinese submarines know the water around Taiwan very, very well -they know where temperature changes happen; they know where salinity changes happen; they know how to hide, and where not to go. They are far, far, far less familiar with these waters out in the North Pacific. And this means that it's far more likely that they will run into places where they'll make a lot more noise. It's also likely -or not likely, but possible if you remember what the U.S.S. San Francisco did a couple of years ago, running into underground mountains that you didn't know were there because you're not familiar with the waters. Another thing that this geography and missile range together, put a constraint on the way communications work. Communications are much easier with a submarine if it's right off your own waters. When it's further away, it's far more difficult. And then, lastly, it's going to be much more difficult to keep allies -U.S. allies out of cooperating in this ASW fight than it would be if they were patrolling off their own waters. If you look at, sort of, the two ways you get out to the North Pacific, you're pretty much going around Japan. So while it might be unlikely to think that Japan is going to fly P-3s off the Chinese coast -and drop sono buoys off the Chinese coast and cooperate in ASW there, it's far more likely that they would cooperate in ASW as it's essentially coming through its own territory. I'll just say one more quick thing and then I'll shut up. I'm equally very worried about crisis stability. The Navy's response to the SSBN seems to be, okay, there's this threat, what do we need to have to neutralize it, deal with it, or be able to keep these Boomers, if they go out, at risk? Some of these escalation concerns are similar to what debates that happened in the 1980s maritime strategy, right, in terms of escalation and whether or not both tracking, trailing and then prosecuting Soviet SSBNs would put the -would provoke a situation where the crisis got out of control. I would say those issues are here, but in spades, right. What we would essentially be doing is putting the Chinese in a use-it-or-loseit situation, right. If you think of -whatever your estimates are of the readiness rates, and how many they build, and how many they get out, we're not talking about a lot of submarines. So it's very likely that even just trailing them, and having a fire-control solution on them, would put them in a situation where they feel like they need to launch, or they lose the capability to launch. And there are very good reasons, in terms of defensive national security, that would lead us to trail them all the time and know where they are. What I want to suggest is before asking that question, what force structure do we need to trail them, we also need to ask the other question of, what are the costs and risks that we're running by trailing them? I would suggest that, for a country whose command-and-control and communications are not that well-developed -and I'm sure we'll get into that; for a country whose understanding of escalation -and what counts as escalation, and what counts as provocation we really don't fully understand, it seems like it might not be the best of idea to put their survivable nuclear weapons in a situation where they're using it or losing it. And I'll just stop.

#### Extinction

**Wittner ‘11** (Lawrence S. Wittner, Emeritus Professor of History at the State University of New York/Albany, Wittner is the author of eight books, the editor or co-editor of another four, and the author of over 250 published articles and book reviews. From 1984 to 1987, he edited Peace & Change, a journal of peace research., 11/28/2011, "Is a Nuclear War With China Possible?", www.huntingtonnews.net/14446)

While nuclear weapons exist, there remains a danger that they will be used. After all, for centuries national conflicts have led to wars, with nations employing their deadliest weapons. The current deterioration of U.S. relations with China might end up providing us with yet another example of this phenomenon. The gathering tension between the United States and China is clear enough. Disturbed by China’s growing economic and military strength, the U.S. government recently challenged China’s claims in the South China Sea, increased the U.S. military presence in Australia, and deepened U.S. military ties with other nations in the Pacific region. According to Secretary of State Hillary Clinton, the United States was “asserting our own position as a Pacific power.” But need this lead to nuclear war? Not necessarily. And yet, there are signs that it could. After all, both the United States and China possess large numbers of nuclear weapons. The U.S. government threatened to attack China with nuclear weapons during the Korean War and, later, during the conflict over the future of China’s offshore islands, Quemoy and Matsu. In the midst of the latter confrontation, President Dwight Eisenhower declared publicly, and chillingly, that U.S. nuclear weapons would “be used just exactly as you would use a bullet or anything else.” Of course, China didn’t have nuclear weapons then. Now that it does, perhaps the behavior of national leaders will be more temperate. But the loose nuclear threats of U.S. and Soviet government officials during the Cold War, when both nations had vast nuclear arsenals, should convince us that, even as the military ante is raised, nuclear saber-rattling persists. Some pundits argue that nuclear weapons prevent wars between nuclear-armed nations; and, admittedly, there haven’t been very many—at least not yet. But the Kargil War of 1999, between nuclear-armed India and nuclear-armed Pakistan, should convince us that such wars can occur. Indeed, in that case, the conflict almost slipped into a nuclear war. Pakistan’s foreign secretary threatened that, if the war escalated, his country felt free to use “any weapon” in its arsenal. During the conflict, Pakistan did move nuclear weapons toward its border, while India, it is claimed, readied its own nuclear missiles for an attack on Pakistan. At the least, though, don’t nuclear weapons deter a nuclear attack? Do they? Obviously, NATO leaders didn’t feel deterred, for, throughout the Cold War, NATO’s strategy was to respond to a Soviet conventional military attack on Western Europe by launching a Western nuclear attack on the nuclear-armed Soviet Union. Furthermore, if U.S. government officials really believed that nuclear deterrence worked, they would not have resorted to championing “Star Wars” and its modern variant, national missile defense. Why are these vastly expensive—and probably unworkable—military defense systems needed if other nuclear powers are deterred from attacking by U.S. nuclear might? Of course, the bottom line for those Americans convinced that nuclear weapons safeguard them from a Chinese nuclear attack might be that the U.S. nuclear arsenal is far greater than its Chinese counterpart. Today, it is estimated that the U.S. government possesses over five thousand nuclear warheads, while the Chinese government has a total inventory of roughly three hundred. Moreover, only about forty of these Chinese nuclear weapons can reach the United States. Surely the United States would “win” any nuclear war with China. But what would that “victory” entail? A nuclear attack by China would immediately slaughter at least 10 million Americans in a great storm of blast and fire, while leaving many more dying horribly of sickness and radiation poisoning. The Chinese death toll in a nuclear war would be far higher. Both nations would be reduced to smoldering, radioactive wastelands. Also, radioactive debris sent aloft by the nuclear explosions would blot out the sun and bring on a “nuclear winter” around the globe—destroying agriculture, creating worldwide famine, and generating chaos and destruction.

# S

**Domestic military demonstration spills-over**

Galloway 10

**(**Brigadier General Gerald E, Former Dean of the Academic Board, US Military Academy and Dean of the Faculty and Academic Programs, Industrial College of the Armed Forces, "On the Need for Creative Energy Solutions", Summer, www.cna.org/sites/default/files/research/WEB%2007%2027%2010%20MAB%20Powering%20America%27s%20Economy.pdf)

Based on the progress made in technology, and on the findings of a study he chaired for the National Academies, General Galloway believes it may be time for the Army to revisit the initiative and consider paradigm shifting technologies like small, modular nuclear reactors. “In 1999, our report on logistics for the future Army recommended looking once again into small nuclear plants. It found that now there are additional benefits, like producing hydrogen for fuel cells. Today, small nuclear reactors are being marketed in the U.S. It’s probably time to think more about this,” General Galloway says. “No one’s envisioned bringing them out in combat zones, but they could provide energy in theater at large staging areas.” General **Galloway sees a special role for DOD in demonstrating these reactors in the U**nited **S**tates. “The challenge at many military facilities is that they’re tied to the grid. We’ve seen the grid go down. At the same time, energy demands are rising. Putting a small reactor on a military installation not only provides a reliable and sustainable power source and a test bed to define its long term utility, but also **places the plant in a secure location**. Within the United States, **it’s hard to find a more physically secure place than a military installation,” says** General **Galloway**. “**If the tests go well on bases in the United States**, these **small reactors could be used to support overseas military operations** or disaster recovery activities.”

a/t: manufacturing shortage

**no shortage**

ITA 11

(International Trade Administration, “The Commercial Outlook for U.S. Small Modular Nuclear Reactors” Manufacturing and Services Competitiveness Report, February 2011, US Department of Commerce)

A serious obstacle to the resurgence of traditional nuclear power in the United States is the eroded domestic manufacturing capacity for the major nuclear components. A robust program of building SMRs, however, could make use of existing domestic capacity that is already capable of completely constructing most proposed SMR designs. **SMRs would not require the ultra-heavy forgings that currently can only be made overseas.** U.S. suppliers say that firms could retool using existing capabilities and resources and could source most of the components of SMRs here in the United States. This ability could mean tremendous new commercial opportunities for U.S. firms and workers.

A substantial SMR deployment program in the United States could result in the creation of many new jobs in manufacturing, engineering, transportation, construction (for site preparation and installation) and craft labor, professional services, and ongoing plant operations. As SMR manufacturers prove their designs in the domestic market, **they will likely consider export opportunities**. The modular nature of SMRs and their relative portability means that locating export-oriented SMR manufacturing and assembly could make sense for U.S. companies, as opposed to the localiza-tion that is typically necessary for building larger reactors

**SMRs solve**

**Schimmoller 11**, Brian, contributing editor to Power Engineering “Go Small or Go Home,” July, Power Engineering115. 7 (Jul 2011): 12.

Manufacturing/construction: SMRs would be built predominantly off-site at a fabrication facility. This provides for greater quality control and reduced exposure to the schedule and cost uncertainties that can plague large-scale nuclear construction. Also, because SMRs will be fabricated using physically smaller components than those in today’s large conventional reactors, the bottlenecks that exist with forging capacity for large reactor components can be avoided.

# 2ac incentive

**we meet – we give the industry money and tax credits**

**Epa.gov 12** [“Solar Power Purchase Agreements,” May 24th, <http://www.epa.gov/greenpower/buygp/solarpower.htm>]

A Solar Power Purchase Agreement (SPPA) is a financial arrangement in which a third-party developer owns, operates, and maintains the photovoltaic (PV) system, and a host customer agrees to site the system on its roof or elsewhere on its property and purchases the system’s electric output from the solar services provider for a predetermined period. This financial arrangement allows the host customer to receive stable, and sometimes lower cost electricity, while the solar services provider or another party acquires valuable financial benefits such as tax credits and income generated from the sale of electricity to the host customer.

**DoE says we’re T**

**Waxman 98 –** Solicitor General of the US (Seth, Brief for the United States in Opposition for the US Supreme Court case HARBERT/LUMMUS AGRIFUELS PROJECTS, ET AL., PETITIONERS v. UNITED STATES OF AMERICA, http://www.justice.gov/osg/briefs/1998/0responses/98-0697.resp.opp.pdf)

2 On November 15, 1986, Keefe was delegated “the authority, with respect to actions valued at $50 million or less, to approve, execute, enter into, modify, administer, closeout, terminate and take any other necessary and appropriate action (collectively, ‘Actions’) with respect to Financial Incentive awards.” Pet. App. 68, 111-112. Citing DOE Order No. 5700.5 (Jan. 12, 1981), the delegation defines “Financial Incentives” as the authorized financial incentive programs of DOE, “including direct loans, loan guarantees, purchase agreements, price supports, guaranteed market agreements and any others which may evolve.” The delegation proceeds to state, “[h]owever, a separate prior written approval of any such action must be given by or concurred in by Keefe to accompany the action.” The delegation also states that its exercise “shall be governed by the rules and regulations of [DOE] and policies and procedures prescribed by the Secretary or his delegate(s).” Pet. App. 111-113.

**Interpretation – incentives are the disbursement of public funds**

**Gielecki 1**, Mark, economist with the Energy Information Administration, Fred Mayes, Senior Technical Advisor for the coal, nuclear, and renewables program within the EIA, Lawrence Prete, retired from the EIA, [“Incentives, Mandates, and Government Programs for Promoting Renewable Energy,” February, <http://lobby.la.psu.edu/_107th/128_PURPA/Agency_Activities/EIA/Incentive_Mandates_and_Government.htm>]

Over the years, incentives and mandates for renewable energy have been used to advance different energy policies, such as ensuring energy security or promoting environmentally benign energy sources. Renewable energy has beneficial attributes, such as low emissions and replenishable energy supply, that are not fully reflected in the market price. Accordingly, governments have used a variety of programs to promote renewable energy resources, technologies, and renewable-based transportation fuels. (1) This paper discusses: (1) financial incentives and regulatory mandates used by Federal and State governments and Federal research and development (R&D), (2), (3) and (2) their effectiveness in promoting renewables. A financial incentive is defined in this report as providing one or more of the following benefits: A transfer of economic resources by the Government to the buyer or seller of a good or service that has the effect of reducing the price paid, or, increasing the price received, respectively; Reducing the cost of production of the good or service; or, Creating or expanding a market for producers. The intended effect of a financial incentive is to increase the production or consumption of the good or service over what it otherwise would have been without the incentive. Examples of financial incentives are: tax credits, production payments, trust funds, and low-cost loans. Research and development is included as a support program because its effect is to decrease cost, thus enhancing the commercial viability of the good(s) provided. (4)

**aff ground – We are the topic - money for energy! Arbitrarily excluding one mechanism is unpredictable – last year proves weak mechanisms stink and only purchasing can defeat states**

**Good is good enough – competing interpretations forces a race to the bottom and judge intervention – this is no less arbitrary than deciding limits are key**

# Plan flaw

We’re still topical

They’re wrong – contextual ev

**NRECA 10**, “Statement by NRECA CEO Glenn English on Inaugural Power Purchase Agreement of the National Renewable Cooperative Organization,”

<http://www.nreca.coop/press/NewsReleases/Pages/20100519NRCO.aspx>

Statement by NRECA CEO Glenn English on Inaugural Power Purchase Agreement of the National Renewable Cooperative Organization

**For implies intent – on indicates what the contract concerns**

**Reasonability – voting on this causes substance crowd out**

**Aff interps plan**

**No definition**

**No ground loss**

# 2ac states

**Perm- do both**

**Perm- do the counterplan – there’s no its in the resolution – financial incentives are increased**

**Case is a DA to the counterplan**

**1.) Hegemony – states have no jurisdiction on military bases**

**2.) Design lock-in – SMRs won’t be useful for the military and we’ll lose the specialists needed to operate them if the DoD isn’t in charge – that’s Andres and Breetz**

**3.) Valley of Death – only the DoD is radically innovative enough to commercialize reactors – that’s Andres and Breetz**

**4.) Nuclear stigma – integration on military bases changes public perception of nuclear power – that’s loudermilk**

**Turn- the States would get rocked by the NRC – only the military doesn’t get killed by regulation**

**King et. al. ’11** (Marcus King , LaVar Huntzinger , Thoi Nguyen, CNA Think Tank, Environment and Energy Team, “Feasibility of Nuclear Power on U.S. Military Installations”, March 31, 2011, LEQ)

Certification and licensing issues The most basic licensing issue relates to whether NRC will have jurisdiction over potential nuclear reactor sites or whether DoD could be self-regulating. Our conversations with NRC indicate it is the only possible licensing authority for reactors that supply power to the com- mercial grid. However, DOE and DoD are authorized to regulate mission critical nuclear facilities under Section 91b of the Atomic Energy Act. There is some historical precedent for DoD exercising this authority. For example, the Army Nuclear Program was granted exception under this rule with regard to the reactor that operated aboard the Sturgis barge in the 1960s and 1970s.

**50 States Fiat is bad-**

**It has never happened before- means no literature- no potential for education or reciprocal debates- jacks fairness- no evidence assumes all 50 actors- this also means we don’t engage in rational policy making which is the most important form of education- its not a real-world solution**

**Counterplan text flaw – doesn’t say “by” – same flaw**

# 2ac Politics

#### Immigrants won’t come – low wages

Taylor and Charlton 3/8/13 (J. Edward and Diane, Taylor is a Prof of Ag and Resource Economics and Director of the Center on Rural Economies of the Americans and Pacific Rim @ the U of California Davis, and Charlton is a PhD Student in Ag and Resource Economics @ UC Davis, Oxford University Press, “Why Are Mexicans Leaving Farm Work, And What Does This Mean for US Farmers”) http://blog.oup.com/2013/03/mexicans-farm-work-united-states/

Agriculture in North America traditionally has had its comparative advantage in having access to abundant low-skilled labor from Mexico. Around 70% of the United States hired farm workforce is Mexico-born, according to the National Agricultural Worker Survey (NAWS). Fruit, vegetable, and horticultural farms in the US have enjoyed an extended period of farm labor abundance with stable or decreasing real wages. However, new panel data reveal a declining long-term trend in the farm labor supply in rural Mexico. In coming years, US farmers will need to offer higher wages to induce new workers to migrate northward to US farm jobs.

#### Labor shortage is inevitable – reform is irrelevant

Plumer 1/29/13 (Brad, “We’re Running out of Farm Workers. Immigration Reform Won’t Help” Wonkblog @ The Washington Post)

But looser immigration laws may not be able to keep our food cheap forever. A [recent study](http://aepp.oxfordjournals.org/content/34/4/587.abstract) suggests that U.S. farms could well face a shortage of low-cost labor in the years ahead no matter what Congress does on immigration. That’s because Mexico is getting richer and can no longer supply as many rural farm workers to the United States. And it won’t be nearly as easy to import low-wage agricultural workers from elsewhere. For decades, farms in the United States have relied heavily on low-wage foreign workers — mainly from Mexico — to work their fields. In 2006, 77 percent of all agricultural workers in the United States were foreign-born. (And [half of those foreign workers](http://www.wisconsinwatch.org/2009/11/04/immigrants-now-40-of-states-dairy-workforce/) were undocumented immigrants.) All that cheap labor has helped keep down U.S. food prices, particularly for labor-intensive fruits and vegetables. But that labor pool is now drying up. In recent years, we’ve seen a spate of headlines like this from CNBC: “[California Farm Labor Shortage ‘Worst It’s Been, Ever’](http://www.cnbc.com/id/48725145/California_Farm_Labor_Shortage_039Worst_It039s_Been_Ever039).” Typically, these stories blame drug-related violence on the Mexican border or tougher border enforcement for the decline. Hence the call for new guest-worker programs. But a [new paper](http://aepp.oxfordjournals.org/content/34/4/587.abstract) from U.C. Davis offers up a simpler explanation for the labor shortage. Mexico is getting richer. And, when a country gets richer, its pool of rural agricultural labor shrinks. Not only are Mexican workers shifting into other sectors like construction, but Mexico’s own farms are increasing wages. That means U.S. farms will have to pay higher and higher wages to attract a dwindling pool of available Mexican farm workers.

#### The recession is the biggest factor – prefer our evidence it cites data

Taylor and Charlton 3/8/13 (J. Edward and Diane, Taylor is a Prof of Ag and Resource Economics and Director of the Center on Rural Economies of the Americans and Pacific Rim @ the U of California Davis, and Charlton is a PhD Student in Ag and Resource Economics @ UC Davis, Oxford University Press, “Why Are Mexicans Leaving Farm Work, And What Does This Mean for US Farmers”) http://blog.oup.com/2013/03/mexicans-farm-work-united-states/

Tighter border enforcement and drug-related violence along the border may deter migration, but our analysis suggests that for US agriculture their main effect is largely secondary, reinforcing a negative trend in rural Mexicans’ willingness to do farmwork. For example, after the “great recession” in 2008, the share of Mexican immigrants working in agriculture decreased more than the share working in non-agriculture. The recession had a large negative impact on construction and service jobs in the non-farm sector while labor demand in the farm sector remained steady and commodity prices rose. If unemployed workers in the non-farm sector sought jobs on US farms during the recession, then one might expect the supply of agricultural labor to increase. Data show that some immigrants did shift from non-farm to farm work after the recession, but more shifted from farm to non-farm in the US. If the decrease in immigration in recent years were the result of increases in border patrol or drug-related violence, then the decrease in farm labor supply should be similar to the decrease in non-farm labor supply, but the data show the opposite. US agriculture appears to be doubly adversely affected by the decline in the supply of immigrant labor and a shift in the Mexican labor supply away from farmwork.

**Wont pass**

Politico 3-5-13. dyn.politico.com/printstory.cfm?uuid=12207C2F-7F94-479F-959C-F539B631CDF1

“More likely that we deal with one bill at a time, more likely that the Senate slams them all together,” said Oklahoma Rep. James Lankford, chairman of the Republican Policy Committee, who is involved with immigration strategy. “They do so few bills over there, they’re going to do one big giant, we may do a few small [bills] and see what we work on in conference together.”¶ Still, as Washington is a-twitter about immigration reform, and President Barack Obama is corralling support on Capitol Hill, the GOP leadership is staring at a daunting statistic: More than 140 Republicans represent districts with nearly no Hispanics. So many of them look at immigration reform through a parochial lens, not as a national political imperative like the party bigwigs.¶ The uptick in private action tells a more hopeful story for reform than was previously understood. Of course, passing any immigration reform bills is a political risk because if the House is seen even temporarily as moving minor proposals while the Senate moves a massive bill, that action could be seen as insufficient.¶ For instance, the piecemeal approach could risk putting some House Republicans crosswise with national party apparatus — who see comprehensive immigration reform as a pathway toward maintaining power in Washington.¶ “I don’t like how some people on our side who are pushing a comprehensive plan who say, ‘The reason we have to do this if because we’re not getting enough of the Hispanic vote at the presidential level,’” said Rep. Tom Rooney (R-Fla.) . “For me, policy should be driven because of policy, not politics, and I know that’s wishful thinking.”¶ Ryan’s office did not answer an email about the private conversations. Gowdy told reporters he would talk about anything except immigration.¶ The desire to avoid comprehensive movement on immigration is so widespread, so geographically diverse, that it’s hard to ignore and might be impossible for leadership to circumvent.¶ Rep. Reid Ribble (R-Wis.) said he is “hopeful … that rather than trying to do a major comprehensive reform, we will try and do it sequentially.”¶ “Everyone agrees on certain things,” Ribble said.¶ Rooney said Republicans would “lose a group of people right off the bat” if they try to cobble together a comprehensive bill.

**Link written by Francisco bencosme**

**PC theory is wrong- winners win**

Hirsh, 2-7 – National Journal chief correspondent, citing various political scientists

[Michael, former Newsweek senior correspondent, "There’s No Such Thing as Political Capital," National Journal, 2-9-13, www.nationaljournal.com/magazine/there-s-no-such-thing-as-political-capital-20130207, accessed 2-8-13, mss]

The idea of political capital—or mandates, or momentum—is so poorly defined that presidents and pundits often get itwrong. On Tuesday, in his State of the Union address, President Obama will do what every president does this time of year. For about 60 minutes, he will lay out a sprawling and ambitious wish list highlighted by gun control and immigration reform, climate change and debt reduction. In response, the pundits will do what they always do this time of year: They will talk about how unrealistic most of the proposals are, discussions often informed by sagacious reckonings of how much “political capital” Obama possesses to push his program through. Most of **this** talk **will have** no bearing on what actually happens over the next four years. Consider this: Three months ago, just before the November election, if someone had talked seriously about Obama having enough political capital to oversee passage of both immigration reform and gun-control legislation at the beginning of his second term—even after winning the election by 4 percentage points and 5 million votes (the actual final tally)—this person would have been called crazy and stripped of his pundit’s license. (It doesn’t exist, but it ought to.) In his first term, in a starkly polarized country, the president had been so frustrated by GOP resistance that he finally issued a limited executive order last August permitting immigrants who entered the country illegally as children to work without fear of deportation for at least two years. Obama didn’t dare to even bring up gun control, a Democratic “third rail” that has cost the party elections and that actually might have been even less popular on the right than the president’s health care law. And yet, for reasons that have very little to do with Obama’s personal prestige or popularity—variously put in terms of a “mandate” or “political capital”—chances are fair that both will now happen. What changed? In the case of gun control, of course, it wasn’t the election. It was the horror of the 20 first-graders who were slaughtered in Newtown, Conn., in mid-December. The sickening reality of little girls and boys riddled with bullets from a high-capacity assault weapon seemed to precipitate a sudden tipping point in the national conscience. One thing changed after another. Wayne LaPierre of the National Rifle Association marginalized himself with poorly chosen comments soon after the massacre. The pro-gun lobby, once a phalanx of opposition, began to fissure into reasonables and crazies. Former Rep. Gabrielle Giffords, D-Ariz., who was shot in the head two years ago and is still struggling to speak and walk, started a PAC with her husband to appeal to the moderate middle of gun owners. Then she gave riveting and poignant testimony to the Senate, challenging lawmakers: “Be bold.” As a result, momentum has appeared to build around some kind of a plan to curtail sales of the most dangerous weapons and ammunition and the way people are permitted to buy them. It’s impossible to say now whether such a bill will pass and, if it does, whether it will make anything more than cosmetic changes to gun laws. But one thing is clear: The **political tectonics** have **shift**ed **dramatically** in very little time. Whole new possibilities exist now that didn’t a few weeks ago. Meanwhile, the Republican members of the Senate’s so-called Gang of Eight are pushing hard for a new spirit of compromise on immigration reform, a sharp change after an election year in which the GOP standard-bearer declared he would make life so miserable for the 11 million illegal immigrants in the U.S. that they would “self-deport.” But this turnaround has very little to do with Obama’s personal influence—his political mandate, as it were. It has almost entirely to do with just two numbers: 71 and 27. That’s 71 percent for Obama, 27 percent for Mitt Romney, the breakdown of the Hispanic vote in the 2012 presidential election. Obama drove home his advantage by giving a speech on immigration reform on Jan. 29 at a Hispanic-dominated high school in Nevada, a swing state he won by a surprising 8 percentage points in November. But the movement on immigration has mainly come out of the Republican Party’s recent introspection, and the realization by its more thoughtful members, such as Sen. Marco Rubio of Florida and Gov. Bobby Jindal of Louisiana, that without such a shift the party may be facing demographic death in a country where the 2010 census showed, for the first time, that white births have fallen into the minority. It’s got nothing to do with Obama’s political capital or, indeed, Obama at all. The point is not that “political capital” is a meaningless term. Often it is a synonym for “mandate” or “momentum” in the aftermath of a decisive election—and just about every politician ever elected has tried to claim more of a mandate than he actually has. Certainly, Obama can say that because he was elected and Romney wasn’t, he has a better claim on the country’s mood and direction. Many pundits still defend political capital as a useful metaphor at least. “It’s an unquantifiable but meaningful concept,” says Norman Ornstein of the American Enterprise Institute. “You can’t really look at a president and say he’s got 37 ounces of political capital. But the fact is, it’s a concept that matters, if you have popularity and some momentum on your side.” The real problem is that the idea of political capital—or mandates, or momentum—is so poorly defined that presidents and pundits often get it wrong. “Presidents usually over-estimate it,” says George Edwards, a presidential scholar at Texas A&M University. “The best kind of political capital—some sense of an electoral mandate to do something—is very rare. It almost never happens. In 1964, maybe. And to some degree in 1980.” For that reason, **political capital** is a concept that **misleads** far more than it enlightens. **It is** **distortionary**. It conveys the idea that we know more than we really do about the ever-elusive concept of political power, and it discounts the way unforeseen events can suddenly change everything. Instead, it suggests, erroneously, that a political figure has a concrete amount of political capital to invest, just as someone might have real investment capital—that a particular leader can bank his gains, and the size of his account determines what he can do at any given moment in history. Naturally, any president has practical and electoral limits. Does he have a majority in both chambers of Congress and a cohesive coalition behind him? Obama has neither at present. And unless a surge in the economy—at the moment, still stuck—or some other great victory gives him more momentum, it is inevitable that the closer Obama gets to the 2014 election, the less he will be able to get done. Going into the midterms, Republicans will increasingly avoid any concessions that make him (and the Democrats) stronger. But the abrupt emergence of the immigration and gun-control issues illustrates how suddenly shifts in mood can occur and how political interests can align in new ways just as suddenly. Indeed, the pseudo-concept of political capital masks a larger truth about Washington that is kindergarten simple: You just don’t know what you can do until you try. Or as Ornstein himself once wrote years ago, “**Winning wins.”** In theory, and in practice, depending on Obama’s handling of any particular issue, even in a polarized time, he could still deliver on a lot of his second-term goals, depending on his skill and the breaks. Unforeseen catalysts can appear, like Newtown. Epiphanies can dawn, such as when many Republican Party leaders suddenly woke up in panic to the huge disparity in the Hispanic vote. Some **political scientists** **who study** the elusive calculus of **how to pass legislation** and run successful presidencies **say** that **political capital is**, at best, **an empty concept**, and that **almost nothing in** the **academic literature** successfully quantifies or even defines it. “It can refer to a very abstract thing, like a president’s popularity, but there’s no mechanism there. That makes it kind of useless,” says Richard Bensel, a government professor at Cornell University. Even Ornstein concedes that the calculus is far more complex than the term suggests. **Winning** on one issue often **changes the** **calculation** for the next issue; there is never any known amount of capital. “The idea here is, if an issue comes up where **the conventional wisdom is that president is not going to get what he wants**, and [they]he gets it, then each time that happens, it changes the calculus of the other actors” Ornstein says. “If they think he’s going to win, they may change positions to get on the winning side. **It’s a bandwagon effect**.” ALL THE WAY WITH LBJ Sometimes, a clever practitioner of power can get more done just because [they’re]he’s aggressive and knows the hallways of Congress well. Texas A&M’s Edwards is right to say that the outcome of the 1964 election, Lyndon Johnson’s landslide victory over Barry Goldwater, was one of the few that conveyed a mandate. But one of the main reasons for that mandate (in addition to Goldwater’s ineptitude as a candidate) was President Johnson’s masterful use of power leading up to that election, and his ability to get far more done than anyone thought possible, given his limited political capital. In the newest volume in his exhaustive study of LBJ, The Passage of Power, historian Robert Caro recalls Johnson getting cautionary advice after he assumed the presidency from the assassinated John F. Kennedy in late 1963. Don’t focus on a long-stalled civil-rights bill, advisers told him, because it might jeopardize Southern lawmakers’ support for a tax cut and appropriations bills the president needed. “One of the wise, practical people around the table [said that] the presidency has only a certain amount of coinage to expend, and you oughtn’t to expend it on this,” Caro writes. (Coinage, of course, was what political capital was called in those days.) Johnson replied, “Well, what the hell’s the presidency for?” Johnson didn’t worry about coinage, and he got the Civil Rights Act enacted, along with much else: Medicare, a tax cut, antipoverty programs. He appeared to understand not just the ways of Congress but also the way to maximize the momentum he possessed in the lingering mood of national grief and determination by picking the right issues, as Caro records. “Momentum is not a mysterious mistress,” LBJ said. “It is a controllable fact of political life.” Johnson had the skill and wherewithal to realize that, at that moment of history, he could have unlimited coinage if he handled the politics right. He did. (At least until Vietnam, that is.)

**Plan’s popular**

Press Action ’12 (3/12/12 (“US Nuclear Industry Operates as if Fukushima Never Happened”) <http://www.pressaction.com/news/weblog/full_article/nuclearsubsidies03122012/>

**Both Democrats and Republicans have had a** long love affair **with commercial nuclear power**, and **the relationship is** showing no signs of losing steam. Since the 1950s, members of both parties have enthusiastically lavished electric utility companies with expensive gifts, ranging from subsidies to protection from liability for disasters to loan guarantees, all underwritten by U.S. taxpayers. The political calculus is simple: nuclear power enjoys unanimous support in Washington. Try to name one member of the U.S. Senate or House of Representatives who favors shutting down the nation’s 104 commercial nuclear reactors. Federal agencies, from the Atomic Energy Commission to the Department of Energy to the Nuclear Regulatory, have worked diligently through the years to promote nuclear power. At the state level, support for nuclear power also is extremely strong, although there are some politicians—albeit a tiny number—who have publicly called for the closure of certain nuclear plants. On the one-year anniversary of the start of the nuclear disaster at the Fukushima Dai-ichi nuclear power plant in Japan, one would assume a voice in official Washington would have emerged calling for an end to the nation’s experiment with nuclear power. In Germany, government officials made the decision to phase out nuclear power by 2022 in response to Fukushima. There’s no such sentiment among the ruling elite in the United States. **Locating a member of Congress opposed to** the continued operation of **nuclear** power plants **is as hard as finding a lawmaker who favors breaking ties with Israel** over its mistreatment of Palestinians for the last 60 years. In fact, it’s more than hard, it’s impossible. It’s very rare to find an issue where there is a noteworthy difference between Democrats and Republicans. When there are differences, they tend to be subtle, although party officials and the corporate media will attempt to sensationalize a slight difference to create an impression that the U.S. political system permits honest and real debate.

**Military shields**

Davenport ’12 (Coral Davenport is the energy and environment correspondent for National Journal. Prior to joining National Journal in 2010, Davenport covered energy and environment for Politico, and before that, for Congressional Quarterly, “Pentagon's Clean-Energy Initiatives Could Help Troops—and President Obama”, <http://www.nationaljournal.com/pentagon-s-clean-energy-initiatives-could-help-troops-and-president-obama-20120411?mrefid=site_search>, April 11, 2012, LEQ)

The Pentagon plans to roll out a new slate of clean- and renewable-energy initiatives on Wednesday as part of its long-term “Operational Energy Strategy” aimed at reducing the military’s dependence on fossil fuels while increasing its front-line fighting power. The moves are in keeping with a sustained push by the military in recent years to cut its dependence on oil, which costs the Pentagon up to $20 billion annually and has led to the deaths of thousands of troops and contractors, killed while guarding fuel convoys in Iraq and Afghanistan. Some renewable-energy projects at the Defense Department are already paying big dividends. Pentagon efforts to research and deploy products like hybrid batteries for tanks have enabled combat vehicles to travel farther without refueling, while advances in portable solar generation have allowed troops on the front lines in Afghanistan to power housing and electronic facilities without requiring fuel convoys to make dangerous drives through hostile territory to deliver the diesel required for traditional generators. It doesn’t hurt that the initiatives also tie in politically with President Obama’s unwavering support for clean energy on the campaign trail—even as Republicans continue to attack him almost daily on energy issues. GOP and conservative “super PACs” have no problem hitting Obama for his support of renewable-energy programs in the wake of the bankruptcy of Solyndra, the solar panel company that cost the federal government $535 million in loan guarantees from the economic stimulus law. But politically, it’s a lot harder for traditionally hawkish Republicans to criticize the Pentagon’s embrace of renewable power, which Defense officials have repeatedly made clear is not being done in the interest of an environmental agenda, but rather to increase security and fighting capability on the front lines. Defense officials have also emphasized that much of the funding for the Pentagon’s renewable-energy initiatives won’t come from taxpayer dollars. On Tuesday, a Defense official said that the construction of renewable-electricity plants for Army and Air Force bases–which the official said could cost up to $7 billion—will be privately financed.

# 2ac Russia Nat Gas

**Shale gas triggers**

Financial Times 9/27(Anders Åslund, Gazprom crisis casts shadow over Putin, September 27, 2012 4:08 pm, http://www.ft.com/cms/s/0/55c1aeb0-07c6-11e2-9df2-00144feabdc0.html#axzz29wPy8147)

Gazprom, the natural gas company controlled by the Russian state, is in crisis. It is likely to fall victim to the shale gas revolution that is under way across the US. The shale gas revolution will probably have telling consequences for Russian state capitalism and President Vladimir Putin’s power. This crisis erupted suddenly. With its surge in shale gas production the US has become self-sufficient in natural gas. It has overtaken Russia as the biggest natural gas producer. Crucially, US natural gas is cheap. Domestic US natural gas prices are only a quarter of Gazprom’s oil-linked eastern European prices. Such large price differentials cannot possibly last for long. Many countries had prepared to produce liquefied natural gas for export to the US. Now these large volumes of LNG are being diverted to Europe, where spot prices have fallen to half of Gazprom’s prices. In Germany, Gazprom has been forced to accept large price cuts, but it insists on maintaining high contracted prices in eastern Europe, although oil and gas prices have delinked on the market.

**Turn – SMRs solve natgas price volatility**

McNelis ’11 (David N. Mcnelis, David N. McNelis is director of the Center for Sustainable Energy, Environment and Economic Development in the Institute for the Environment at UNC-Chapel Hill, “Safer power from smaller reactors”, <http://www.newsobserver.com/2011/06/24/1295895/safer-power-from-smaller-reactors.html>, June 24, 2011, LEQ)

CHAPEL HILL -- Efforts to promote energy efficiency, encourage sustainable lifestyle changes and exploit renewable energy sources are laudable, but they will not be sufficient to meet the projected growth in demand for electricity. The United States and the world need to increase the use of nuclear power, particularly for energy security and to limit climate-changing emissions. Nothing that has happened in Japan has made nuclear power any less essential. The Fukushima nuclear power plant accident was caused by a major earthquake and tsunami of the sort that are not likely to occur here, but we can learn from the cascade of events that led to reactor meltdowns and hydrogen explosions there. The U.S. Nuclear Regulatory Commission is studying the accident, and its findings could lead to a number of changes, especially better protection against a loss of power from extreme events like hurricanes, earthquakes and floods. Lessons learned from Japan's crisis would improve nuclear safety, as other changes did following the Three Mile Island accident in 1979. Change could also come from a different direction: development of a new generation of small modular reactors similar in size to those that have successfully powered U.S. submarines and aircraft carriers for decades. No bigger than a double-wide trailer and built in a factory for a fraction of the cost of a large nuclear plant, the small modular reactor (SMR) is an environmentally friendly and cost-effective way to help meet growing demand for electricity. SMRs have the potential to replace older coal plants and to provide a hedge against volatility in natural gas prices. And while solar and wind are attractive energy sources, both produce power only intermittently and require back-up power in the event the weather is not cooperating. Established nuclear-energy companies engaged in the development of SMRs include Westinghouse, General Electric, General Atomics and Charlotte-based Babcock & Wilcox. But the field also includes some smaller start-ups such as NuScale Power in Oregon, Hyperion Power Generation in New Mexico and TerraPower, based on the outskirts of Seattle and established with support from Bill Gates. Ground has been broken for construction of large nuclear plants in Georgia and South Carolina, but many other projects have been delayed due to the downturn in the economy, a surge in natural gas production and the high cost of building large new power plants. So the SMR may be emblematic of nuclear power's future. President Barack Obama has allocated $500 million to be spent on research and development of SMRs over the next five years. Energy Secretary Steven Chu says he expects an SMR to be operating in this country by the end of this decade. In Congress, Republicans and Democrats alike support SMR development. In contrast to a conventional nuclear plant, SMRs could be added one at a time in a cluster of modules, as the need for electricity rises. The cluster's costs would be paid for over time, softening the financial impact. The modules could be factory assembled and be delivered by rail to an existing nuclear plant site. In such a configuration, one SMR could be taken out of service for maintenance or repair without affecting operation of the other units. Most SMRs would be situated beneath the ground to provide better security. Typically they would operate for many years - possibly decades - without refueling and produce far less waste than conventional reactors. Significantly, almost all of the SMR development is being done with private financing. Companies are using their own resources to develop the small reactors, without government support from mandates or subsidies of the sort that renewable energy sources now require. An SMR designed by Babcock & Wilcox would generate 125 megawatts, using conventional light-water reactor technology. The Tennessee Valley Authority is considering deploying six of the Babcock & Wilcox modules at its Clinch River site near the Oak Ridge National Laboratory. Another SMR on the drawing board would be an advanced, sodium-cooled "fast" reactor producing just 25 megawatts - enough electricity to power a rural community or a military installation. Hyperion Power Generation has formed a partnership with the Savannah River National Laboratory to build a sodium-cooled reactor as part of a clean energy park near Aiken, S.C. Looking ahead, SMRs could be an important element in a balanced mix of clean energy sources in North Carolina and nationally. It's likely that a large number of older fossil-fuel power plants will have to be shut down within the next few years. These plants are relatively inefficient, and it would not be cost-effective to equip them with the sort of state-of-the-art environmental controls that will be needed to meet air quality standards. That capacity must be replaced, and additional electricity generation will be needed to meet forecasts for rising demand. SMRs are a safe and affordable source of energy that should be considered for use in the United States.

**EU shale development thumps**

**Michta, 12** -- German Marshall Fund senior transatlantic fellow

(Andrew, Ph.D. from the School of Advanced International Studies at Johns Hopkins, . Rhodes College M. W. Buckman Distinguished Professor of International Studies, former Woodrow Wilson Center Senior Scholar and George C. Marshall European Center for Security Studies National Security Studies professor, "Shale Storm," American Interest, Jan/Feb 2012, www.the-american-interest.com/article.cfm?piece=1168, accessed 5-28-12, mss)

Lobbying is only part of the unfolding struggle over the future of unconventional gas in Europe. On the positive side, several efforts are underway to address infrastructure deficiencies in Europe, including efforts to build interconnectors between Hungary and Romania, Poland and Lithuania, and the Czech Republic and Poland, and others. Most significant is the mandate that pipelines allow for bidirectional flow so that gas can be redirected out of Western Europe if needed. The European Union has enacted the so-called Third Energy Package, which requires the unbundling of supplies and, most important, third-party access to pipeline infrastructure—a decision which Gazprom views as a direct challenge to its current monopoly. At the institutional level, the Third Package may be the most important lever for achieving broader changes within the European Union when it comes to shale gas, especially as source diversification continues to lag behind. Unbundling (opening up pipeline access to generate competition, namely, separating the generation and sale from the transportation network) is central to the future of the European gas market, but it puts Gazprom on a direct collision course with the European Commission. Increasingly, too, shale gas producers can deploy EU liberalization and antitrust rules to access the market over the heads of the dominant local gas companies, thus forcing them to provide access to the pipelines and effectively pricing their expensive gas out of the market. The Poles are making a good-faith effort to move forward with their own infrastructure projects. The Polish Gaz-System, which runs the pipeline infrastructure, has already invested in expanding its western interconnector by building a new connector to the Czech Republic, and it is developing a massive infrastructure building project to facilitate Polish shale gas exports, with 1,000 kilometers of pipeline planned for 2014, and an additional 800 kilometers of pipe planned for 2017. If these efforts yield fruit, not only will shale gas technology reduce energy costs, liberalize markets and reduce Russian leverage over Europe; it will also give a major competitive advantage to producer countries in manufacturing, agriculture and virtually every aspect of the economy. Finally, the coming shale storm has great potential to redefine the climate change debate, becoming, in effect, a pathway to renewables down the line while also dramatically improving energy security in the meantime.

**SMRs solve Mars colonization**

**O’Neil 11**, Ian, PhD from University of Wales, founder and editor of Astroengine, space producer for Discovery News [“'Suitcase' Nuclear Reactors to Power Mars Colonies,” August 30th, http://news.discovery.com/space/mars-colonies-powered-by-mini-nuclear-reactors-110830.html]

Nuclear power is an emotive subject -- particularly in the wake of the Fukushima power plant disaster after Japan's March earthquake and tsunami -- but in space, it may be an essential component of spreading mankind beyond terrestrial shores. On Monday, at the 242nd National Meeting and Exposition of the American Chemical Society (ACS) in Denver, Colo., the future face of space nuclear power was described. You can forget the huge reactor buildings, cooling towers and hundreds of workers; the first nuclear reactors to be landed on alien worlds to support human settlement will be tiny. Think less "building sized" and more "suitcase sized." "People would never recognize the fission power system as a nuclear power reactor," said James E. Werner, lead of the Department of Energy's (DOE) Idaho National Laboratory. "The reactor itself may be about 1 feet wide by 2 feet high, about the size of a carry-on suitcase. There are no cooling towers. A fission power system is a compact, reliable, safe system that may be critical to the establishment of outposts or habitats on other planets. Fission power technology can be applied on Earth's Moon, on Mars, or wherever NASA sees the need for continuous power." The joint NASA/DOE project is aiming to build a demonstration unit next year. Obviously, this will be welcome news to Mars colonization advocates; to have a dependable power source on the Martian surface will be of paramount importance. The habitats will need to have a constant power supply simply to keep the occupants alive. This will be "climate control" on an unprecedented level. Water extraction, reclamation and recycling; food cultivation and storage; oxygen production and carbon dioxide scrubbing; lighting; hardware, tools and electronics; waste management -- these are a few of the basic systems that will need to be powered from the moment humans set foot on the Red Planet, 24 hours 39 minutes a day (or "sol" -- a Martian day), 669 sols a year. Fission reactors can provide that. However, nuclear fission reactors have had a very limited part to play in space exploration up until now. Russia has launched over 30 fission reactors, whereas the US has launched only one. All have been used to power satellites. Radioisotope thermoelectric generators (RTGs), on the other hand, have played a very important role in the exploration of the solar system since 1961. These are not fission reactors, which split uranium atoms to produce heat that can then be converted into electricity. RTGs depend on small pellets of the radioisotope plutonium-238 to produce a steady heat as they decay. NASA's Pluto New Horizons and Cassini Solstice missions are equipped with RTGs (not solar arrays) for all their power needs. The Mars Science Laboratory (MSL), to be launched in November 2011, is powered by RTGs for Mars roving day or night. RTGs are great, but to power a Mars base, fission reactors would be desirable because they deliver more energy. And although solar arrays will undoubtedly have a role to play, fission reactors will be the premier energy source for the immediate future. "The biggest difference between solar and nuclear reactors is that nuclear reactors can produce power in any environment," said Werner. "Fission power technology doesn't rely on sunlight, making it able to produce large, steady amounts of power at night or in harsh environments like those found on the Moon or Mars. A fission power system on the Moon could generate 40 kilowatts or more of electric power, approximately the same amount of energy needed to power eight houses on Earth." "The main point is that nuclear power has the ability to provide a power-rich environment to the astronauts or science packages anywhere in our solar system and that this technology is mature, affordable and safe to use." Of course, to make these "mini-nuclear reactors" a viable option for the first moon and Mars settlements, they'll need to be compact, lightweight and safe. Werner contends that once the technology is validated, we'll have one of the most versatile and affordable power resources to support manned exploration of the solar system.

**extinction**

**Schulze-Makuch and Davies 2010** (Dirk Schulze-Makuch, Ph.D., School of Earth and Environmental Sciences, Washington State University and Paul Davies, Ph.D., Beyond Center, Arizona State University, “To Boldly Go: A One-Way Human Mission to Mars”, <http://journalofcosmology.com/Mars108.html>)

There are several reasons that motivate the establishment of a permanent Mars colony. We are a vulnerable species living in a part of the galaxy where cosmic events such as major asteroid and comet impacts and supernova explosions pose a significant threat to life on Earth, especially to human life. There are also more immediate threats to our culture, if not our survival as a species. These include global pandemics, nuclear or biological warfare, runaway global warming, sudden ecological collapse and supervolcanoes (Rees 2004). Thus, the colonization of other worlds is a must if the human species is to survive for the long term. The first potential colonization targets would be asteroids, the Moon and Mars. The Moon is the closest object and does provide some shelter (e.g., lava tube caves), but in all other respects falls short compared to the variety of resources available on Mars. The latter is true for asteroids as well. Mars is by far the most promising for sustained colonization and development, because it is similar in many respects to Earth and, crucially, possesses a moderate surface gravity, an atmosphere, abundant water and carbon dioxide, together with a range of essential minerals. Mars is our second closest planetary neighbor (after Venus) and a trip to Mars at the most favorable launch option takes about six months with current chemical rocket technology.

**Plan solves military oil entanglement**

Buis ’12 (Tom Buis, CEO, Growth Energy, Co-written by Buis and Growth Energy Board Co-Chair Gen. Wesley K. Clark (Ret.), “American Families Need American Fuel”, <http://energy.nationaljournal.com/2012/05/powering-our-military-whats-th.php>, May 23, 2012, LEQ)

Our nation is dangerously dependent on foreign oil. We import some 9 million barrels per day, or over 3 billion barrels per year; the U.S. military itself comprises two percent of the nation’s total petroleum use, making it the world’s largest consumer of energy and oil imports. Of U.S. foreign oil imports, one out of five barrels comes from unfriendly nations and volatile areas, including at least 20 percent stemming from the Persian Gulf, including Bahrain, Iraq, Iran, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates. Further, our nation heavily relies on hot-beds of extremism, as Saudi Arabia, Venezuela, Nigeria are our third, fourth, and fifth, respectively, largest exporters of oil. How dangerous is this? Very! Not only does America’s huge appetite for oil entangle us into complicated relationships with nations marred by unstable political, economic, and security situations, it also gravely impacts our military, who risk their lives daily to protect foreign energy supply routes. Because of our addiction to oil, we have been in almost constant military conflict, lost more than 6,500 soldiers and created a whole new class of wounded warriors, thousands of whom will need long-term care funded by our government. One in eight soldiers killed or wounded in Iraq from 2003-2007 were protecting fuel convoys, with a total of 3,000 Army casualties alone. We maintain extra military forces at an annual cost of about $150 billion annually, just to assure access to foreign oil - because we know that if that stream of 9 million barrels per day is seriously interrupted, our economy will crash. That's what I call dangerously dependent. Even worse, according to a new Bloomberg Government analysis, Pentagon spending on fuel is dramatically increasing. This will force the military to dedicate even more funds toward energy costs, at the expense of other priorities, like training and paying soldiers. In fact, every $.25 increase in the cost of jet fuel makes a $1 billion difference in the Department of Defense’s bottom line – a debt that will be passed along to the American taxpayer. And if that's not enough to make you want to avoid foreign oil, then consider this: every dollar hike in the international, politically-rigged price of oil hands Iran about $3 million more per day, that their regime can use to sow mischief, fund terrorism, and develop missiles and nuclear weapons. Enough is enough! We have domestic alternatives that can protect American interests, and promote prosperity and security – including, more domestic oil production, using natural gas and biofuels, like ethanol, as fuel, converting coal to liquid fuel, and moving as rapidly as possible to vehicles powered by green energy. By introducing clean energy and fuel alternatives, this would rapidly reduce both the strain of securing foreign energy supply routes in unstable regions, as well as unnecessary economic and political entanglement with volatile regimes. It is imperative the U.S. military leverage its position as a leader and enact pertinent energy policies to best enhance American energy – and national – security.

**These will risk wars that will escalate**

Collina 5 (Executive Director of 20-20 Vision, Tom Z. Collina, Executive Director of 20-20Vision; testimony in front of Committee on Foreign Relations Subcommittee on Near Eastern and South Asian Affairs United States Senate “Oil Dependence and U.S. Foreign Policy: Real Dangers, Realistic Solutions”. October 19, 2005 <http://www.globalsecurity.org/military/library/congress/2005_hr/051020-collina.pdf>)

More conflicts in the Middle East America imports almost 60% of its oil today and, at this rate, we’ll import 70% by 2025. Where will that oil come from? Two-thirds of the world’s oil is in the Middle East, primarily in Saudi Arabia, Iran and Iraq. The United States has less than 3% of global oil. The Department of Energy predicts that North American oil imports from the Persian Gulf will double from 2001 to 2025.i Other oil suppliers, such as Venezuela, Russia, and West Africa, are also politically unstable and hold no significant long-term oil reserves compared to those in the Middle East. Bottom line: our economy and security are increasingly dependent on one of the most unstable regions on earth. Unless we change our ways, we will find ourselves even more at the mercy of Middle East oil and thus more likely to get involved in future conflicts. The greater our dependence on oil, the greater the pressure to protect and control that oil. The growing American dependence on imported oil is the primary driver of U.S. foreign and military policy today, particularly in the Middle East, and motivates an aggressive military policy now on display in Iraq. To help avoid similar wars in the future and to encourage a more cooperative, responsible, and multilateral foreign policy the United States must significantly reduce its oil use. Before the Iraq war started, Anthony H. Cordesman of the Center for Strategic and International Studies said: “Regardless of whether we say so publicly, we will go to war, because Saddam sits at the center of a region with more than 60 percent of all the world's oil reserves.” Unfortunately, he was right. In fact, the use of military power to protect the flow of oil has been a central tenet of U.S. foreign policy since 1945. That was the year that President Franklin D. Roosevelt promised King Abdul Aziz of Saudi Arabia that the United States would protect the kingdom in return for special access to Saudi oil—a promise that governs U.S. foreign policy today. This policy was formalized by President Jimmy Carter in 1980 when he announced that the secure flow of oil from the Persian Gulf was in “the vital interests of the United States of America” and that America would use “any means necessary, including military force” to protect those interests from outside forces. This doctrine was expanded by President Ronald Reagan in 1981 to cover internal threats, and was used by the first President Bush to justify the Gulf War of 1990-91, and provided a key, if unspoken rationale for the second President Bush’s invasion of Iraq in 2003.ii The Carter/Reagan Doctrine also led to the build up of U.S. forces in the Persian Gulf on a permanent basis and to the establishment of the Rapid Deployment Force and the U.S. Central Command (CENTCOM). The United States now spends over $50 Billion per year (in peacetime) to maintain our readiness to intervene in the Gulf.iii America has tried to address its oil vulnerability by using our military to protect supply routes and to prop up or install friendly regimes. But as Iraq shows the price is astronomical—$200 Billion and counting. Moreover, it doesn’t work—Iraq is now producing less oil than it did before the invasion. While the reasons behind the Bush administration’s decision to invade Iraq may be complex, can anyone doubt that we would not be there today if Iraq exported coffee instead of oil? It is time for a new approach. Americans are no longer willing to support U.S. misadventures in the Persian Gulf. Recent polls show that almost two-thirds of Americans think the Iraq war was not worth the price in terms of blood and treasure. Lt. Gen William Odom, director of the National Security Agency during President Reagan's second term, recently said: "The invasion of Iraq will turn out to be the greatest strategic disaster in U.S. history." The nation is understandably split about what to do now in Iraq, but there appears to be widespread agreement that America should not make the same mistake again—and we can take a giant step toward that goal by reducing our dependence on oil.

**SMRs solve inevitable water wars**

**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. 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**.”

**Plan’s key to displace Russian reactors in Latin America**

Charles D. Ferguson, President, Federation of American Scientists, 5/19/2010, http://www.fas.org/press/\_docs/05192010\_Testimony\_HouseScienceCommHearing%20.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 selling 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 United States has yet to license such reactors for domestic use, it has placed itself at an additional market disadvantage. By the time the United States 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 United States 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.”

**Solves escalatory instability**

Christopher Sabatini, editor-in-chief of Americas Quarterly and senior director of policy at Americas Society/Council of the Americas, and Ryan Berger, policy associate at the Americas Society/Council of the Americas, 6/13/2012, Why the U.S. can't afford to ignore Latin America, globalpublicsquare.blogs.cnn.com/2012/06/13/why-the-u-s-cant-afford-to-ignore-latin-america/

Speaking in Santiago, Chile, in March of last year, President Obama called Latin America “a region on the move,” one that is “more important to the prosperity and security of the United States than ever before.” Somebody forgot to tell the Washington brain trust. The Center for a New American Security, a respected national security think tank a half-mile from the White House, recently released a new series of policy recommendations for the next presidential administration. The 70-page “grand strategy” report only contained a short paragraph on Brazil and made only one passing reference to Latin America. Yes, we get it. The relative calm south of the United States seems to pale in comparison to other developments in the world: China on a seemingly inevitable path to becoming a global economic powerhouse, the potential of political change in the Middle East, the feared dismemberment of the eurozone, and rogue states like Iran and North Korea flaunting international norms and regional stability. But the need to shore up our allies and recognize legitimate threats south of the Rio Grande goes to the heart of the U.S.’ changing role in the world and its strategic interests within it. Here are three reasons why the U.S. must include Latin America in its strategic calculations: 1. Today, pursuing a global foreign policy requires regional allies. Recently, countries with emerging economies have appeared to be taking positions diametrically opposed to the U.S. when it comes to matters of global governance and human rights. Take, for example, Russia and China’s stance on Syria, rejecting calls for intervention. Another one of the BRICS, Brazil, tried to stave off the tightening of U.N. sanctions on Iran two years ago. And last year, Brazil also voiced its official opposition to intervention in Libya, leading political scientist Randall Schweller to refer to Brazil as “a rising spoiler.” At a time of (perceived) declining U.S. influence, it’s important that America deepens its ties with regional allies that might have been once taken for granted. As emerging nations such as Brazil clamor for permanent seats on the U.N. Security Council and more representatives in the higher reaches of the World Bank and the International Monetary Fund, the U.S. will need to integrate them into global decision-making rather than isolate them. If not, they could be a thorn in the side of the U.S. as it tries to implement its foreign policy agenda. Worse, they could threaten to undermine efforts to defend international norms and human rights. 2. Latin America is becoming more international. It’s time to understand that the U.S. isn’t the only country that has clout in Latin America. For far too long, U.S. officials and Latin America experts have tended to treat the region as separate, politically and strategically, from the rest of the world. But as they’ve fought battles over small countries such as Cuba and Honduras and narrow bore issues such as the U.S.-Colombia free-trade agreement, other countries like China and India have increased their economic presence and political influence in the region. It’s also clear that countries such as Brazil and Venezuela present their own challenges to U.S. influence in the region and even on the world forum. The U.S. must embed its Latin America relations in the conceptual framework and strategy that it has for the rest of the world, rather than just focus on human rights and development as it often does toward southern neighbors such as Cuba. 3. There are security and strategic risks in the region. Hugo Chavez’s systematic deconstruction of the Venezuelan state and alleged ties between FARC rebels and some of Chavez’s senior officials have created a volatile cocktail that could explode south of the U.S. border. FARC, a left-wing guerrilla group based in Colombia, has been designated as a “significant foreign narcotics trafficker” by the U.S. government. At the same time, gangs, narcotics traffickers and transnational criminal syndicates are overrunning Central America. In 2006, Mexican President Felipe Calderón launched a controversial “war on drugs” that has since resulted in the loss of over 50,000 lives and increased the levels of violence and corruption south of the Mexican border in Guatemala, El Salvador, Honduras and even once-peaceful Costa Rica. Increasingly, these already-weak states are finding themselves overwhelmed by the corruption and violence that has come with the use of their territory as a transit point for drugs heading north. **Given** their **proximity and close historical and political connections with Washington**, the U.S. will find it increasingly difficult not to be drawn in. Only this case, it won’t be with or against governments — as it was in the 1980s — but in the far more complex, sticky situation of failed states. There are many other reasons why **Latin America is important to U.S. interests**. It is a market for more than 20% of U.S. exports. With the notable exception of Cuba, it is nearly entirely governed by democratically elected governments — a point that gets repeated ad nauseum at every possible regional meeting. The Western Hemisphere is a major source of energy that has the highest potential to seriously reduce dependence on Middle East supply. And through immigration, Latin America has close personal and cultural ties to the United States. These have been boilerplate talking points since the early 1990s. But the demands of the globe today are different, and they warrant a renewed engagement with Latin America — a strategic pivot point for initiatives the U.S. wants to accomplish elsewhere. We need to stop thinking of Latin America as the U.S. “backyard” that is outside broader, global strategic concerns.

# 1ar

# Solvency

**The plan solves by the end of next year**

**Causbie 12** (Hanson Causbie, BS in Civil Engineering & BA in Comparative Politics – US Military Academy at West Point, aviation officer in the Army, March 2012, “DEPLOYABLE NUKES: THE FUTURE OF NUCLEAR POWER IN THE DEPLOYED ENVIRONMENT”)

A number of nuclear reactor designs are available at varying costs and power outputs. Many of these designs are currently only available on paper while others have entered the initial stages of production. All of the designs, however, share common features which make them appropriate to the deployed environment. The first feature is their size. Reactors range in size from as small as a residential hot tub to as large as a van. This compactness allows these units to achieve specific fabrication and performance goals not found in large light water reactors. 26 Second is the selfcontainment of these units. Most of the current designs are simply installed in the required location and then left alone with the only maintenance required at the time of removal or refuel.27 Finally, these mini reactors are significantly safer than the prior generations of nuclear technology. Current reactors, known as Generation IV reactors, have fewer moving parts and fewer systems, thus decreasing the points of failure and thus danger of the units.

Illustration 1 (see below) outlines a few of available nuclear power units available on today’s market. All of these units are self-contained and differ in the length of their service as well as their power output.

All of the units above are manufactured and then transported in their entirety to their on-site locations.30 Some of the larger units may require to be sent in components because of their size. Even though the units are self-contained they do require additional infrastructure to distribute power including but not limited to cooling towers and condensers, a steam turbine, and additional support services.

Associated Costs

Even though all of the above products are capable of operating in the deployed environment the Gen4 Module will be used as the example unit for a number of reasons. First, the Gen4 Module is the smallest and most transportable unit, thus making it an easier unit to integrate into FOBs and begin the transition to nuclear power. Second, the Gen4 Module is the closest to development with **delivery of the first units by June of 2013**.31 Finally, the Gen4 Module has some important technological advances over its counterparts which make it even more appropriate for the deployed environment. These characteristics will be discussed in detail below.

#### That builds NRC expertise

CSPO ’10 (Consortium for Science, Policy and Outcomes at ASU, “four policy principles for energy innovation & climate change: a synthesis”, June, <http://www.catf.us/resources/publications/files/Synthesis.pdf>)

Government purchase of new technologies is a powerful way to accelerate innovation through increased demand (Principle 3a). We explore how this principle can be applied by considering how the DoD could purchase new nuclear reactor designs to meet electric power needs for DoD bases and operations. Small modular nuclear power reactors (SMRs), which generate less than 300 MW of power (as compared to more typical reactors built in the 1000 MW range) are often listed as a potentially transformative energy technology. While typical traditional large-scale nuclear power plants can cost five to eight billion dollars, smaller nuclear reactors could be developed at smaller scale, thus not presenting a “bet the company” financial risk. SMRs could potentially be mass manufactured as standardized modules and then delivered to sites, which could significantly reduce costs per unit of installed capacity as compared to today’s large scale conventional reactor designs. It is likely that some advanced reactors designs – including molten salt reactors and reactors utilizing thorium fuels – could be developed as SMRs. Each of these designs offers some combination of inherently safe operation, very little nuclear proliferation risk, relatively small nuclear waste management needs, very abundant domestic fuel resources, and high power densities – all of which are desirable attributes for significant expansion of nuclear energy. Currently, several corporations have been developing small nuclear reactors. Table 2 lists several of these companies and their reactor power capacities, as well as an indication of the other types of reactor innovations that are being incorporated into the designs. Some of these technologies depend on the well-established light water reactor, while others use higher energy neutrons, coolants capable of higher temperature operation, and other innovative approaches. Some of these companies, such as NuScale, intend to be able to connect as many as 24 different nuclear modules together to form one larger nuclear power plant. In addition to the different power ranges described in Table 2, these reactors vary greatly in size, some being only 3 to 6 feet on each side, while the NuScale reactor is 60 feet long and 14 feet in diameter. Further, many of these reactors produce significant amounts of high-temperature heat, which can be harnessed for process heating, gas turbine generators, and other operations. One major obstacle is to rapid commercialization and development are prolonged multi-year licensing times with the Nuclear Regulatory Commission. Currently, the NRC will not consider a reactor for licensing unless there is a power utility already prepared to purchase the device. Recent Senate legislation introduced by Senator Jeff Bingaman (D-NM) has pushed for DOE support in bringing down reactor costs and in helping to license and certify two reactor designs with the NRC. Some additional opportunities to facilitate the NRC licensing process for innovative small modular reactors would be to fund NRC to conduct participatory research to get ahead of potential license applications (this might require ~$100million/year) and potentially revise the current requirement that licensing fees cover nearly all NRC licensing review costs. One option for accelerating SMR development and commercialization, would be for DOD to establish SMR procurement specifications (to include cost) and agree to purchase a sufficient amount of SMR’s to underwrite private sector SMR development. Of note here may be that DARPA recently (3/30/10) issued a “Request for Information (RFI) on Deployable Reactor Technologies for Generating Power and Logistic Fuels”2 that specifies may features that would be highly desirable in an advanced commercial SMR. While other specifications including coproduction of mobility fuel are different than those of a commercial SMR power reactor, it is likely that a core reactor design meeting the DARPA inquiry specifications would be adaptable to commercial applications. While nuclear reactors purchased and used by DOD are potentially exempt from many NRC licensing requirements3, any reactor design resulting from a DOD procurement contract would need to proceed through NRC licensing before it could be commercially offered. Successful use of procured SMR’s for DOD purposes could provide the knowledge and operational experience needed to aid NRC licensing and it might be possible for the SMR contractor to begin licensing at some point in the SMR development process4. Potential purchase of small modular nuclear reactors would be a powerful but proven way in which government procurement of new energy technologies could encourage innovation. Public procurement of other renewable energy technologies could be similarly important.

**His statistics are stupid**

**Wohlforth 12**, William, Daniel Webster Professor in the Department of Government at Dartmouth College “Nuno Monteiro. “’Unrest Assured: Why Unipolarity is not Peaceful.’ Reviewed by William Wohlforth” October 31st, http://www.h-net.org/~diplo/ISSF/PDF/ISSF-AR17.pdf

Third, setting up the article as a claim that unipolarity is not peaceful runs into a problem: **Unipolarity is peaceful. The Most Peaceful. Ever. Period**. No one expects any imaginable anarchic inter-state system to be perfectly peaceful, with no war at all. In my 1999 paper, I stressed that “unipolarity does not imply the end of all conflict... It simply means the absence of two big problems” — hegemonic rivalry and counter-hegemonic balancing—that were present in all earlier systems. As a result “unipolarity favors the absence of war among the great powers.” Like any statement about the war-proneness of any international system, this is a relative claim. International relations scholarship does not have theories that make anything other than relative predictions about the war-proneness of systems. Monteiro tries but fails to escape this reality. He writes: “Rather than assess the relative peacefulness of unipolarity vis-à-vis bipolar or multipolar systems, I identify causal pathways to war that are characteristic of a unipolar system and that have not been developed in the extant literature (12). The latter portion of this sentence is exactly right, but the former bit is contradicted just a few pages later when Monteiro presents evidence that “Unipolarity is the most conflict prone of all systems .. .“ (18). While **conflict researchers** debate the causes, they **are nearly united** in agreeing that the post-1990 international system is the least afflicted by war.5 There are many ways to measure war: the overall number that occur, the number of people killed, the probability that any state will be at war in any year, the size or cost of military forces compared to economic output or population, or, perhaps best, the probability that any individual will die as a result of organized inter-group violence. By all those measures, we are living in the most peaceful period since the modern inter-state system took shape in the seventeenth century. Indeed, Stephen Pinker assembles masses of evidence to suggest that there has never been a less violent time in all of human history.6 It is hard to think of any way to measure war that does not show the unipolar period as remarkably peaceful— except for the ones Monteiro uses: “the percentage of years that great powers spend at war, and the incidence of war involving great powers,” (18) with the United States defined as the only great power after 1990. That is a very convoluted way to say ‘Iraq and Afghanistan.’ The fact that the United States ended up in two grinding counter-insurgency operations in no way contradicts the claim that unipolarity is unprecedentedly peaceful.

# Russia War New

# \*\*\*Russia-US War\*\*\*

**Zero risk of war**

David E. **Hoffman 10/22**/12, contributing editor to Foreign Policy and the author of The Dead Hand: The Untold Story of the Cold War Arms Race and Its Dangerous Legacy, which won the 2010 Pulitzer Prize for general non-fiction, "Hey, Big Spender," Foreign Policy, www.foreignpolicy.com/articles/2012/10/22/hey\_big\_spender?page=full

Despite tensions that flare up, the United States and Russia are no longer enemies; **the chance of nuclear war or surprise attack is nearly zero**. We trade in each other's equity markets. Russia has the largest audience of Facebook users in Europe, and is open to the world in a way the Soviet Union never was.

**Graham ‘7** (Thomas Graham, senior advisor on Russia in the US National Security Council staff 2002-2007, September 2007, "Russia in Global Affairs” July - September 2007, The Dialectics of Strength and Weakness

An astute historian of Russia, Martin Malia, wrote several years ago that “Russia has at different times been demonized or divinized by Western opinion less because of her real role in Europe than because of the fears and frustrations, or hopes and aspirations, generated within European society by its own domestic problems.” Such is the case today. To be sure, mounting Western concerns about Russia are a consequence of Russian policies that appear to undermine Western interests, but they are also a reflection of declining confidence in our own abilities and the efficacy of our own policies. Ironically, this growing fear and distrust of Russia come at a time when Russia is arguably less threatening to the West, and the United States in particular, than it has been at any time since the end of the Second World War. Russia does not champion a totalitarian ideology intent on our destruction, its military poses no threat to sweep across Europe, its economic growth depends on constructive commercial relations with Europe, and its strategic arsenal – while still capable of annihilating the United States – is under more reliable control than it has been in the past fifteen years and the threat of a strategic strike approaches zero probability. Political gridlock in key Western countries, however, precludes the creativity, risk-taking, and subtlety needed to advance our interests on issues over which we are at odds with Russia while laying the basis for more constructive lon-term relations with Russia.

No impact- US would win without any casualties or escalation

Lieber and Press ‘6 (Keir A. Lieber and Daryl G. Press, Assistant Professor of Political Science, University of Notre Dame, and Associate Professor of Political Science, University of Pennsylvania, “The End of MAD? The Nuclear Dimension of U.S. Primacy,” INTERNATIONAL SECURITY, v 30 n 4, Spring 2006, p. 7-8. <http://belfercenter.ksg.harvard.edu/files/is3004_pp007-044_lieberpress.pdf>]

The age of MAD, however, is waning. Today the United States stands on the verge of attaining nuclear primacy vis-à-vis its plausible great power adversaries. For the first time in decades, it could conceivably disarm the long-range nuclear arsenals of Russia or China with a nuclear first strike. A preemptive strike on an alerted Russian arsenal would still likely fail, but a surprise attack at peacetime alert levels would have a reasonable chance of [succeed] success. Furthermore, the Chinese nuclear force is so vulnerable that it could be destroyed even if it were alerted during a crisis. To the extent that great power peace stems from the pacifying effects of nuclear weapons, it currently rests on a shaky foundation. This article makes three empirical claims. First, the strategic nuclear balance has shifted dramatically since the end of the Cold War, and the United States now stands on the cusp of nuclear primacy.2 Second, the shift in the balance of power has two primary sources: the decline of the Russian nuclear arsenal and the steady growth in U.S. nuclear capabilities. Third, the trajectory of nuclear developments suggests that the nuclear balance will shift further in favor of the United States in the coming years. Russia and China will face tremendous incentives to reestablish mutual assured destruction, but doing so will require substantial sums of money and years of sustained effort. If these states want to reestablish a robust strategic deterrent, they will have to overcome current U.S. capabilities, planned improvements to the U.S. arsenal, and future developments being considered by the United States. U.S. nuclear primacy may last a decade or more. To illustrate the shift in the strategic nuclear balance, we model a U.S. nuclear first strike against Russia. Russia was not chosen because it is the United States’ most likely great power adversary; to the contrary, most analysts expect China to ªll that role. But Russia presents the hardest case for our contention that the United States is on the brink of nuclear primacy. It has about 3,500 nuclear warheads capable of reaching the continental United States; by comparison, China has only 18 single-warhead missiles that can reach the U.S. homeland.3 If the United States can destroy all of Russia’s long-range nuclear systems in a ªrst strike—as we argue it could possibly do today—it suggests that the Chinese strategic nuclear arsenal is far more vulnerable.

# 1AR/2NC- US Win

And they can’t access Bostrom- he assumes Cold War levels of nukes which Russia does not have anymore- US would win

Leiber and Press ‘6 (Keir A. Lieber and Daryl G. Press, Assistant Professor of Political Science, University of Notre Dame, and Associate Professor of Political Science, University of Pennsylvania, “The End of MAD? The Nuclear Dimension of U.S. Primacy,” INTERNATIONAL SECURITY, v 30 n 4, Spring 2006, p. 7-8. <http://belfercenter.ksg.harvard.edu/files/is3004_pp007-044_lieberpress.pdf>)

In the last fifteen years, however, the strategic nuclear balance has shifted profoundly. Part of the shift is attributable to the decline of the Russian arsenal. Compared with the Soviet force in 1990, Russia has 58 percent fewer intercontinental ballistic missiles (ICBMs), 39 percent fewer bombers, and 80 percent fewer ballistic missile submarines (SSBNs).16 Furthermore, serious maintenance and readiness problems plague Russia’s nuclear forces. Most of Russia’s ICBMs have exceeded their service lives, and a series of naval accidents— highlighted by the sinking of the attack submarine Kursk in 2000— reºect the severe decay of the ºeet.17 Budgetary constraints have also dramatically reduced the frequency of Russia’s submarine and mobile ICBM patrols, increasing the vulnerability of what would otherwise be the most survivable element of its arsenal. Since 2000, Russian SSBNs have conducted approximately two patrols per year (with none in 2002), down from sixty in 1990, and apparently Russia often has no mobile missiles on patrol.18 Finally, Russia has had difficulty maintaining satellite observation of U.S. ICBM ªelds, and gaps in its radar network would leave it blind to a U.S. submarine-launched ballistic missile (SLBM) attack from launch areas in the Paciªc Ocean.19 While the Russian strategic arsenal has eroded, the United States has continued to modernize its weapons. U.S. strategic forces have shrunk in number since the end of the ColdWar, but they have become more lethal. The U.S. submarine force has undergone nearly continuous improvement over the past ªfteen years. The deployment of the highly accurate Trident II (D-5) SLBM was a Cold War decision, but the United States stuck with the deployment plans and has steadily reªtted its entire SSBN ºeet to carry the new missile.20 Furthermore, the United States has signiªcantly increased the lethality of the original Trident II missile against hard targets such as missile silos: the navy replaced nearly 400 of the 100-kiloton W76 warheads on these missiles with the more powerful 455-kiloton W88 warhead, creating an incredibly lethal combination of accuracy and warhead yield. Other upgrades to Trident II include a more accurate reentry vehicle (RV) and other improvements to increase the missile’s accuracy.21 The United States has also been upgrading its land-based missiles and strategic bombers. Although the United States ªnished dismantling the MX Peacekeeper ICBM in 2005 in accordance with its arms control commitments, the key elements that gave the MX exceptional lethality are being preserved. The nuclear warheads and advanced RVs from the MX are beginning to replace the lower-yield warheads and less accurate RVs on 200 Minuteman III ICBMs. In addition, the Minuteman guidance systems have been upgraded to roughly match the accuracy of the retired MX.22 In another example of U.S. force modernization, the B-2 bomber has been given upgraded avionics that allow it to avoid radar by ºying at extremely low altitude.23 At ªrst glance, this seems like a strange capability to give the B-2: the aircraft is so stealthy that it seems hard to justify the risks of very low altitude ºight (e.g., crashing into the ter-rain) to reduce the bomber’s exposure to radar. However, against an adversary with an extremely sophisticated air defense network (e.g., Russia today or China in the future), very low-level ºight may be necessary to penetrate enemy airspace.

# Impact Defense

#### No impact to Russian economy collapse

Friedman ‘9 (chief [intelligence officer](http://en.wikipedia.org/wiki/Intelligence_officer), financial overseer, and CEO of the private intelligence corporation [Stratfor](http://en.wikipedia.org/wiki/Stratfor), 9 (George, 7-27-09, Stratfor, “The Russian Economy and Russian Power,” http://www.stratfor.com/weekly/20090727\_u\_s\_policy\_continuity\_and\_russian\_response, accessed 10-27-10,)

Russia has been an economic wreck for most of its history, both under the czars and under the Soviets. The [geography of Russia has a range of weaknesses](http://www.stratfor.com/analysis/20081014_geopolitics_russia_permanent_struggle), as we have explored. Russia's geography, daunting infrastructural challenges and demographic structure all conspire against it. But the strategic power of Russia was never synchronized to its economic well-being. Certainly, following World War II the Russian economy was shattered and never quite came back together. Yet Russian global power was still enormous. A look at the crushing poverty -- but undeniable power -- of Russia during broad swaths of time from 1600 until Andropov arrived on the scene certainly gives credence to Putin's view.¶ The problems of the 1980s had as much to do with the weakening and corruption of the Communist Party under former Soviet leader Leonid Brezhnev as it had to do with intrinsic economic weakness. To put it differently, the Soviet Union was an economic wreck under Joseph Stalin as well. The Germans made a massive mistake in confusing Soviet economic weakness with military weakness. During the Cold War, the United States did not make that mistake. It understood that Soviet economic weakness did not track with Russian strategic power. Moscow might not be able to house its people, but its military power was not to be dismissed.¶ What made an economic cripple into a military giant was political power. Both the czar and the Communist Party maintained a ruthless degree of control over society. That meant Moscow could divert resources from consumption to the military and suppress resistance. In a state run by terror, dissatisfaction with the state of the economy does not translate into either policy shifts or military weakness -- and certainly not in the short term. Huge percentages of gross domestic product can be devoted to military purposes, even if used inefficiently there. [Repression and terror](http://www.stratfor.com/realism_russia) smooth over public opinion.¶ The czar used repression widely, and it was not until the army itself rebelled in World War I that the regime collapsed. Under Stalin, even at the worst moments of World War II, the army did not rebel. In both regimes, economic dysfunction was accepted as the inevitable price of strategic power. And dissent -- even the hint of dissent -- was dealt with by the only truly efficient state enterprise: the security apparatus, whether called the Okhraina, Cheka, NKVD, MGB or KGB.¶ From the point of view of Putin, who has called the Soviet collapse the greatest tragedy of our time, the problem was not economic dysfunction. Rather, it was the attempt to completely overhaul the Soviet Union's foreign and domestic policies simultaneously that led to the collapse of the Soviet Union. And that collapse did not lead to an economic renaissance. ¶ Biden might not have meant to gloat, but he drove home the point that Putin believes. For Putin, the West, and particularly the United States, engineered the fall of the Soviet Union by policies crafted by the Reagan administration -- and that same policy remains in place under the Obama administration.¶ It is not clear that Putin and Russian President Dmitri Medvedev disagree with Biden's analysis -- the Russian economy truly is "withering" -- except in one sense. Given the policies Putin has pursued, the Russian prime minister must believe he has a way to cope with that. In the short run, Putin might well have such a coping mechanism, and this is the temporary [window of opportunity](http://www.stratfor.com/russias_window_opportunity) Biden alluded to. But in the long run, the solution is not improving the economy -- that would be difficult, if not outright impossible, for a country as large and lightly populated as Russia. Rather, the solution is accepting that [Russia's economic weakness](http://www.stratfor.com/analysis/20090612_russia_and_recession) is endemic and creating a regime that allows Russia to be a great power in spite of that. ¶ Such a regime is the one that can create military power in the face of broad poverty, something we will call the "Chekist state." This state uses its security apparatus, now known as the FSB, to control the public through repression, freeing the state to allocate resources to the military as needed. In other words, this is [Putin coming full circle](http://www.stratfor.com/coming_era_russias_dark_rider) to his KGB roots, but without the teachings of an Andropov or Gorbachev to confuse the issue. This is not an ideological stance; it applies to the Romanovs and to the Bolsheviks. It is an operational principle embedded in Russian geopolitics and history.¶ Counting on Russian strategic power to track Russian economic power is risky. Certainly, it did in the 1980s and 1990s, but Putin has worked to decouple the two. On the surface, it might seem a futile gesture, but in Russian history, this decoupling is the norm. Obama seems to understand this to the extent that he has tried to play off Medvedev (who appears less traditional) from Putin (who appears to be the more traditional), but we do not think this is a viable strategy -- this is not a matter of Russian political personalities but of Russian geopolitical necessity.