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## 1AC – NEW CARDS!

### 1AC fissile material advantage

#### ADVANTAGE: 1 fissile material

#### Rapid cascade proliferation at the tipping point.

Graham Allison, January/February 2010, Director of Harvard's major Center for Science and International Affairs, as for three decades been a leading analyst of U.S. national security and defense policy with a special interest in nuclear weapons, terrorism, and decision-making, Assistant Secretary of Defense in the first Clinton Administration, Defense Medal for Distinguished Public Service, Organizer of the Commission on America's National Interests, Foreign Policy, “Nuclear Disorder,” Ebsco Host

THE GLOBAL nuclear order today could be as fragile as the global financial order was two years ago, when conventional wisdom declared it to be sound, stable, and resilient. In the aftermath of the 1962 Cuban missile crisis, a confrontation that he thought had one chance in three of ending in nuclear war, U.S. President John F. Kennedy concluded that the nuclear order of the time posed unacceptable risks to mankind. "I see the possibility in the 1970s of the president of the United States having to face a world n which 15 or 20 or 25 nations may have these weapons," he forecast. "I regard that as the greatest possible danger." Kennedy's estimate reflected the general expectation that as nations acquired the advanced technological capability to build nuclear weapons, they would do so. Although history did not proceed along that trajectory, Kennedy's warning helped awaken the world to the intolerable dangers of unconstrained nuclear proliferation. His conviction spurred a surge of diplomatic initiatives: a hot line between Washington and Moscow, a unilateral moratorium on nuclear testing, a ban on nuclear weapons in outer space. Refusing to accept the future Kennedy had spotlighted, the international community instead negotiated various international constraints, the centerpiece of which was the 1968 Nuclear Nonproliferation Treaty (NPT). Thanks to the nonproliferation regime, 184 nations, including more than 40 that have the technical ability to build nuclear arsenals, have renounced nuclear weapons. Four decades since the NPT was signed, there are only nine nuclear states. Moreover, for more than 60 years, no nuclear weapon has been used in an attack. In 2004, the secretary-general of the UN created a panel to review future threats to international peace and security. It identified nuclear Armageddon as the prime threat, warning, "We are approaching a point at which the erosion of the nonproliferation regime could become irreversible and result in a cascade of proliferation." Developments since 2004 have only magnified the risks of an irreversible cascade. The current global nuclear order is extremely fragile, and the three most urgent challenges to it are North Korea, Iran, and Pakistan. If North Korea and Iran become established nuclear weapons states over the next several years, the nonproliferation regime will have been hollowed out. If Pakistan were to lose control of even one nuclear weapon that was ultimately used by terrorists, that would change the world. It would transform life in cities, shrink what are now regarded as essential civil liberties, and alter conceptions of a viable nuclear order. Henry Kissinger has noted that the defining challenge for statesmen is to recognize "a change in the international environment so likely to undermine a nation's security that it must be resisted no matter what form the threat takes or how ostensibly legitimate it appears." The collapse of the existing nuclear order would constitute just such a change and the consequences would make nuclear terrorism and nuclear war so imminent that prudent statesmen must do everything feasible to prevent it.

#### Proliferation causes nuclear war and extinction – deterrence fails for three reasons.

Matthew Kroenig, 5-26-2012, assistant professor in the Department of Government at Georgetown University and a research affiliate with The Project on Managing the Atom at Harvard University, he served as a strategist on the policy planning staff in the Office of the Secretary of Defense where he received the Office of the Secretary of Defense’s Award for Outstanding Achievement. He is a term member of the Council on Foreign Relations and has held academic fellowships from the National Science Foundation, the Belfer Center for Science and International Affairs at Harvard University, the Center for International Security and Cooperation at Stanford University, and the Institute on Global Conflict and Cooperation at the University of California, “The History of Proliferation Optimism: Does It Have A Future?,” http://www.npolicy.org/article.php?aid=1182andrtid=2

The spread of nuclear weapons poses a number of severe threats to international peace and U.S. national security including: nuclear war, nuclear terrorism, emboldened nuclear powers, constrained freedom of action, weakened alliances, and further nuclear proliferation. This section explores each of these threats in turn. Nuclear War. The greatest threat posed by the spread of nuclear weapons is nuclear war. The more states in possession of nuclear weapons, the greater the probability that somewhere, someday, there is a catastrophic nuclear war. A nuclear exchange between the two superpowers during the Cold War could have arguably resulted in human extinction and a nuclear exchange between states with smaller nuclear arsenals, such as India and Pakistan, could still result in millions of deaths and casualties, billions of dollars of economic devastation, environmental degradation, and a parade of other horrors. To date, nuclear weapons have only been used in warfare once. In 1945, the United States used one nuclear weapon each on Hiroshima and Nagasaki, bringing World War II to a close. Many analysts point to sixty-five-plus-year tradition of nuclear non-use as evidence that nuclear weapons are unusable, but it would be naïve to think that nuclear weapons will never be used again. After all, analysts in the 1990s argued that worldwide economic downturns like the great depression were a thing of the past, only to be surprised by the dot-com bubble bursting in the later 1990s and the Great Recession of the late Naughts. [53] This author, for one, would be surprised if nuclear weapons are not used in my lifetime. Before reaching a state of MAD, new nuclear states go through a transition period in which they lack a secure-second strike capability. In this context, one or both states might believe that it has an incentive to use nuclear weapons first. For example, if Iran acquires nuclear weapons neither Iran, nor its nuclear-armed rival, Israel, will have a secure, second-strike capability. Even though it is believed to have a large arsenal, given its small size and lack of strategic depth, Israel might not be confident that it could absorb a nuclear strike and respond with a devastating counterstrike. Similarly, Iran might eventually be able to build a large and survivable nuclear arsenal, but, when it first crosses the nuclear threshold, Tehran will have a small and vulnerable nuclear force. In these pre-MAD situations, there are at least three ways that nuclear war could occur. First, the state with the nuclear advantage might believe it has a splendid first strike capability. In a crisis, Israel might, therefore, decide to launch a preemptive nuclear strike to disarm Iran’s nuclear capabilities and eliminate the threat of nuclear war against Israel. Indeed, this incentive might be further increased by Israel’s aggressive strategic culture that emphasizes preemptive action. Second, the state with a small and vulnerable nuclear arsenal, in this case Iran, might feel use ‘em or loose ‘em pressures. That is, if Tehran believes that Israel might launch a preemptive strike, Iran might decide to strike first rather than risk having its entire nuclear arsenal destroyed. Third, as Thomas Schelling has argued, nuclear war could result due to the reciprocal fear of surprise attack.[54] If there are advantages to striking first, one state might start a nuclear war in the belief that war is inevitable and that it would be better to go first than to go second. In a future Israeli-Iranian crisis, for example, Israel and Iran might both prefer to avoid a nuclear war, but decide to strike first rather than suffer a devastating first attack from an opponent. Even in a world of MAD, there is a risk of nuclear war. Rational deterrence theory assumes nuclear-armed states are governed by rational leaders that would not intentionally launch a suicidal nuclear war. This assumption appears to have applied to past and current nuclear powers, but there is no guarantee that it will continue to hold in the future. For example, Iran’s theocratic government, despite its inflammatory rhetoric, has followed a fairly pragmatic foreign policy since 1979, but it contains leaders who genuinely hold millenarian religious worldviews who could one day ascend to power and have their finger on the nuclear trigger. We cannot rule out the possibility that, as nuclear weapons continue to spread, one leader will choose to launch a nuclear war, knowing full well that it could result in self-destruction. One does not need to resort to irrationality, however, to imagine a nuclear war under MAD. Nuclear weapons may deter leaders from intentionally launching full-scale wars, but they do not mean the end of international politics. As was discussed above, nuclear-armed states still have conflicts of interest and leaders still seek to coerce nuclear-armed adversaries. This leads to the credibility problem that is at the heart of modern deterrence theory: how can you threaten to launch a suicidal nuclear war? Deterrence theorists have devised at least two answers to this question. First, as stated above, leaders can choose to launch a limited nuclear war.[55] This strategy might be especially attractive to states in a position of conventional military inferiority that might have an incentive to escalate a crisis quickly. During the Cold War, the United States was willing to use nuclear weapons first to stop a Soviet invasion of Western Europe given NATO’s conventional inferiority in continental Europe. As Russia’s conventional military power has deteriorated since the end of the Cold War, Moscow has come to rely more heavily on nuclear use in its strategic doctrine. Indeed, Russian strategy calls for the use of nuclear weapons early in a conflict (something that most Western strategists would consider to be escalatory) as a way to de-escalate a crisis. Similarly, Pakistan’s military plans for nuclear use in the event of an invasion from conventionally stronger India. And finally, Chinese generals openly talk about the possibility of nuclear use against a U.S. superpower in a possible East Asia contingency. Second, as was also discussed above leaders can make a “threat that leaves something to chance.”[56] They can initiate a nuclear crisis. By playing these risky games of nuclear brinkmanship, states can increases the risk of nuclear war in an attempt to force a less resolved adversary to back down. Historical crises have not resulted in nuclear war, but many of them, including the 1962 Cuban Missile Crisis, have come close. And scholars have documented historical incidents when accidents could have led to war.[57] When we think about future nuclear crisis dyads, such as India and Pakistan and Iran and Israel, there are fewer sources of stability that existed during the Cold War, meaning that there is a very real risk that a future Middle East crisis could result in a devastating nuclear exchange.

#### Central question of the nonproliferation regime is disposal of nuclear fuel - not solving will undercut the global nuclear order.

Graham Allison, January/February 2010, Director of Harvard's major Center for Science and International Affairs, as for three decades been a leading analyst of U.S. national security and defense policy with a special interest in nuclear weapons, terrorism, and decision-making, Assistant Secretary of Defense in the first Clinton Administration, Defense Medal for Distinguished Public Service, Organizer of the Commission on America's National Interests, Foreign Policy, “Nuclear Disorder,” Ebsco Host

GROWING CYNICISM about the nonproliferation regime also threatens to undercut the global nuclear order. It is easy to see why non-nuclear-weapons states view the regime as an instrument for the haves to deny the have-nots. At the NPT Review Conference in 2000, the United States and other nuclear weapons states promised to take 13 "practical steps" toward meeting their NPT commitments, but later, at the Review Conference in 2005, John Bolton, then the U.S. ambassador to the UN, declared those 2000 undertakings inoperable and subsequently banned any use of the word "disarmament" from the "outcome document" of the UN's 60th anniversary summit. In preparation for the 2010 Review Conference, which will convene in May, diplomats at the IAEA have been joined by prime ministers and presidents in displaying considerable suspicion about a regime that permits nuclear weapons states to keep their arsenals but prevents others from joining the nuclear club. Those suspicions are reflected in governments' unwillingness to accept additional constraints that would reduce the risks of proliferation, such as by ratifying the enhanced safeguards agreement known as the Additional Protocol or approving an IAEA-managed multinational fuel bank to ensure states access to fuel for nuclear energy plants. At the same time, rising concerns about greenhouse gas emissions have stimulated a growing demand for nuclear energy as a clean-energy alternative. There are currently 50 nuclear energy plants under construction, most of them in China and India, and 130 more might soon be built globally. Concern arises not from the nuclear reactors themselves but from the facilities that produce nuclear fuel and dispose of its waste product. The hardest part of making nuclear weapons is producing fissile material: enriched uranium or plutonium. The same setup of centrifuges that enriches uranium ore to four percent to make fuel for nuclear power plants can enrich uranium to 90 percent for nuclear bombs. A nuclear regime that allows any state with a nuclear energy plant to build and operate its own enrichment facility invites proliferation. The thorny question is how to honor the right of non-nuclear-weapons states, granted by the NPT, to the "benefits of peaceful nuclear technology" without such a consequence.

#### U.S. fast reactors and pyro-processing is key to reinvigorating nuclear leadership – Korea proves.

Charles D. Ferguson, 6-17-2009, is the Philip D. Reed senior fellow for science and technology at the Council on Foreign Relations (CFR), is also an adjunct professor in the security studies program at Georgetown University, where he teaches a graduate-level course titled “Nuclear Technologies and Security,” and an adjunct lecturer in the national security studies program at the Johns Hopkins University, where he teaches a graduate level course titled “Weapons of Mass Destruction Technologies,” served as the project director for the CFR-sponsored Independent Task Force on U.S. Nuclear Weapons Policy, scientist-inresidence at the Monterey Institute’s Center for Nonproliferation Studies (CNS), won the Robert S. Landauer Lecture Award from the Health Physics Society, Testimony to Committee on Science and Technology, U.S. House of Representatives, “Advancing Technology for Nuclear Fuel Recycling: What Should Our Research, Development, and Demonstration Strategy Be?.” <http://www.cfr.org/content/publications/attachments/FergusonTestimonyJune172009.pdf>

The benefit of a fast reactor recycling program could be the reduction or near elimination of the longer-lived transuranic elements that are the major heat producing elements beyond several hundred years. Other countries may venture into reprocessing. Therefore, it is imperative for the United States to reevaluate its policies and redouble its efforts to prevent the further spread of reprocessing plants to non-nuclear-weapon states. In particular, the Republic of Korea is facing a crisis in the overcrowded conditions in the spent fuel pools at its power plants. One option is to remove older spent fuel and place it in dry storage casks, but the ROK government believes this option may cost too much because of the precedent set by the exorbitantly high price paid for a low level waste disposal facility. Another option is for the ROK to reprocess spent fuel. While this will provide significant volume reduction in the waste, it will only defer the problem to storage of MOX spent fuel, similar to the problem faced by France. This option will run counter to the agreement the ROK signed with North Korea in the early 1990s for both states to prohibit reprocessing or enrichment on the Korean Peninsula. A related option is to ship spent fuel to La Hague, but a security question is whether to ship plutonium back to the ROK. France would require shipment of the high level waste back to the ROK. Thus, the ROK will need a high level waste disposal facility. The main reason I raise this ROK issue at length is that the ROK and the United States have recently begun talks on the renewal of their peaceful nuclear cooperation agreement, which will expire in 2014. The United States has consent rights on ROK spent fuel because either it was produced with U.S.-supplied fresh fuel or U.S. origin reactor systems. The ROK is seeking to have future spent fuel not subject to such consent rights by purchasing fresh fuel from other suppliers and by developing reactor systems that do not have critical components that are U.S.-origin or derived from U.S.origin systems. The bottom line is that the United States is steadily losing its leverage with the ROK and other countries because of declining U.S. leadership in nuclear power plant systems and nuclear waste management. Concerning lessons the United States can learn from other countries’ nuclear waste management experience, the first lesson is that a fair political and sound scientific process is essential for selecting a permanent repository. Sweden demonstrates the effectiveness of examining multiple sites and gaining buy-in from the public and local governments. The second lesson is that reprocessing, as currently practiced, does not substantially alleviate the nuclear waste management problem. However, more research is needed to determine the costs and benefits of fast reactors for reducing transuranic waste. Any type of reprocessing will require safe and secure waste repositories. While the United States investigates the costs and benefits of various recycling proposals through a research program, it has an opportunity now to exercise leadership in two waste management areas. First, as envisioned in GNEP, the United States should offer fuel leasing services. As part of those services, it should offer to take back spent fuel from the client countries. (Russia is offering this service to Iran’s Bushehr reactor.) This spent fuel does not necessarily have to be sent to the United States. It could be sent to a third party country or location that could earn money for the spent fuel storage rental service. Spent fuel can be safely and securely stored in dry storage casks for up to 100 years. Long before this time ends, a research program will most likely determine effective means of waste management. The spent fuel leasing could be coupled to the second area where the United States can play a leadership role. That is, the United States can offer technical expertise and political support in helping to establish regional spent fuel repositories.

#### Bargaining breaks down with uncertainty and overconfidence from proliferation.

Erik Gartzke, 5-1-2010, Ph.D. in Political Science from the University of Iowa, associate professor of political science at UC San Diego, “Nuclear Proliferation Dynamics and Conventional Conflict,” http://dss.ucsd.edu/~egartzke/papers/nuketime\_05032010.pdf

A third possibility is that uncertainty about nuclear weapons status increases the hazard of militarized disputes. In contrast to the classical approach that emphasizes power relations, contemporary research on the causes of conflict focuses on the role of asymmetric information (Fearon 1995, Wagner 2000). Nations are more likely to fight if they underestimate one another’s respective resolve or capabilities. Bargaining breaks down when competitors cannot identify acceptable offers. Bargaining failures in turn heighten the probability of disputes. If nations are more likely to fight when they are uncertain about an enemy's capabilities, then capability shocks that make nations uncertain about the balance of power will lead to an increase in conflict. Countries with new military advantages may not yet be perceived as possessing significant advantages. Alternately, the proliferating country may itself overestimate the scale of its advantage. Nuclear proliferation is particularly prone to producing this type of uncertainty, given the extreme nature of nuclear capabilities shocks, the secrecy that enshrouds nuclear programs, and the fact that nuclear capabilities are not actually exercised (as opposed to the influence nuclear nations wield). Just as uncertainty peaks with the advent of possible new nuclear status, it decays quickly with the revelation of nuclear capabilities. Certainty about nuclear weapons capability may make countries no more dispute prone than certainty about the lack of nuclear status. War and peace are conditioned on nuclear secrecy or on nuclear uncertainty, not on the proliferation of nuclear weapons per se.8 The effects of uncertainty about nuclear status on whether nations initiate, or are the targets of, conflict are a bit more complicated to unravel. It is possible that uncertainty about nuclear status could lead to bargaining failure, and thus to a greater risk of a contest for either a potential initiator or a target. In the standard bargaining story, a state possesses an advantage about which its counterpart is dubious, either because other states also claim such an advantage, or because it is difficult to ascertain the consequences of the advantage for warfare, should conflict occur. Opponents can also be uncertain about the resolve or preferences of a nation, underestimating not capabilities but the willingness to use them if necessary. In the context of nuclear proliferation, one can imagine that other nations doubt claims of nuclear capabilities, or that they are uncertain about the willingness of a nation to pursue nuclear brinkmanship under certain circumstances, or that the opponent of the new nuclear power discounts delivery systems, command and control, or some other aspect affecting the veracity of threats. A nascent nuclear nation may feel compelled to press advantages that are not yet accepted by other powers. In doing so, the nuclear state risks a greater likelihood of a military contest. While either a potential attacker or a target can be uncertain about capabilities or resolve, it is much more in the nature of a challenger to be dissatisfied with the status quo. Proliferators are preference outliers. The same incentives that lead nations to seek out nuclear capabilities also encourage attempts to use newly acquired leverage to seek to effect change. Once demands are made, underestimation can lead to bargaining failures and warfare.

#### Controlling the fuel-cycle strengthens tacit bargaining to prohibit war – creates a framework of incentives.

Jan Ruzicka & Nicholas J. Wheeler, 1-18-2010, was appointed as Lecturer in Security Studies at Aberystwyth University, worked in the Department as research assistant for the project ‘The Challenges to Trust-Building in Nuclear Worlds,’ Marie Curie doctoral fellow in the Department, served as the chief aide to a ranking member of the Committee on Foreign Affairs, Defence, and Security of the Senate of the Czech Republic, graduate of Charles University in Prague, he received his MA degrees in politics at Brandeis University and in international relations at Central European University, and Nicholas J. Wheeler is professor of international politics at Aberystwyth University and co-editor of the Cambridge Studies in International Relations book series, published by Cambridge University Press and the British International Studies Association, International Affairs, Vol. 86 Issue 1, p. 79-81, Ebsco Host

The nub of the problem is how to preserve the sovereign right of states to enjoy the peaceful benefits of nuclear energy without practising a new discrimination in fuel-cycle capabilities. 33 For even if those states that have not yet developed enrichment and reprocessing facili-ties could be persuaded to rely on external suppliers of fuel, would those that have already crossed the threshold of ‘virtual’ nuclear weapon status be prepared to give up their national control over the fuel-cycle? Just as the NWS argue that the bomb is vital to their security in an uncertain world, so some states view indigenous fuel-cycle capabilities as an insurance against potential adversaries breaking out of the restraints of the NPT, the fear of those nuclear-armed powers outside the treaty and a generalized collapse of the non-proliferation norm. Establishing international controls over the fuel-cycle is a critical challenge in the years ahead. However, it remains to be seen whether those NNWS that are most critical of the failure of the NWS to live up to their promise to disarm can be persuaded to accept constraints on fuel-cycle capabilities in the absence of what the NNWS see as the NWS acting in good faith to honour their obligations under article VI. Even if this were to lead to global zero, there remains the question whether the current NNWS would accept a global nuclear order that froze them into a permanent inferiority vis-à-vis nuclear suppliers who would also have the ultimate leverage of reconstituting their arsenals. George Perkovich and James Acton are right in recognizing that the issue of ‘nuclear equity’ is a major barrier to a future bargain of this kind. They argue that ‘the most acceptable alternative would be to move towards a standard whereby only multinational facilities were allowed everywhere’. 34 But such an ambitious proposal still leaves unanswered the concerns about hedging both inside and outside the treaty. Movement towards a new and far-reaching bargain might seem to require that one of the parties take a leap of trust by accepting substantially greater vulnerability. 35 This is one of the possibilities, but it is unlikely that governments will act in this manner. There is another possibility, which builds on the fact that the signatories of the NPT have already accepted a significant degree of vulner-ability by entering into the treaty in the first place. This alternative rests on one or both parties taking a series of steps that would strengthen the trusting relationship between the NWS and the NNWS. 36 It is at this point that our reinterpretation of the NPT as embodying a set of trusting relationships opens up new ways to think about nuclear non-proliferation policy. If states realize that they have already entered a trusting relationship with other signatories, the actions required to revitalize the grand bargain do not appear as risky as sceptics might suggest. The new bargain could be defended as advan-tageous in terms of pay-offs for both the NWS and the NNWS, exhibiting the intersection of particular interests and the collective interest in non-proliferation. Notwithstanding the pay-offs providing an incentive to enter into the extended bargain (the rationalist approach to trust), a trusting relationship also requires that all parties have good grounds to think that others will do what is right (the binding approach to trust). Establishing the necessary confidence among the signatories that the bargain can be revitalized in the manner set out above would be significantly helped by all NPT states living up to the promises they have made, by a willingness on the part of all signatories to uphold and enforce the norms on which the treaty stands, and by a recognition that trusting relationships are already in place. Historical legacies, feelings of betrayal on all sides—especially on the part of the NNWS— and questioning of others’ motives and integrity create formidable obstacles to strengthening the trusting relationships. What is crucial is that these obstacles do not rule out the possibility of reversing the erosion of trust in the original bargain of the treaty. The fact that the states that have signed up to the treaty argue over each other’s trustworthiness suggests that there is more space for trust than is generally recognized. The steps that are necessary to build trusting relationships both open up and depend on the possibility of new pay-offs as well as mutual bonds. Building trust among the NWS The lack of progress towards nuclear disarmament on the part of the NWS is probably the most contentious sticking point between the signatories of the NPT. The nuclear-armed powers have at best exercised the ‘radical’ rhetoric of admit-ting that they would consider moving towards nuclear disarmament if only the other members of the nuclear club made the first move. Their behaviour is testa-ment to the present limits of their trusting relationship. Which actions and policies could lead to the extension of these limits? Following the end of the Cold War, the context for thinking about nuclear disarmament changed from the bilateral relationship between the United States and the Soviet Union to a more complex web of relationships between the five recognized nuclear powers. Nevertheless, given the enormous size of their nuclear arsenals, the US and Russia still hold the key to strengthening trusting relation-ships among the NWS and ultimately moving towards nuclear disarmament.

#### Counterplan cards and reprocessing turns don’t apply – brain drain, new capacity.

Jacques C. Hymans, January/March 2011, is associate professor of international relations at the University of Southern California, research focuses on nuclear proliferation, and more broadly, on international security affairs, an editorial board member of the Nonproliferation Review, Ph.D. in Government from Harvard University,Postdoctoral Fellow, Harvard University Olin Institute for Strategic Studies, Vol. 20 Issue 1, “Proliferation Implications of Civil Nuclear Cooperation: Theory and a Case Study of Tito's Yugoslavia,” p. 100-3, Ebsco Host

Many analysts have characterized aboveboard international civil nuclear cooperation—“Atoms for Peace”—as an unmitigated disaster for the cause of nonproliferation. Most of Atoms for Peace’s dwindling band of supporters themselves no longer contest the idea that it has given dozens of developing countries the technical capacity to build nuclear weapons at a time of their 114 Note that despite Tito’s 1974 decision, Gaukhar Mukhatzhanova finds that Solingen’s argument about the impact of liberalizing political coalition interests on regimes’ nuclear intentions generally fits the Yugoslav case pretty well. See Mukhatzhanova, “Nuclear Weapons in the Balkans,” esp. 213–15. choosing. Even such routine practices as the holding of international confer-ences and student exchange programs in the fields of nuclear science and engineering have come under fire. In contrast to these general trends in the literature, this article has offered a more nuanced assessment of the effects of Atoms for Peace. The literature needs to abandon its outdated, oversimplified, techno-centric approach to the supply side of the proliferation equation. When we recognize that “tech-nical” capacity has political foundations, the effects of Atoms for Peace on states’ nuclear weapons capacity appear much different than the literature suggests. In particular, by changing the career opportunities available to the most talented and energetic among the small pool of competent scientific workers in developing country contexts, Atoms for Peace makes their choice for loyalty more complicated, their choice for voice less dangerous, and their choice for exit more feasible. Thus, Atoms for Peace can substantially retard or even reverse the growth of technical capacity to build the bomb, despite the transfer of hardware and know-how that it promotes. The case study of Yugoslavia has substantiated the theorized nonproliferation-promoting effects of Atoms for Peace, even during the pol-icy’s most “na¨ıve” nuclear promotion days of the 1950s and 1960s. As Yu-goslavia represents a hard test for the theory presented here, the findings from this study should be given special heed. We should not be surprised that Atoms for Peace ended up undercutting the Tito regime’s nuclear ambi-tions through such mechanisms as brain drain, since similar findings abound in the broader literature on international technology transfer, with which the proliferation literature needs to engage deeply. This article is not claiming that Atoms for Peace was a silver bullet for nonproliferation in the case of Yugoslavia. Rather, the claim is that over the long run Atoms for Peace intensified and locked in the Yugoslav nuclear program’s poor organizational performance, and accelerated the program’s ultimate collapse. Some readers might be tempted to conclude that since poor organization and management were the root causes of Yugoslavia’s nuclear woes, therefore the effects of Atoms for Peace were superfluous to the outcome. However, it would be wrong to ignore the Atoms for Peace variable simply because it did not singlehandedly prevent a Yugoslav nuclear bomb from coming into being. Recall that up until now, the literature has generally contended that Atoms for Peace helps states leapfrog over their or-ganizational and resource limitations by handing them ready-made solutions to difficult technical problems. So it would already be a significant finding simply to show that Atoms for Peace, even in its heyday in the 1950s and 1960s, actually did not allow them to leapfrog those limitations. But in fact my finding is that Atoms for Peace greatly compounded those limitations, at least in the case of Yugoslavia. My finding turns standard thinking about this question on its head. This finding is not just interestingly counterintu-itive; it also has important implications for United States and international nonproliferation policy. Typical nonproliferation measures, such as export controls and technical safeguards, can hope to achieve little more than to re-strain nuclear programs from moving forward; but I have shown that Atoms for Peace, especially by stimulating the brain drain, ultimately caused the Yu-goslav nuclear program to stumble backward, and made it next to impossible for Belgrade to turn things around. I should also underscore that this article is not claiming that Yugoslavia’s experience with Atoms for Peace necessarily generalizes to every developing country. Some developing countries have been able to leverage civil nuclear cooperation to achieve nuclear weapons more quickly than they otherwise could have. India is often mentioned as a prime example of the danger that Atoms for Peace will unwittingly provide atoms for war. But this article’s focus on Yugoslavia represents a necessary corrective to the literature’s typ-ical focus on proliferation headline-makers like India. Moreover, there are good theoretical reasons to think that the Yugoslav nuclear experience with Atoms for Peace may have been much more typical for developing countries than the Indian experience. First, as noted earlier in the article, the brain drain literature has singled out India as one of the handful of developing countries where the size and quality of the science and technology com-munity are enough to allow it to absorb the hit of a substantial brain drain and yet still benefit through such compensating mechanisms as brain circu-lation, brain diaspora, and brain replacement. 121 Second, the literature on state capacity suggests that the bureaucratic “steel frame” inherited from the British colonial Indian Civil Service, though surely not problem-free, places India far above most other developing countries in terms of its level of state institutionalization. 122 Reflecting these general bureaucratic strengths of the Indian state, the Indian nuclear program was—despite some hiccups—quite well-organized and managed, and this substantially reduced the potential for India’s participation in Atoms for Peace to cause it serious damage. 123 In short, India appears deductively to be a much more exceptional case in the developing world than Yugoslavia, although more in-depth case studies will be necessary before we can say for sure if Yugoslavia’s experience with Atoms for Peace was truly typical or not. 124 121 An anonymous reviewer of this article suggested that we should consider whether, contrary to the general presumption of the proliferation literature, proliferant states often pare back their international civil nuclear cooperation efforts in order to avoid creating complications for their nuclear weapons Proliferation Implications of Civil Nuclear Cooperation 103 It might be that even if Yugoslavia’s experience was typical for its time period, a reenergized Atoms for Peace policy would not have the same nonproliferation-promoting consequences in today’s changed circumstances. But it is also possible to argue that an expanded commitment to overt interna-tional civil nuclear cooperation would have even stronger nonproliferation-promoting consequences in today’s world. After all, the brain drain from the developing world (and post-Communist states) continues to be a major social fact in the contemporary international system. Although the United States demand for the services of developing-world scientists and engineers was already quite high during the 1950s and 1960s, it has become absolutely voracious in recent years. Between 1978 and 2008, the number of U.S. PhD recipients holding temporary visas jumped from 3,475 (11 percent of the total number of doctorates granted by American universities) to 15,246 (31 percent of the total). In the physical sciences, the increase was from 653 (16 percent) to 3,678 (45 percent). In engineering, the increase was from 781 (32 percent) to 4,486 (57 percent). Of these newly minted temporary visa-holding PhDs, in 2008 73.5 percent reported the intention to remain in the United States; this number was generally much higher among those PhDs who had come from developing and post-Communist countries. Meanwhile, the out-migration of the highly skilled is having dramatic consequences on the resource base of sending countries: for instance, 41 percent of all tertiary-educated Caribbeans have emigrated to developed countries; for West Africa the figure is 27 percent; and for East Africa it is 18.4 percent. 125 This mas-sive brain drain is nothing to celebrate; it has caused major social ills in the developing world. But as an empirical matter brain drain is correlated with reduced technological potential, and when it comes to the narrow question of nuclear weapons development, reducing developing countries’ techno-logical potential is not necessarily a bad thing. One could try to turn this argument around and contend that since the brain drain has become so massive, state policies can do little to encourage or discourage it anymore. But in fact the brain drain still depends crucially on facilitative state policies, especially those of the United States and other receiving countries. 126 In the nuclear area in particular, there is no guarantee that those facilitative policies will continue. As noted at the outset of this article, nonproliferation concerns have led the United States to reduce sub-stantially the scope of its international civil nuclear cooperation programs over the past decades, and some nonproliferation advocates want to abolish them altogether.

#### GNEP/IFNEC is faltering - without U.S. leadership in advanced reprocessing technologies - proliferation from the collapsing IFNEC framework will be rampant.

Tim Gitzel, July 2012, senior vice-president and chief operating officer and was appointed president, President and CEO of Cameco, extensive experience in Canadian and international uranium mining activities, executive vice-president, mining business unit for AREVA, College of Law at the University of Saskatchewan, serves as vice-chair on both the Mining Association of Canada and the Canadian Nuclear Association boards of directors, past president of the Saskatchewan Mining Association, and has served on the boards of Sask Energy, co-chair of the Royal Care campaign, a recipient of the Centennial Medal, World Nuclear Association (WNA), “International Framework for Nuclear Energy Cooperation (formerly Global Nuclear Energy Partnership),” <http://www.world-nuclear.org/info/inf117_international_framework_nuclear_energy_cooperation.html>

The International Framework for Nuclear Energy Cooperation (IFNEC), formerly the Global Nuclear Energy Partnership (GNEP), aims to accelerate the development and deployment of advanced nuclear fuel cycle technologies while providing greater disincentives to the proliferation of nuclear weapons. GNEP was initiated by the USA early in 2006, but picked up on concerns and proposals from the International Atomic Energy Agency (IAEA) and Russia. The vision was for a global network of nuclear fuel cycle facilities all under IAEA control or at least supervision. Domestically in the USA, the Global Nuclear Energy Partnership (GNEP) was based on the Advanced Fuel Cycle Initiative (AFCI), and while GNEP faltered with the advent of the Barack Obama administration in Washington from 2008, the AFCI is being funded at higher levels than before for R&D "on proliferation-resistant fuel cycles and waste reduction strategies." Two significant new elements in the strategy are new reprocessing technologies which separate all transuranic elements together (and not plutonium on its own), and advanced burner (fast) reactors to consume the result of this while generating power. GNEP was set up as both a research and technology development initiative and an international policy initiative. It addresses the questions of how to use sensitive technologies responsibly in a way that protects global security, and also how to manage and recycle wastes more effectively and securely. The USA had a policy in place since 1977 which ruled out reprocessing used fuel, on non-proliferation grounds. Under GNEP, reprocessing is to be a means of avoiding proliferation, as well as addressing problems concerning high-level wastes. Accordingly, the US Department of Energy set out to develop advanced fuel cycle technologies on a commercial scale. As more countries consider nuclear power, it is important that they develop the infrastructure capabilities necessary for such an undertaking. As with GNEP, IFNEC partners are working with the IAEA to provide guidance for assessing countries' infrastructure needs and for helping to meet those needs. For countries that have no existing nuclear power infrastructure, IFNEC partners can share knowledge and experience to enable developing countries to make informed policy decisions on whether, when, and how to pursue nuclear power without any need to establish sensitive fuel cycle facilities themselves. With the USA taking a lower profile in GNEP from 2009, the partners are focused on collaboration to make nuclear energy more widely accessible in accordance with safety, security and non-proliferation objectives, as an effective measure to counter global warming, and to improve global energy security. A change of name to International Framework for Nuclear Energy Cooperation was adopted in June 2010, along with a new draft vision statement, which read: "The Framework provides a forum for cooperation among participating states to explore mutually beneficial approaches to ensure the use of nuclear energy for peaceful purposes proceeds in a manner that is efficient, safe, secure, and supports non-proliferation and safeguards." By some accounts, this envisages "cradle to grave" fuel management as central, along with assurance of fuel supply. IFNEC agenda Broadly, IFNEC's mission is the global expansion of nuclear power in a safe and secure manner. A major rationale is reducing the threat of proliferation of nuclear materials and the spread of sensitive nuclear technology for non-peaceful purposes. With greater use of nuclear energy worldwide the possibility of the spread of nuclear material and technology for the development of weapons of mass destruction must be countered to avoid increasing the present threat to global security. A second issue addressed by IFNEC is the efficiency of the current nuclear fuel cycle. The USA, the largest producer of nuclear power, has employed a 'once through' fuel cycle. This practice only uses a part of the potential energy in the fuel, while effectively wasting substantial amounts of useable energy that could be tapped through recycling. The remaining fissionable material can be used to create additional power, rather than treating it as waste requiring long-term storage. Others, notably Europe and Japan, recover the residual uranium and plutonium from the used fuel to recycle at least the plutonium in light water reactors. However, no-one has yet employed a comprehensive technology that includes full actinidea recycle. In the USA, this question is pressing since significant amounts of used nuclear fuel are stored in different locations around the country awaiting shipment to a planned geological repository which was to be at Yucca Mountain in Nevada. This project is delayed, and in any case will fill very rapidly if it is used simply for used fuel rather than the separated wastes after reprocessing it. IFNEC also aims to address cost issues associated with the development and expansion of nuclear power in developing countries. Nuclear programs require a high degree of technical and industrial expertise. This is a serious obstacle for emerging countries attempting to develop nuclear power, although efforts are underway to increase the number of indigenously-trained nuclear experts through a variety of education and training initiatives. Internationally, the countries identified by the US Department of Energy (DOE) as likely participants at both enrichment and recycling ends are the USA, UK, France, Russia and Japan. The USA and Japan agreed to develop a nuclear energy cooperation plan centered on GNEP and the construction of new nuclear power plants. (Japan also intended to participate in the DOE's FutureGen clean coal project, which was abandoned but may possibly be revived.) Several bilateral agreements centered on GNEP/IFNEC have been developed. IFNEC parties and rationale At the first ministerial meeting in May 2007, the USA, China, France, Japan and Russia became formally the founding members of GNEP. Four of the five are nuclear weapons states and have developed full fuel cycle facilities arising from that; the non-nuclear weapons state, Japan, has developed similar facilities to support its extensive nuclear power program. To date, 31 nationsb are participants in IFNEC. Most of these signed the GNEP Statement of Principles1, which established broad guidelines for participation and incorporates seven objectives that touch on each element of GNEP. Under GNEP, so-called 'fuel cycle nations' would provide assured supplies of enriched nuclear fuel to client nations, which would generate electricity before returning the used fuel. The used fuel would then undergo advanced reprocessing so that the uranium and plutonium it contained, plus long-lived minor actinides, could be recycled in advanced nuclear power reactors. Waste volumes and radiological longevity would be greatly reduced by this process, and the wastes would end up either in the fuel cycle or user countries. Nuclear materials would never be outside the strictest controls, overseen by the IAEA. Two sensitive processes in particular would not need to be employed in most countries: enrichment and reprocessing. The limitation on these, by commercial dissuasion rather than outright prohibition, is at the heart of GNEP strategy. A corollary of this dissuasion is that GNEP/IFNEC member nations would be assured of reliable and economic fuel supply under some IAEA arrangement yet to be specified. GNEP/IFNEC work plan The GNEP members set up two principal working groups: The reliable nuclear fuel services working group (RNFS WG) is addressing nuclear fuel leasing and other considerations around comprehensive nuclear fuel supply goals, and includes evaluation of back-end fuel cycle options. The nuclear infrastructure development working group (ID WG) is addressing human resource development, radioactive waste management, small modular reactors, financing options, engagement with specialist organizations and identifying infrastructure requirements for an international nuclear fuel services framework enabling nuclear power deployment in many countries. An early priority was seen to be the development of new reprocessing technologies to enable recycling of most of the used fuel. One of the concerns when reprocessing used nuclear fuel is ensuring that separated fissile material is not used to create a weapon. One chemical reprocessing technology – PUREX – has been employed for over half a century, having been developed in wartime for military use (see page on Processing of Used Nuclear Fuel). This has resulted in the accumulation of 240 tonnes of separated reactor-grade plutonium around the world (though some has been used in the fabrication of mixed oxide fuel). While this is not suitable for weapons use, it is still regarded as a proliferation concern. New reprocessing technologies are designed to combine the plutonium with some uranium and possibly with minor actinides (neptunium, americium and curium), rendering it impractical to use the plutonium in the manufacture of weapons. GNEP/IFNEC creates a framework where states that currently employ reprocessing technologies can collaborate to design and deploy advanced separations and fuel fabrication techniques that do not result in the accumulation of separated pure plutonium. Several developments of PUREX which fit the GNEP/IFNEC concept are being trialled: NUEX separates uranium and then all transuranics (including plutonium) together, with fission products separately (USA). UREX+ separates uranium and then either all transuranics together or simply neptunium with the plutonium, with fission products separately (USA). COEX separates uranium and plutonium (and possibly neptunium) together as well as a pure uranium stream, leaving other minor actinides with the fission products. A variation of this separates americium and curium from the fission products (France). GANEX separates uranium and plutonium as in COEX, then separates the minor actinides plus some lanthanides from the short-lived fission products (France). The central feature of all these variants is to keep the plutonium either with some uranium or with other transuranics which can be destroyed by burning in a fast neutron reactor – the plutonium being the main fuel constituent. Trials of some fuels arising from UREX+ reprocessing in USA are being undertaken in the French Phenix fast reactor. An associated need is to develop the required fuel fabrication plant. That for plutonium with only some uranium and neptunium is relatively straightforward and similar to today's MOX fuel fabrication plants. A plant for fuel including americium and curium would be more complex (due to americium being volatile and curium a neutron emitter). The second main technological development originally envisaged under GNEP is the advanced recycling reactor – basically a fast reactor capable of burning minor actinides. Thus used fuel from light water reactors would be transported to a recycling centre, where it would be reprocessed and the transuranic product (including plutonium) transferred to a fast reactor on site. This reactor, which would destroy the actinides, would have a power capacity of perhaps 1000 MWe. The areas of development for fast reactor technology centre on the need for fast reactors to be cost competitive with current light water reactors. Countries such as France, Russia and Japan have experience in the design and operation of fast reactors and the USA is working with them to accelerate the development of advanced fast reactors that are cost competitive, incorporate advanced safeguards features, and are efficient and reliable. The advent of such fast reactors would mean that reprocessing technology could and should step from the aqueous processes derived from PUREX described above to electrometallurgical processes in a molten salt bath. Separating the actinides then is by electrodeposition on a cathode, without chemical separation of heavy elements as occurs in the Purex and related processes. This cathode product can then be used in a fast reactor, since it is not sensitive to small amounts of impurities. GE Hitachi Nuclear Energy (GEH) is developing this 'Advanced Recycling Center' concept which combines electrometallurgical separation and burning the final product in one or more of its PRISM fast reactors on the same site.2 The separation process would remove uranium, which is recycled to light water reactors; then fission products, which are waste; and finally the actinides including plutonium. With respect to the ultimate disposition of nuclear waste from recycling, three options exist conceptually: User responsibility. The radioactive wastes from the nuclear fuel recycling centre could be considered as processed waste belonging to the user nation that sent its used nuclear fuel to the recycling centre. These wastes might then be shipped back to that user nation for final disposal. Supplier responsibility. The nation hosting the recycling centre might retain the waste or, if a different supplier nation had manufactured the original fuel, all wastes arising from the original fuel could be considered the responsibility of that fuel supplier nation. Third-party responsibility. A disposal facility might be sited in a country that is, in particular cases, neither the supplier nor the user, but is using its technological capability and geological suitability to manage the safe delivery of a commercially and environmentally valuable service. The IFNEC program is considering the ownership and final disposal of waste, but this discussion has not yet reached beyond the preliminary stages. The second and third conceptual options for waste disposal would require one or more international radioactive waste final disposal facilities (see page on International Nuclear Waste Disposal Concepts), and serious discussion of those options will begin only when nations enter into real consideration of the sensitive issue of the hosting of such facilities. In 2012 the RNFS WG is working on a paper entitled ‘Comprehensive Fuel Services: Strategies for the Back End of the Fuel Cycle’ to pursue agreement on the basis for international cooperation on repositories and reprocessing for these activities to be commercialised. Finally, IFNEC is concerned to foster the development of 'grid-appropriate reactors', i.e. smaller units (perhaps 50-350 MWe) for electricity grids of up to 3 GWe. These should incorporate advanced features including safety, simplicity of operation, long-life fuel loads, intrinsic proliferation-resistance and security3. In January 2007, the US Department of Energy (DOE) announced a new strategic plan for GNEP initiatives, including preparation of an environmental impact statement. It would assess three facilities: a fuel recycling centre including reprocessing and fuel fabrication plants; a fast reactor to burn the actinide-based fuel and transmute transuranic elements; and an advanced fuel cycle research facility. The DOE envisaged the first two being industry-led initiatives. In October 2007, the DOE awarded $16 million to four industry consortia for GNEP-related studies. The largest share of this, $5.6 million, went to the International Nuclear Recycling Alliance (INRA) led by Areva and including Mitsubishi Heavy Industries (MHI), Japan Nuclear Fuel Ltd (JNFL), Battelle, BWX Technologies and Washington Group International. INRA was contracted to provide three major studies: technology development roadmaps analyzing the technology needed to achieve GNEP goals; business plans for the development and commercialization of the advanced GNEP technologies and facilities; and conceptual design studies for the fuel recycling centre and advanced recycling reactor. Areva and JNFL are focused on the Consolidated Fuel Treatment Center, a reprocessing plant (which will not separate pure plutonium), and MHI on the Advanced Recycling Reactor, a fast reactor which will burn actinides with uranium and plutonium. These are the two main technological innovations involved with GNEP. In this connection MHI has also set up Mitsubishi FBR Systems (MFBR). INRA appears to have materialized out of a September 2007 agreement between Areva and JNFL to collaborate on reprocessing. Its contract with the DOE was extended in April 2008. A significant setback for the US leadership of GNEP was related to funding by Congress. For FY 2007 the program – including some specifically US aspects – had $167 million, and for FY 2008 Congress cut it back to $120 million, severely constraining the fuel cycle developments. For FY 2009, GNEP did not receive any funding although $120 million was allocated to the Advanced Fuel Cycle Initiative (AFCI), which funds research into reprocessing technologies. The funding for AFCI was only about 40% of the amount requested by the administration. Thus in the USA, GNEP has been largely reduced to an R&D program on advanced fuel cycle technologies. In June 2009, the DOE cancelled the programmatic environmental impact statement for GNEP "because it is no longer pursuing domestic commercial reprocessing, which was the primary focus of the prior Administration's domestic GNEP program."4 Outcomes of IFNEC Under any scenario, the USA and others will require waste repositories; however, recycling used fuel will greatly reduce the amount of waste destined for disposal. For the planned US repository at Yucca Mountain in Nevada, the reprocessing-recycling approach with burning of actinides and perhaps also some long-lived fission products would mean that the effective capacity of such a repository would be increased by a factor of 50 or more. This is due to decreased radiotoxicity and heat loads, as well as reducing greatly the ultimate volume of waste requiring disposal. IFNEC envisages the development of comprehensive fuel services, including such options as fuel leasing, to begin addressing the challenges of reliable fuel supply while maximizing non-proliferation benefits. The establishment of comprehensive and reliable fuel services, including used fuel disposition options, will create a more practical approach to nuclear power for nations seeking its benefits without the need to establish indigenous fuel cycle facilities. It is through enabling such a comprehensive framework that IFNEC will possibly make its primary contribution to reducing proliferation risk.

#### Cooperation with Russia via IFNEC is enduring and overcomes other disagreements to boost relations – other points of cooperation are failing.

Robert Legvold, 10-13-2006, is professor of political science emeritus at Columbia University and a member of the executive committee of Columbia's Harriman Institute, served as director of Soviet studies at the Council on Foreign Relations and was then appointed as director of the Harriman Institute, received his PhD at the Fletcher School of Law and Diplomacy, specializing in Soviet foreign policy, New York, Global Affairs, “Russia in Global Affairs, U.S.-Russian Relations: An American Perspective,” <http://eng.globalaffairs.ru/numbers/17/1074.html>

More likely, for the next several years, the two leaderships will propel the relationship along one of two paths: either the status quo plus or the status quo minus. In the first case, the uneasy balance between cooperation and discord will continue, from time to time to be boosted by new enterprises, such as the recent “Global Initiative to Combat Nuclear Terrorism” or the new merger of the U.S. “Global Nuclear Energy Partnership” with the Russian initiative to create multilateral centers for the provision of nuclear fuel cycle service. Perhaps, if each tries to find the positive in the other side’s positions, they could even enlarge the field of their foreign policy cooperation. Handled skillfully, the U.S. commitment to ready Ukraine for NATO membership, given the inevitable delay as Ukraine sorts out its own domestic scene, need not bruise U.S.-Russian relations. Or, if Russia tires further of Belarus’ reactionary regime, it may, for perfectly selfish reasons, knock from under Alexander Lukashenko the support allowing him to thumb his nose at the United States and Europe. Provided neither Russia nor the United States attempts to force fundamental choices on Kazakhstan and given the United States receding security presence in the region, Central Asia seems unlikely to threaten the relationship, and, as a quarter where U.S., Russian, and Chinese concerns over terrorism physically intersect, may even reinforce at least one area of cooperation. In the crucial case of China, the considerable parallelism in Russian and Chinese foreign policy will surely continue, but a full-blown alliance directed against the United States, impossible today – because, even if Moscow wanted it, which it does not, the Chinese have the final say – will remain so, unless the United States brings it about through a reckless policy toward China. The other rising power, India, seems certain to grow in importance for both countries, but, notwithstanding their already evident efforts to curry favor in Delhi, little either can do is likely to have great resonance in their own bilateral relationship. Finally, the increasing thrusting and parrying over domestic trends within Russia has only limited potential to seriously sour relations, if the Americans continually treat it as a back-burner issue subordinated to other things they want from the Russians – as has been true this summer, including the July G8 meeting – and/or Putin continues to brush the importuning aside with an awkward sense of humor.

#### IFR’s makes it impossible for terrorists to steal fissile material – too hot to handle and mixed materials.

Charles Till, 2011, longtime Associate Laboratory Director for Engineering Research at Argonne National Laboratory, directed civilian nuclear power reactor development at Argonne National Laboratory, PhD Engineering, Specialty Reactor Physics, Imperial College, University of London, National Research Council of Canada, United Kingdom Atomic Energy Authority , Fellow of the American Nuclear Society, awarded the Walker Cisler Medal, National Academy of Engineering, FRONTLINE PBS, “NUCLEAR REACTION Why do Americans Fear Nuclear Power,” <http://www.pbs.org/wgbh/pages/frontline/shows/reaction/interviews/till.html>

The object in the IFR demonstration was to invent, if you like, a process that did not allow separations of pure plutonium that would be necessary for weapons. In order to recycle, you need some kind of a chemical process. And the chemical process that was invented here at Argonne used quite different principles than present processes do. It allows the separation of that group of things that are useful, but not one from the other, so that you cannot separate plutonium purely from uranium and the other things. You can separate uranium, plutonium, and the other useful things from the fission products. So it does exactly what you want it to do. It gives you the new fuel, and it separates off the waste product, but it doesn’t allow careful distinguishing between the materials that are useful, such that you could use one or another of those materials for weapons. Q: So it would be very difficult to handle for weapons, would it? A: It’s impossible to handle for weapons, as it stands. It’s highly radioactive. It’s highly heat producing. It has all of the characteristics that make it extremely, well, make it impossible for someone to make a weapon. Q: The argument most put on the Senate floor was that the IFR increases the risks of proliferation. A: Yes. Well, it doesn’t. As simply as that. There’s no technical reason why one would make that argument. In order to produce weapons, you have to produce pure plutonium. The IFR process will not do that. The only possible argument that would hold any water whatsoever was that when showing people that plutonium is not the demon substance that it’s been advertised as being, that, in fact, it’s quite a workaday material, that in some way or other, the familiarity of it could be used to say that it doesn’t hold the terrors that it’s supposed to hold, and so, perhaps, more tempting in some way for someone to try to misuse it. But I mean, that’s a far-out kind of argument, it seems to me, compared to the unquestioned benefits from simply using this stuff to produce energy. Q: But they were arguing that this made the world less safe. Would you say the opposite, or what? A: No, I would say completely the opposite. Modern society runs on energy. This gives a wonderful, clean form of energy. Its possibility for misuse for weapons goes against the history of the development of nuclear energy over the last 50 years. If weapons are going to be produced, they’re going to be produced by making plutonium in facilities that specifically make weapons-grade plutonium, because that’s the kind that the weapon designer needs. The IFR doesn’t do that.

#### Expansion of unsafe status quo reprocessing tech through IFNEC produces a multiplier effect for nuclear theft.

John Deutch & Ernest Moniz, 2003, CO CHAIR Institute Professor Department of Chemistry, MIT, and Ernest Moniz a co-chair in the Department of Physics, MIT Director of Energy Studies, Laboratory for Energy and the Environment, The Future of Nuclear Power – an interdisciplinary MIT Study, The Future of Nuclear Power: An Interdisciplinary MIT Study, “Chaired Effort to Identify Barriers and Solutions for Nuclear Option in Reducing Greenhouse Gases,” <http://web.mit.edu/nuclearpower/>

In addition to the risk of nuclear weapons capability spreading to other nations, the threat of acquisition of a crude nuclear explosive by a sub-national group has arisen in the aftermath of the September 11, 2001 terrorist attacks. The report of interest in nuclear devices by the terrorist Al Qaeda network especially highlights this risk. Terrorist or organized crime groups are not expected to be able to produce nuclear weapons material themselves; the concern is their direct acquisition of nuclear materials by theft or through a state sponsor. This places the spotlight on the PUREX/MOX fuel cycle as currently practiced in several countries, since the fuel cycle produces during conventional operation nuclear material that is easily made usable for a weapon. The sub-national theft risk would be exacerbated by the spread of the PUREX/MOX fuel cycle, particularly to those countries without the infrastructure for assuring stringent control and accountability.

#### Transitioning to IFRs eliminates PUREX and solves verification difficulties.

John Carlson, 6-4-2009, director general of the Australian Safeguards and Non-proliferation Office, “New Verification Challenges”, research paper has been commissioned by the International Commission on Nuclear Non-proliferation and Disarmament, <http://icnnd.org/Documents/Carlson_Verification_090604.doc>

The verification challenges for the FMCT are expected to be: having to implement verification approaches in old facilities not designed with verification in mind. These are likely to require intensive verification effort - the more of these facilities that can be shut down and decommissioned, the more manageable the verification task will be:- there will be no reason to continue operation of facilities used only for weapons programs (since the NWS have had informal moratoria on fissile production for weapons for many years, presumably no such facilities are operating now);- there should be little if any need to produce HEU (the states with large naval propulsion programs have extensive HEU stocks to draw on);- with advanced spent fuel recycling technologies which will avoid the need to separate plutonium – such as pyro-processing – on the horizon, there should be little or no requirement for new conventional (Purex-based) reprocessing plants, and existing plants could be phased out over time; the verification workload. This highlights the importance of shutting down as many sensitive facilities as possible, and transitioning to new fuel cycle technologies. A state-level approach, discussed below, will also be important for cost-efficient verification; establishing a reliable capability for detecting undeclared fissile material production.

#### Russian nuclear security is a joke spent nuclear fuel is highly vulnerable to terrorist theft – cited means and motivation.

Stephen Menesick, Summer 2011, Political Science and Peace, War and Defense, public policy analysis, Unviersity of Chapel Hill, Global Security Studies, Vol. 2 Issue 3, “ Preventing the Unthinkable: An Overview of Threats, Risks, and US Policy Response to Nuclear Terrorism,” p. 5-6, <http://globalsecuritystudies.com/Menesick%20Nuclear%20Final.pdf>

The outlook in Russia is bleaker. After the Cold War, many Russian nuclear weapons were extremely vulnerable—left nearly unsecured across the country. Since then, the Russian government has made a considerable effort to strengthen security and upgrade technology that guards nuclear weapons and material (Bunn, 2006). However, significant risks still remain. Because of the sheer quantity of weapons in Russia, and the difficulty of managing such a large number of weapons, external risks of outright theft are always a concern. Reports by Russian officials have confirmed that terrorists have conducted intelligence gathering operations on Russian stockpiles, and to date, it is the only country where documentation of terrorist surveillance exists (Bunn 2010, 35). Equipping all sites with state of the art security measures has been a difficult challenge. The Russian government, and consequently the security contractors who are responsible for the upkeep of these facilities, suffers from a lack of financial resources (Joyner & Parkhouse 2009, 215). Additionally, significant internal threats are present. Because the government employs independent security companies to coordinate much of management of nuclear materials, there are two channels for insiders to aid terrorist groups—high level government officials and low level technical personnel. Both groups have incentive to divulge information at the right price, and Russia has a political environment that has been rife with corruption for decades (Bunn 2010, 32-33 and Joyner & Parkhouse 2009, 216). Finally, there is the security risk of Highly Enriched Uranium-fueled reactors (HEU’s). Because of its chemical composition and refinement, HEU can be used easily to make crude nuclear weapons even by non-experts (Norwegian Project Secretariat). Because of the ease with which a weapon can be made out of HEU, it is easy to see why terrorist acquisition is a direct security risk. As of 2009, about half of the 200 remaining reactors were still using HEU fuel, and do not have capability to be converted to lower enriched uranium (LEU) (World Nuclear Association 2011). Most of these are in Russia, where the government has invested little in research to convert their own reactors to LEU power or other alternatives (World Nuclear Association 2011). Further, and most alarming, is that the security at many of these HEU sites is inadequate to prevent theft of HEU, making research reactors a prime target for terrorists seeking to obtain nuclear material (Bunn, 2010, 45). If a terrorist group only acquires nuclear material, and not a functional weapon, they will have to successfully create a weapon that they can detonate. Unfortunately, this is an achievable end that can be done with little resources or expertise. As discussed above, Highly Enriched Uranium is pure enough that it can be made into a devastating weapon relatively easily, and it is also the most likely nuclear material that terrorists would get their hands on. The perception of modern nuclear weapons may be that they are highly technical instruments of warfare backed by complex science. While this may be true, a “crude” nuclear weapon, one that takes little skill to create, would still be incredibly deadly—capable of destroying the downtown of a major city (Bunn, 2010, 16). The process of building a weapon of this type is not entirely simple, and anyone who wanted to construct such a device would need a technical team with at least some experience. However, in comparison to the nuclear weapons manufactured today, a crude bomb would be a more feasible project, as it would not have to comply with rigorous military and safety specifications. Thus, it is plausible to see that this kind of power is not out of reach for dedicated terrorist groups, should they acquire nuclear material (Ferguson & Potter 2003, 116). Having acquired nuclear material and created a weapon, the final obstacle a terrorist group would need to pass would be delivery and detonation in the target location. Likely, this would involve them smuggling a bomb or device into the United States, and then into a major city, undetected. Nuclear material is quite difficult to track, especially the small amounts that would be needed for a crude weapon (Bunn 2010, 18). Journalists have repeatedly demonstrated the ease with which radioactive materials can be transported and shielded from detection while traveling (Ferguson & Potter 2003, 141). Even with the most advanced technology, HEU is among the most difficult kind of radiological material to detect (Montgomery 2009, 79). Also, terrorists could use existing port and transport systems in place, as they are relatively unsecure. Customs and Border Patrol inspects only around 6% of cargo containers entering the US (Medalia 2005). Even with increased security measures and Port Authority reorganization in 2003, there are still plausible scenarios for terrorist groups sneaking radioactive materials into the US via boat undetected (Ferguson & Potter 2003, 300). Furthermore, terrorists could avoid this obstacle entirely by taking materials that were already inside the US. Once inside the US, delivery and detonation to target site would also not be insurmountable. As Matthew Bunn and E. P. Maslin write: The length of national borders, the diversity of means of transport, the vast scale of legitimate traffic across borders, and the ease of shielding the radiation from plutonium or especially from HEU all operate in favor of the terrorists. Building the overall system of legal infrastructure, intelligence, law enforcement, border and customs forces, and radiation detectors needed to find and recover stolen nuclear weapons or materials, or to interdict these as they crossnational borders, is an extraordinarily difficult challenge. (Bun & Maslin 2010) In order for a terrorist group to be “successful” in carrying out a nuclear attack, many elements must come together. There is no doubt that the end result of a nuclear terrorist attack would be terrible, so even with a low probability of attack, the high impact possibility means steps should still be taken to prevent it. In each link of the chain of attack, there are security measures that have been put in place, and continue to be upgraded. However, as discussed above, there are still vulnerabilities in each step of the process that, if they all were orchestrated together, terrorists could exploit to pull off an attack with a nuclear weapon. The most critical of these links is acquisition of a bomb or nuclear material, because it is the only one that truly prevents an attack from occurring. Once a terrorist group has nuclear material, they can find people willing to make it into a usable weapon if they cannot themselves.

#### Causes retaliation and global nuclear war – only the plan solves.

Patrick F. Speice, Jr., Feburary 2006, is an associate in Gibson, Dunn & Crutcher's Washington, D.C. office, works in the firm’s International Trade Regulation and Compliance Department, focusing on export controls, foreign regulations, and economic sanctions, earned his J.D. in 2006 from the Marshall-Wythe School of Law at the College of William & Mary, William and Mary Research Fellowpolitical science, Wake Forest University, authored or co-authored professional articles, includes representation of clients in Foreign Corrupt Practices matters and securities investigations, “Negligence and Nuclear Nonproliferation,” William & Mary Law Review, Lexis Nexis

Accordingly, there is a significant and ever-present risk that terrorists could acquire a nuclear device or fissile material from Russia as a result of the confluence of Russian economic decline and the end of stringent Soviet-era nuclear security measures. 39 Terrorist groups could acquire a nuclear weapon by a number of methods, including "steal[ing] one intact from the stockpile of a country possessing such weapons, or ... [being] sold or given one by [\*1438] such a country, or [buying or stealing] one from another subnational group that had obtained it in one of these ways." 40 Equally threatening, however, is the risk that terrorists will steal or purchase fissile material and construct a nuclear device on their own. Very little material is necessary to construct a highly destructive nuclear weapon. 41 Although nuclear devices are extraordinarily complex, the technical barriers to constructing a workable weapon are not significant. 42 Moreover, the sheer number of methods that could be used to deliver a nuclear device into the United States makes it incredibly likely that terrorists could successfully employ a nuclear weapon once it was built. 43 Accordingly, supply-side controls that are aimed at preventing terrorists from acquiring nuclear material in the first place are the most effective means of countering the risk of nuclear terrorism. 44 Moreover, the end of the Cold War eliminated the rationale for maintaining a large military-industrial complex in Russia, and the nuclear cities were closed. 45 This resulted in at least 35,000 nuclear scientists becoming unemployed in an economy that was collapsing. 46 Although the economy has stabilized somewhat, there [\*1439] are still at least 20,000 former scientists who are unemployed or underpaid and who are too young to retire, 47 raising the chilling prospect that these scientists will be tempted to sell their nuclear knowledge, or steal nuclear material to sell, to states or terrorist organizations with nuclear ambitions. 48 The potential consequences of the unchecked spread of nuclear knowledge and material to terrorist groups that seek to cause mass destruction in the United States are truly horrifying. A terrorist attack with a nuclear weapon would be devastating in terms of immediate human and economic losses. 49 Moreover, there would be immense political pressure in the United States to discover the perpetrators and retaliate with nuclear weapons, massively increasing the number of casualties and potentially triggering a full-scale nuclear conflict. 50 In addition to the threat posed by terrorists, leakage of nuclear knowledge and material from Russia will reduce the barriers that states with nuclear ambitions face and may trigger widespread proliferation of nuclear weapons. 51 This proliferation will increase the risk of nuclear attacks against the United States [\*1440] or its allies by hostile states, 52 as well as increase the likelihood that regional conflicts will draw in the United States and escalate to the use of nuclear weapons. 53

#### By itself terrorism causes extinction.

Owen B. Toon, 4-19-2007, is professor of Atmospheric and Oceanic Sciences and a fellow at the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado received his Ph.D. from Cornell University, in cloud physics, atmospheric chemistry and radiative transfer, “Atmospheric effects and societal consequences of regional scale nuclear conﬂicts and acts of individual nuclear terrorism,” Atmosphere Chemistry Physics

To an increasing extent, people are congregating in the world’s great urban centers, creating megacities with popula- tions exceeding 10 million individuals. At the same time, ad- vanced technology has designed nuclear explosives of such small size they can be easily transported in a car, small plane or boat to the heart of a city. We demonstrate here that a sin- gle detonation in the 15 kiloton range can produce urban fa- talities approaching one million in some cases, and casualties exceeding one million. Thousands of small weapons still ex- ist in the arsenals of the U.S. and Russia, and there are at least six other countries with substantial nuclear weapons invento- ries. In all, thirty-three countries control sufficient amounts of highly enriched uranium or plutonium to assemble nuclear explosives. A conflict between any of these countries involv- ing 50-100 weapons with yields of 15kt has the potential to create fatalities rivaling those of the Second World War. Moreover, even a single surface nuclear explosion, or an air burst in rainy conditions, in a city center is likely to cause the entire metropolitan area to be abandoned at least for decades owing to infrastructure damage and radioactive contamina- tion. As the aftermath of hurricane Katrina in Louisiana sug- gests, the economic consequences of even a localized nuclear catastrophe would most likely have severe national and inter- national economic consequences. Striking effects result even from relatively small nuclear attacks because low yield det- onations are most effective against city centers where busi- ness and social activity as well as population are concen- trated. Rogue nations and terrorists would be most likely to strike there. Accordingly, an organized attack on the www.atmos-chem-phys.net/7/1973/2007/ Atmos. Chem. Phys., 7, 1973–2002, 2007 Page 28 2000 O. B. Toon et al.: Consequences of regional scale nuclear conflicts U.S. by a small nuclear state, or terrorists supported by such a state, could generate casualties comparable to those once predicted for a full-scale nuclear “counterforce” exchange in a superpower conflict. Remarkably, the estimated quantities of smoke generated by attacks totaling about one megaton of nuclear explosives could lead to significant global climate perturbations (Robock et al., 2007). While we did not ex- tend our casualty and damage predictions to include poten- tial medical, social or economic impacts following the initial explosions, such analyses have been performed in the past for large-scale nuclear war scenarios (Harwell and Hutchin- son, 1985). Such a study should be carried out as well for the present scenarios and physical outcomes.

#### IFNEC U.S.-Russia nuclear reprocessing cooperation stops theft – new safety and control systems with technical management.

Mary B. Nikitin, 6-26-2008, has been an Analyst in WMD Nonproliferation in the Foreign Affairs, Defense and Trade Division of the Congressional Research Service, was a Research Associate and then Fellow at the Center for Strategic and International Studies (CSIS), coordinated the international consortium "Strengthening the Global Partnership" among other nonproliferation-related programs, worked at the Center for Nonproliferation Studies, holds a Masters in International Policy Studies from the Monterey Institute of International Studies, member of the Institute of Nuclear Materials Management, Federation of Atomic Scientists (FAS), “U.S.-Russian Civilian Nuclear Cooperation Agreement: Issues for Congress,” <http://www.fas.org/sgp/crs/nuke/RS22892.pdf>

Pledging to accelerate nuclear energy cooperation, Presidents Bush and Putin established in July 2006 a working group 11 whose report defined an Action Plan for cooperation that led to the bilateral Presidential Declaration on Nuclear Energy and Nonproliferation of July 3, 2007. 12 U.S. and Russian officials have stated that a 123 agreement is needed in order to implement fully these goals — for example, full scale technical cooperation on fast reactors and demonstration of advanced spent fuel processing and waste management technologies. 13 Possible benefits to the United States from a 123 agreement with Russia include development of advanced nuclear fuel cycle technologies and a future generation of proliferation-resistant reactors, 14 joint commercial partnerships, influence over Russian nonproliferation and nuclear export policies, and improving bilateral cooperation generally. 15 A common argument in favor of the agreement is that the United States could gain from Russian work on reprocessing/advanced fuel cycle research. Since the United States does not operate fast neutron reactors or reprocess, testing of fuels developed under the GNEP program could be done in Russia, including post-irradiation examination. Supporters argue that U.S. partnership in developing these technologies could help ensure that “proliferation- resistance” remains a priority. Critics point out that the agreement risks entrenching the Bush Administration’s policy of accepting reprocessing as a necessary part of the future of nuclear energy(although a future administration and Congress would always have the ability to guide the pace and direction of these developments). A 123 agreement could provide Russia with access to U.S. nuclear technologies and markets, the right to receive U.S.-origin nuclear materials into Russia for storage or processing, and an improved international image for its nuclear industry. The agreement might also be construed as U.S. approval for Russia’s civilian nuclear industry, thereby enabling Moscow to conclude similar agreements with other countries. Some have criticized the agreement on this basis — that safety and environmental problems with the Russian nuclear industry remain and therefore it would be premature to give approval. Others counter that only through such an agreement will western safety technology and standards be available to Russia. Russia could also expand its reach into new nuclear power markets by adding U.S. safety and automated control systems to its exported reactors, or partnering with U.S. multinationals. A 123 agreement could bolster the nonproliferation regime by promoting a nuclear energy framework that addresses emerging nuclear energy states’ fuel needs while dissuading them from pursuing indigenous enrichment and reprocessing technologies. Proposals include the development of multilateral fuel assurances, international fuel service centers, and a new generation of “proliferation-resistant” reactors. Russia has set up the joint venture International Uranium Enrichment Center at Angarsk, which is to be under international safeguards, and is discussing options for hosting an international fuel bank at the site as well. The United States may choose to join the Angarsk consortium in order to have more input into its management, but a section 123 agreement with the United States is not necessary for Russia to proceed with these efforts, unless the United States transfers nuclear material or equipment. Additionally, a 123 agreement would allow for Russian reprocessing of U.S.-origin spent fuel from third countries (although Russia has not yet decided to do this) or long- term spent fuel storage of such material in Russia. 16 The enrichment of U.S.-obligated reprocessed uranium, and the re-enrichment of U.S. uranium tails or U.S.-origin tails, using Russian enrichment facilities, would also require a 123 agreement. 17 There appears to be interest by Russia in establishing an International Spent Fuel Storage Facility (ISFSF) that could accept U.S.-origin fuel, for example from Taiwan or South Korea, or as part of a Russian fuel leasing and return program for future nuclear power plants abroad. 18 The U.S. may encourage a ISFSF in Russia as a way to prevent countries from pursuing reprocessing technologies. 19 Collaboration between the United States and Russia on providing nuclear fuel cycle services to non-nuclear weapon states could increase the confidence of these states in the services and therefore increase participation.

#### 2012 is the key year for U.S.-Russia relations – nuclear cooperation will be the litmus test.

Steven E. Miller, 1-6-2012, is Director of the International Security Program, Editor-in-Chief of the quarterly journal, International Security and also co-editor of the International Security Program's book series, Belfer Center Studies in International Security, he was Senior Research Fellow at the Stockholm International Peace Research Institute (SIPRI) and taught Defense and Arms Control Studies in the Department of Political Science at the Massachusetts Institute of Technology, Bulletin of the Atomic Scientists, “Nuclear weapons 2011: Momentum slows, reality returns,” <http://www.gulfinthemedia.com/files/article_en/587421.pdf>

If 2010 was the year of successes and landmarks for arms control, 2011 was the year that the momentum of the new era slowed, and hard realities were made apparent. By the end of the year, the Comprehensive Nuclear Test Ban Treaty had not been ratified or even seriously discussed, and negotiations on the Fissile Materials Cut-off Treaty remained stuck in the Conference on Disarmament, with no sign of success in the offing. The author takes a look at five events that unfolded in 2011 and that seem certain to cast a powerful shadow in months and years to come. He writes that both the spread of nuclear technology in the Middle East and Southeast Asia and the revision of the export control regime pose a threat to the long-term structure of the global nuclear order. The crisis with Iran continues to present a serious challenge to the Non-Proliferation Treaty regime while raising the risk of a military response. A conference on a Middle East WMD-free zone requires addressing an ambitious objective in the world’s most intractable diplomatic environment. And the impediments to progress in US”Russian relations stifle hopes that further agreements and deeper cuts can be achieved; a deterioration of this relationship could mean serious consequences in the arms control environment. In 2011, no new breakthroughs occurred, the author writes, adding that 2012 could be a much more difficult year.

#### U.S.-Russia relations are key to solving every impact – collapse causes great power war.

Dimitry Suslov & Sergei Karaganov, March 2011, Sergei Karaganov, Dean of the School of the World Economy and International Affairs at the National Research University–Higher School of Economics (NRU-HSE), Chairman of the Presidium, the Council on Foreign and Defense Policy (CFDP), Chairman of the Editorial Board, Russia in Global Affairs journal AND Dmitry Suslov, Deputy Director of the Center for Comprehensive European and International Studies, NRU-HSE; Assistant Dean for Research, the School of the World Economy and International Affairs, NRUHSE, Deputy Director of Research Programs at CFDP, “The U.S.—Russia Relations after the «Reset»: Building a New Agenda. A View from Russia Report by the Russian Participants of the Working Group on the Future of the Russian—U.S. Relations,” p. 6, <http://vid-1.rian.ru/ig/valdai/US-Russia%20relations_eng.pdf>

The building of friendly and, on some dimensions, allied relations does not require that Russia and the United States overcome some fundamental obstacles. Thanks to the success of the «reset» of the U.S.—Russian relations, U.S. policy — for the first time since the mid-1990s — does not undermine Russia’s vital interests (for example, in the post-Soviet space). The political challenge that U.S. policy continues to pose to Russia is much less danger-ous to it than the threats and challenges that are common to both countries. Moscow, on its part, poses no threat to U.S. fundamental interests, and even facilitates implementation of some of them. This factor offers a window of opportu-nities in their relations that is unprecedented when one looks at the past two decades. 1.11. If the parties resume bitter rivalry or even confrontation, the weakening of Moscow’s and Washington’s international positions will grow faster. There can be no return of history, as some conservative American authors would like to see, if the larger part of the U.S.-Russian agenda is again given to rivalry in regional issues and disputes over global ones. Russia will not «mobilize,» if its confrontation with the United States grows, as many Russian strategists hope. Engrossed in mutual con-frontation, Moscow and Washington would have to pay less and less attention to real com-mon threats and challenges. In addition, they would not be able to build a multilateral partnership to counter new challenges collectively, which is so vital for themselves and the whole world. 1.12. For Russia, a return to and — all the more so — an aggravation of confrontation with the U.S. is fraught with conservation of the stagna-tion and of the authoritarian path of develop-ment. It will also challenge the very possibility of its social, economic and political moderni-zation. The conflict will significantly weak-en Russia’s positions with regard to Europe, China and former Soviet countries. Russia could succeed as an anti-American center of power only if the United States resumes the aggressive, messianic and unilateral policy that was characteristic of the George W. Bush administration in the first years of his stay in office. In this case, the U.S. policy will trigger resentment of the majority of countries. How-ever, this scenario is unlikely in the short term (if only due to financial/economic and social limitations in the U.S.); and, in the long term, it is disadvantageous for Russia because of the 5 This task prioritizes building tripartite partnerships among the U.S., Russia and China and among the U.S., Russia and the EU 6 general destabilization of the international system that will unavoidably follow any new surge of U.S. aggressive behavior. 1.13. For the United States, a new confronta-tion with Russia is fraught with a failure to implement many of its top-priority — both short- and long-term — national foreign-pol-icy interests. It will result in a deterioration of the situation in Afghanistan, reduction of the opportunities for settling the nuclear problems of Iran and South Korea, and an aggravation of the nuclear non-proliferation regime crisis. It may threaten the strategic stability and global military-political security, and make the international system more con-flict-prone and less governable. Also, it may facilitate the consolidation of anti-American regimes in Asia and Latin America, as well as worsen Washington’s relations with those European and Asian allies that find confron-tation with Russia undesirable. Lastly, it will increase the probability of a global confronta-tion between the U.S. and China — and the balance of power might be not necessarily to the U.S.’s advantage.

### 1AC climate advantage

#### ADVANTAGE: 2 climate

#### Pyro-processing is key to stop climate change we’re close to the tipping point.

Steve Kirsch, 11-25-2009, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “Why We Should Build an Integral Fast Reactor Now,” <http://skirsch.wordpress.com/2009/11/25/ifr/>

\*\*\*cites Charles Till, former Associate Director, Argonne National Laboratory, The National Academy Studies, James Hansen, Director, NASA Goddard Institute for Space Studies, Ray Hunter, former Deputy Director of the Office of Nuclear Energy, Science and Technology in the U.S. Department of Energy (DOE), Leonard Koch, winner of the Global Energy International Prize, Barry Brook Sir Hubert Wilkins Chair of Climate Change\*\*\*

To prevent a climate disaster, we must eliminate virtually all coal plant emissions worldwide in 25 years. The best way and, for all practical purposes, the only way to get all countries off of coal is not with coercion; it is to make them want to replace their coal burners by giving them a plug-compatible technology that is less expensive. The IFR can do this. It is plug-compatible with the burners in a coal plant (see Nuclear Power: Going Fast). No other technology can upgrade a coal plant so it is greenhouse gas free while reducing operating costs at the same time. In fact, no other technology can achieve either of these goals. The IFR can achieve both. The bottom line is that without the IFR (or a yet-to-be-invented technology with similar ability to replace the coal burner with a cheaper alternative), it is unlikely that we’ll be able to keep CO2 under 450 ppm. Today, the IFR is the only technology with the potential to displace the coal burner. That is why restarting the IFR is so critical and why Jim Hansen has listed it as one of the top five things we must do to avert a climate disaster.[4] Without eliminating virtually all coal emissions by 2030, the sum total of all of our other climate mitigation efforts will be inconsequential. Hansen often refers to the near complete phase-out of carbon emissions from coal plants worldwide by 2030 as the sine qua non for climate stabilization (see for example, the top of page 6 in his August 4, 2008 trip report). To stay under 450ppm, we would have to install about 13,000 GWe of new carbon-free power over the next 25 years. That number was calculated by Nathan Lewis of Caltech for the Atlantic, but others such as Saul Griffith have independently derived a very similar number and White House Science Advisor John Holdren used 5,600 GWe to 7,200 GWe in his presentation to the Energy Bar Association Annual Meeting on April 23, 2009. That means that if we want to save the planet, we must install more than 1 GWe per day of clean power every single day for the next 25 years. That is a very, very tough goal. It is equivalent to building one large nuclear reactor per day, or 1,500 huge wind turbines per day, or 80,000 37 foot diameter solar dishes covering 100 square miles every day, or some linear combination of these or other carbon free power generation technologies. Note that the required rate is actually higher than this because Hansen and Rajendra Pachauri, the chair of the IPCC, now both agree that 350ppm is a more realistic “not to exceed” number (and we’ve already exceeded it). Today, we are nowhere close to that installation rate with renewables alone. For example, in 2008, the average power delivered by solar worldwide was only 2 GWe (which is to be distinguished from the peak solar capacity of 13.4GWe). That is why every renewable expert at the 2009 Aspen Institute Environment Forum agreed that nuclear must be part of the solution. Al Gore also acknowledges that nuclear must play an important role. Nuclear has always been the world’s largest source of carbon free power. In the US, for example, even though we haven’t built a new nuclear plant in the US for 30 years, nuclear still supplies 70% of our clean power!

#### Solving electricity is the first step to solve climate change because without nuclear power warming is inevitable.

Barry Brook et. al, 2-21-2009, a leading environmental scientist, holding the Sir Hubert Wilkins Chair of Climate Change at the School of Earth and Environmental Sciences, and is also Director of Climate Science at the University of Adelaide’s Environment Institute, published three books, over 200 refereed scientific papers, is a highly cited researcher, received a number of distinguished awards for his research excellence including the Australian Academy of Science Fenner Medal, is an International Award Committee member for the Global Energy Prize, Australian Research Council Future Fellow, ISI Researcher, Ph.D., Macquarie University in Environmental Engineering, Science Council for Global Initiatives, Edgeworth David Medal Royal Society of NSW, Cosmos Bright Sparks Award, Tom Blees is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, George S. Stanford is a nuclear reactor physicist, part of the team that developed the Integral Fast Reactor, PhD from Stanford University in Physics, Masters from University of Virginia in Engineering, worked at Argonne National Laboratory, Graham R.L. Cowan, "Boron: A Better Energy Carrier than Hydrogen?" in 2001, published "How Fire Can Be Tamed," BraveNewClimate, “Response to an Integral Fast Reactor (IFR) critique,” <http://bravenewclimate.com/2009/02/21/response-to-an-integral-fast-reactor-ifr-critique/>

[TB] Almost 80% of greenhouse gas emissions come from nuclear-capable countries anyway, so even if we just deployed them there we could make tremendous strides, though it would still be wise to create some sort of international oversight organization as I propose in the book. [BWB] This is at best grossly disingenuous (not to mention insulting to call Kirsch stupid). You need to solve the electricity carbon problem to fix the vehicular fuels problem, space heating and embedded energy in building and manufactured goods, and Tom has a solution for MSW [municipal solid waste] also. About half of agricultural emissions can also be solved if you have a zero-carbon energy source. Then you just need to worry about the ruminant methane and carbon from deforestation. But the bottom line is, if you fix electricity, everything else will quicktly start to fall into place. If we don’t stop coal in places like China and India, we’re hosed, irrespective of what we might do in the US and Oz (and even if we could do with without advanced nuclear, which we very likely cannot). I do wonder, what is Jim Green’s plan is for replacing the 484 GW of coal-fired power stations already installed in China, and the further 200 or so plants in the planning or construction pipeline?

#### We could start building hundreds of IFR’s by 2015 – cost competitive option.

Steve Kirsch, 2011, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “The Integral Fast Reactor (IFR) project: Q&A,” <http://skirsch.com/politics/globalwarming/ifrQandA.htm>

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I do not agree that nuclear energy would be "a costly option," especially given a level playing field (external health and environmental costs considered, for instance). Nuclear power is now competitive in many countries, and there is no reason to think that fast reactors, in the long run, will be significantly more expensive. They will require no mining, no milling, no enrichment, and the waste-management expense will be negligible. The raw material for the fuel (used fuel already on hand) is essentially free. Virtually the entire cost will be in infrastructure and operations. It's likely if we made this a national priority, it could move a lot faster (like we did with the Manhattan Project). The argument that it might take a long time is an argument for starting immediately. Nobody, even the critics, have suggested that waiting around makes it happen faster when we finally need to do it. We need to get out from under a "let's just pursue the quick fixes" mentality we have now. The time to do these longer term projects is before they are needed. Are we going to wait for our existing nuclear material to be depleted before it is a crisis? And then, once again, we will be too late. We need forward, visionary thinking in this country. It seems to be in short supply. Here's what Blees wrote in response to my answer above: I couldn't agree more. That said, I'm certain it could be done expeditiously and we could start building these things by the hundreds by 2015 or so. Meanwhile we could start building ABWRs and the other Gen III+ reactors so we could start shutting down coal plants. Nuclear waste is simply not an issue. And in terms of building both Gen III and IFRs in nuclear-capable countries, neither is economics. Or safety. Or proliferation. Those who maintain that we don't have the technology are either ignorant of the facts or lying. Not to put too fine a point on it or anything. That's not something I'd just toss out there, but just between you and me that's the way I see it.

#### Electricity demands are rising.

John Deutch & Ernest Moniz, 2003, CO CHAIR Institute Professor Department of Chemistry, MIT, and Ernest Moniz a co-chair in the Department of Physics, MIT Director of Energy Studies, Laboratory for Energy and the Environment, The Future of Nuclear Power – an interdisciplinary MIT Study, The Future of Nuclear Power: An Interdisciplinary MIT Study, “Chaired Effort to Identify Barriers and Solutions for Nuclear Option in Reducing Greenhouse Gases,” <http://web.mit.edu/nuclearpower/>

The U.S. National Academy of Engineering named electrification as the premier engineering achievement of the twentieth century3. This is a remarkable statement for the century of lasers, computers, airplanes, and other ubiquitous and important technologies and is indicative of the extraordinary impact of electricity in improving the quality of people’s lives. Accordingly, it should not be surprising that global electricity use is expected to increase dramatically in the years ahead, even taking into account improvements in end use efficiency. Growth in electricity use is expected especially in developing countries, as they strive to meet basic needs and to modernize and industrialize their economies. The U.S. Department of Energy’s EIA projects a 75% increase in global electricity use in two decades, from 2000 to 2020. By mid-century, a threefold increase or more is credible and, indeed, expected. Table 2.1 gives the growth rate for electricity use in different regions of the world as anticipated in the EIA “business-asusual” projections to the year 2020.4 There is a strong correlation between electricity consumption per capita and the United Nations “human development index” (HDI), which combines indicators of health, education, and economic prosperity.5 Industrialized countries have an HDI above 0.9 (on a scale of 0 to 1) and per capita energy consumption above 4000 kWe-hrs. Large developing countries, such as China, India, Pakistan, and Indonesia, are well below the industrialized country HDI and aspire to advance by rapid economic growth. Overall, energy consumption per capita in the developing world is currently less than a fifth of that in the developed world. Unless provided with assistance or incentives, these developing nations are likely to seek the lowest cost supply alternatives that can meet their growing industrial and consumer demand for electricity. This prospect clearly raises the specter of substantially increased greenhouse gas emissions, since coal is likely to be an economic choice for many developing countries, e.g. China and India. How these developing countries meet their electricity demand is of central interest to the discussion of global warming, since over time their choices will influence global emissions levels more than measures taken by the developed world. Greater electricity consumption is desirable because it accompanies social and economic advance, but we want the electricity production to take place in an economic and environmentally acceptable manner. The attractiveness of nuclear power as an option will be determined by many countryspecific factors. To understand how much nuclear power would be needed to make a significant contribution to reducing CO2 emissions by 2050, and where it might be deployed, we present, in Appendix 2, a simple scenario for electricity growth over the next fifty years.

#### Nuclear power is the most economic source of base-load power it’s key to solve GHG emissions by displacing pollutants.

Alexander DeVolpi, 2-28-2010, been active in nuclear-arms policy and treaty-verification technology studies for over 25 years, Argonne National Laboratory, Argonne, Illinois (and other national laboratories) involved nearly 40 years of lab, field, and analytical activities in instrumentation, nuclear physics, nuclear engineering, reactor safety, radioisotopes, experiments, verification technology, and arms control, the Defense Nuclear Agency, On-Site Inspection Agency, all the Department of Energy weapons labs, with the Departments of Defense and State, author or coauthor of several books, Ph.D. in physics (and MS in nuclear engineering physics) from Virginia Polytechnic Institute, certificate from the Argonne International Institute of Nuclear Science and Engineering, managing nuclear diagnostics for the Reactor Analysis and Safety Division at Argonne, and becoming technical manager of the arms-control and nonproliferation program, Who’s Who in Frontiers of Science and Technology, American Men and Women of Science, fellow of the American Physical Society, technical consultant in the Federation of American Scientists/Natural Resources Defense Council joint project, ScienceTechnologyHistory, “NUCLEAR EXPERTISE: The Amory Lovins Charade,” <http://sciencetechnologyhistory.wordpress.com/article/nuclear-expertise-the-amory-lovins-1gsyt5k142kc5-20/>

Nuclear power is not only commercially competitive, but extremely safe (no coal miners dying), no air pollution at all, no greenhouse gas emissions (such as carbon-dioxide). Nuclear-plant lifetime is being doubled from 30 to 60 years (which utilities, investors, and ratepayers appreciate). If Lovins had his way 30 years ago, considerably more particulates and gases would have been vented to the local and regional atmosphere from coal-fired plants (aside from the greenhouse gases emitted). Moreover, if Lovins had his way, we would not have conserved the electricity-equivalent in domestic coal, imported and domestic oil, and domestic and imported natural-gas resources and reserves that we have for 30 years. A typical nuclear power plant each year avoids consumption of 3.4 million short tons of coal, or 65.8 billion cubic feet of natural gas, or 14 billion barrels of oil. (The United States has ample uranium resources.) So Lovins was wrong in implying that nuclear had no overriding societal or environmental benefits. Incidentally, it’s no accident that Illinois has the highest concentration of nuclear-power plants in the United States: Argonne National Laboratory can be proud of its half-century nuclear stewardship. (California, by the way, generates more electricity from geothermal, solar, and wind energy sources combined than any other State.) Lovins displayed complex viewgraphs that, he purports, show that nuclear is the costliest of “low-or-non-nuclear resources.” Yet, in the last 30 years, nuclear has displaced half the fossil-fuel combustion in Illinois while still being competitive. Inasmuch as nuclear-power plants emit no byproduct carbon-dioxide to the atmosphere, surely his claim that it is the costliest of low-carbon-emission sources fails the smell test. Most of Lovins’ pricing and cost/benefit comparisons are based on “new delivered electricity” which frames the cost of U.S. domestic nuclear construction in the least favorable light. He declares nuclear power an economic failure. Can someone explain that to my bank account which has benefitted from compounding competitive electric power savings for the past 30 years? His rimy claim certainly fails the ripeness test. On the issue of electrical-grid reliability, Lovins asserts that there is no such thing as a “outage-free” source of electrical power. He must think that nuclear power runs by government fiat. Nuclear is a fixture on the grid because it is more economical to operate as base-load supply, while sources less reliable, intermittent, and more costly (such as wind, solar, and gas) provide supplementary power. During the past 30 years in Illinois, I don’t recall having the electricity supply and cost problems that California has had after it prohibited nuclear-power plants from being built within its borders. By the way, average U.S. nuclear capacity factor was about 92% in 2007. That’s excellent. Lovins pitiful effort to undermine the reliability of nuclear power egregiously fails the smell test.

#### Nuclear power is needed before renewables, it’s the jumpstart for new clean energy leadership – scientific consensus.

Steve Kirsch, 11-25-2009, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “Why We Should Build an Integral Fast Reactor Now,” <http://skirsch.wordpress.com/2009/11/25/ifr/>

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Nuclear can be installed very rapidly; much more rapidly than renewables. For example, about two thirds of the currently operating 440 reactors around the world came online during a 10 year period between 1980 and 1990. So our best chance of meeting the required installation of new power goal and saving the planet is with an aggressive nuclear program. Unlike renewables, nuclear generates base load power, reliably, regardless of weather. Nuclear also uses very little land area. It does not require the installation of new power lines since it can be installed where the power is needed. However, even with a very aggressive plan involving nuclear, it will still be extremely difficult to install clean power fast enough. Unfortunately, even in the US, we have no plan to install the clean power we need fast enough to save the planet. Even if every country were to agree tomorrow to completely eliminate their coal plant emissions by 2030, how do we think they are actually going to achieve that? There is no White House plan that explains this. There is no DOE plan. There is no plan or strategy. The deadlines will come and go and most countries will profusely apologize for not meeting their goals, just like we have with most of the signers of the Kyoto Protocol today. Apologies are nice, but they will not restore the environment. We need a strategy that is believable, practical, and affordable for countries to adopt. The IFR offers our best hope of being a centerpiece in such a strategy because it is the only technology we know of that can provide an economically compelling reason to change. At a speech at MIT on October 23, 2009, President Obama said “And that’s why the world is now engaged in a peaceful competition to determine the technologies that will power the 21st century. … The nation that wins this competition will be the nation that leads the global economy. I am convinced of that. And I want America to be that nation, it’s that simple.” Nuclear is our best clean power technology and the IFR is our best nuclear technology. The Gen IV International Forum (GIF) did a study in 2001-2002 of 19 different reactor designs on 15 different criteria and 24 metrics. The IFR ranked #1 overall. Over 242 experts from around the world participated in the study. It was the most comprehensive evaluation of competitive nuclear designs ever done. Top DOE nuclear management ignored the study because it didn’t endorse the design the Bush administration wanted. The IFR has been sitting on the shelf for 15 years and the DOE currently has no plans to change that. How does the US expect to be a leader in clean energy by ignoring our best nuclear technology? Nobody I’ve talked to has been able to answer that question. We have the technology (it was running for 30 years before we were ordered to tear it down). And we have the money: The Recovery Act has $80 billion dollars.

#### Anthropogenic warming causes extinction – mitigating coal in the electric power industry is key to solve.

Mudathir F. Akorede et. al, June 2012, M.Eng degree at Bayero University Kano in Electrical Engineering, tutelage engineer in the Chad Basin Development Authority’s, lectureship appointment in the Department of Electrical Engineering, University of Ilorin, professional engineer with the Council for Regulation of Engineering in Nigeria (COREN), reviewer for a number of reputable international journals, Hashim Hizam, Department of Meterology and Atmospheric Sciences, faculty, University of Putra Malaysia, M.Sc in Electrical Engineering, Polytechnic University of Brooklyn, New York, M. Z. A. Ab Kadir and I. Aris, Department of Electrical and Electronics Engineering, Faculty of Engineering University Putra Malaysia, S.D. Buba professor of Climatology University of Putra Malaysia, Ph.D. paleoclimatology, University of Oxford, M.Eng at the University of Putra Malaysia, Renewable & Sustainable Energy Reviews, Vol. 16 Issue 5, “Mitigating the anthropogenic global warming in the electric power industry,” p. 1, Ebsco Host

One of the most current and widely discussed factors that could lead to the ultimate end of man’s existence and the world at large is global warming. Global warming, described as the greatest environmental challenge in the 21st century, is the increase in the average global air temperature near the surface of the Earth, caused by the gases that trap heat in the atmosphere called greenhouse gases (GHGs). These gases are emitted to the atmosphere mostly as a result of human activities, and can lead to global climate change. The economic losses arising from climate change presently valued at $125 billion annually, has been projected to increase to $600 billion per year by 2030, unless critical measures are taken to reduce the spate of GHG emissions. Globally, the power generation sector is responsible for the largest share of GHG emissions today. The reason for this is that most power plants worldwide still feed on fossil fuels, mostly coal and consequently produce the largest amount of CO2 emitted into the atmosphere. Mitigating CO2 emissions in the power industry therefore, would significantly contribute to the global efforts to control GHGs. This paper gives a brief overview of GHGs, discusses the factors that aid global warming, and examines the expected devastating effects of this fundamental global threat on the entire planet. The study further identifies the key areas to mitigate global warming with a particular focus on the electric power industry.

#### Climate change is real and anthropogenic – fundamental science, atmospheric patterns, greenhouse gas fingerprints, and newest measurements all confirm.

Karl Braganza, 6-14-2011, received his PhD from the School of Mathematics at Monash University, work has centered on understanding and attributing climate variability and change, using numerical modeling, instrumental observations and past climate evidence, currently the Head of Climate Monitoring at the Bureau of Meteorology's National Climate Center, The Conversation, "The Greenhouse Effect is Real: Here’s Why," <http://theconversation.edu.au/the-greenhouse-effect-is-real-heres-why-1515>

The greenhouse effect is fundamental science It would be easy to form the opinion that everything we know about climate change is based upon the observed rise in global temperatures and observed increase in carbon dioxide emissions since the industrial revolution. In other words, one could have the mistaken impression that the entirety of climate science is based upon a single correlation study. In reality, the correlation between global mean temperature and carbon dioxide over the 20th century forms an important, but very small part of the evidence for a human role in climate change. Our assessment of the future risk from the continued buildup of greenhouse gases in the atmosphere is even less informed by 20th century changes in global mean temperature. For example, our understanding of the greenhouse effect – the link between greenhouse gas concentrations and global surface air temperature – is based primarily on our fundamental understanding of mathematics, physics, astronomy and chemistry. Much of this science is textbook material that is at least a century old and does not rely on the recent climate record. For example, it is a scientific fact that Venus, the planet most similar to Earth in our solar system, experiences surface temperatures of nearly 500 degrees Celsius due to its atmosphere being heavily laden with greenhouse gases. Back on Earth, that fundamental understanding of the physics of radiation, combined with our understanding of climate change from the geological record, clearly demonstrates that increasing greenhouse gas concentrations will inevitably drive global warming. Dusting for climate fingerprints The observations we have taken since the start of 20th century have confirmed our fundamental understanding of the climate system. While the climate system is very complex, observations have shown that our formulation of the physics of the atmosphere and oceans is largely correct, and ever improving. Most importantly, the observations have confirmed that human activities, in particular a 40% increase in atmospheric carbon dioxide concentrations since the late 19th century, have had a discernible and significant impact on the climate system already. In the field known as detection and attribution of climate change, scientists use indicators known as fingerprints of climate change. These fingerprints show the entire climate system has changed in ways that are consistent with increasing greenhouse gases and an enhanced greenhouse effect. They also show that recent, long term changes are inconsistent with a range of natural causes. Is it getting hot in here? A warming world is obviously the most profound piece of evidence. Here in Australia, the decade ending in 2010 has easily been the warmest since record keeping began, and continues a trend of each decade being warmer than the previous, that extends back 70 years. Globally, significant warming and other changes have been observed across a range of different indicators and through a number of different recording instruments, and a consistent picture has now emerged. Scientists have observed increases in continental temperatures and increases in the temperature of the lower atmosphere. In the oceans, we have seen increases in sea-surface temperatures as well as increases in deep-ocean heat content. That increased heat has expanded the volume of the oceans and has been recorded as a rise in sea-level. Scientists have also observed decreases in sea-ice, a general retreat of glaciers and decreases in snow cover. Changes in atmospheric pressure and rainfall have also occurred in patterns that we would expect due to increased greenhouse gases. There is also emerging evidence that some, though not all, types of extreme weather have become more frequent around the planet. These changes are again consistent with our expectations for increasing atmospheric carbon dioxide. Patterns of temperature change that are uniquely associated with the enhanced greenhouse effect, and which have been observed in the real world include: greater warming in polar regions than tropical regions greater warming over the continents than the oceans greater warming of night time temperatures than daytime temperatures greater warming in winter compared with summer a pattern of cooling in the high atmosphere (stratosphere) with simultaneous warming in the lower atmosphere (troposphere).

#### Even if there is only a one percent chance fast reactors can work you vote aff because the planet is at stake.

Steve Kirsch, 11-25-2009, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “Why We Should Build an Integral Fast Reactor Now,” <http://skirsch.wordpress.com/2009/11/25/ifr/>

\*\*\*cites Charles Till, former Associate Director, Argonne National Laboratory, The National Academy Studies, James Hansen, Director, NASA Goddard Institute for Space Studies, Ray Hunter, former Deputy Director of the Office of Nuclear Energy, Science and Technology in the U.S. Department of Energy (DOE), Leonard Koch, winner of the Global Energy International Prize, Barry Brook Sir Hubert Wilkins Chair of Climate Change\*\*\*

Even if you believe all the arguments of the opposition and completely discount the arguments of the Argonne scientists who best know the technology, it doesn’t matter because we do not have an option: we have to make this work now. Renewables alone can’t kill coal in the time allotted. The point is:1) virtually every credible renewable expert agrees we cannot reduce our carbon emissions enough without nuclear, 2) the IFR is our best nuclear, 3) the IFR is the only technology we have with a realistic chance of replacing coal burners in a coal plant with a lower-cost carbon-free alternative. So objections noted, but our planet is at stake and we have got to make this work. We should be joining together and doing things that our most credible scientists tell us we have to do to save our planet, rather than arguing amongst ourselves and debating what the optimum solution is. The time for debate is over. We are so late on deploying clean energy technologies that any new technology that has a realistic potential to make a significant positive impact should be welcomed with open arms by every human being. Urgency “Within the next four decades, human civilization must eliminate its use of fossil fuels and replace them with 10,000 gigawatts of reliable, sustainable power. The only realistic way that this extraordinary challenge can be met is with the rapid and large-scale deployment of nuclear power, on a worldwide basis, led by countries like the US, Russia, the EU, China and India. Generation III nuclear plants will be critical to this expansion over the short term, Generation IV technology is the astoundingly attractive long-term prospect, with the IFR being the flagship Gen IV design. The urgency in getting the IFR commercialised and deployment on an industrial scale cannot be overstated”.

#### Anthropogenic warming causes rapid sea level rise and collapse in biodiversity.

Kathy J. Willis et. al, 2010, holds the Tasso Leventis Chair of Biodiversity, is Director of the Biodiversity Institute (BIO) in the Zoology Department and a Professorial Fellow at Merton College, Ph.D. from the University of Cambridge in Plant Sciences, held a Selwyn College Research Fellowship and then a NERC Postdoctoral Fellowship in the department of Plant Sciences, University of Cambridge, Royal Society University Research Fellowship in the Godwin Institute for Quaternary Research, University of Cambridge, University Lectureship in the School of Geography and the Environment, University of Oxford, Keith D. Bennett is a professor in the School of Geography, Archaeology and Palaeoecology at Queen’s University, Belfast, Professor of Late-Quaternary Environmental Change, Responsible for Quaternary Geology program, Senior Assistant in Research at the University of Cambridge, NSERC Postdoctoral Research Fellow, University of Toronto, Shonil A. Bhagwat has a D.Phil. in Tropical Forest Diversity and Conservation and MSc in Forestry and its Relation to Land Use from the University of Oxford, Senior Research Fellow, Course Director BCM, co-ordinating a project that examines Human Adaptation to Biodiversity Change, and John B. Birks professor in the Department of Biology and Bjerknes Centre for Climate Research University of Bergen, editorial boards of Review of Palaeobotany and Palynology; Palaeogeography, Palaeoclimatology, and Palaeoecology; Grana; Journal of Paleolimnology; Acta Palaeobotanica; Journal of Biogeography; Ecology and Plant Diversity, and Perspectives in Plant Ecology, and Evolution, Systematics and Biodiversity, Vol. 8 Issue 1, “4 C and beyond: what did this mean for biodiversity in the past?,” p. 3, Ebsco Host

Of the many predictions for climate change in the next cen-tury, a general consensus is emerging that global tempera-tures will increase by 2–4 ◦ C and possibly beyond (Mein-shausenet al., 2009), sea levels will rise (1m±0.5 m), and atmospheric CO2 will increase by up to 1000 ppmv (Solomonet al., 2007). It is also widely suggested that the magnitude and rate of these changes will result in many plants and animals going extinct, for example within the next century, over 35% of some biota will have gone ex-tinct (Thomaset al., 2004; Solomonet al., 2007) and there will be extensive die-back of the tropical rainforest due to climate change (e.g. Huntingford et al., 2008). These predictions, based predominantly on models constructed using the present-day static distribution of species in rela-tion to present-day climate, paint a depressing picture. And it is these predictions that pervade the scientific and non-scientific literature to highlight the potential perils of future climate change and leading to the oft-cited sentiment that future climate change poses an equal or greater extinction threat to global biodiversity than land-use change (Parme-san & Yohe, 2003; Thomaset al., 2004).

#### Biodiversity loss causes extinction.

Ruth Young, 2-9-2010, Ph.D. specialising in coastal marine ecology, “Biodiversity: what it is and why it’s important,” <http://www.talkingnature.com/2010/02/Biodiversity/Biodiversity-what-and-why/>

Different species within ecosystems fill particular roles, they all have a function, they all have a niche. They interact with each other and the physical environment to provide ecosystem services that are vital for our survival. For example plant species convert carbon dioxide (CO2) from the atmosphere and energy from the sun into useful things such as food, medicines and timber. A bee pollinating a flower (Image: ClearlyAmbiguous Flickr) Pollination carried out by insects such as bees enables the production of ⅓ of our food crops. Diverse mangrove and coral reef ecosystems provide a wide variety of habitats that are essential for many fishery species. To make it simpler for economists to comprehend the magnitude of services offered by Biodiversity, a team of researchers estimated their value – it amounted to $US33 trillion per year. “By protecting Biodiversity we maintain ecosystem services” Certain species play a “keystone” role in maintaining ecosystem services. Similar to the removal of a keystone from an arch, the removal of these species can result in the collapse of an ecosystem and the subsequent removal of ecosystem services. The most well known example of this occurred during the 19th century when sea otters were almost hunted to extinction by fur traders along the west coast of the USA. This led to a population explosion in the sea otters’ main source of prey, sea urchins. Because the urchins graze on kelp their booming population decimated the underwater kelp forests. This loss of habitat led to declines in local fish populations. Sea otters are a keystone species once hunted for their fur (Image: Mike Baird) Eventually a treaty protecting sea otters allowed the numbers of otters to increase which inturn controlled the urchin population, leading to the recovery of the kelp forests and fish stocks. In other cases, ecosystem services are maintained by entire functional groups, such as apex predators (See Jeremy Hance’s post at Mongabay). During the last 35 years, over fishing of large shark species along the US Atlantic coast has led to a population explosion of skates and rays. These skates and rays eat bay scallops and their out of control population has led to the closure of a century long scallop fishery. These are just two examples demonstrating how Biodiversity can maintain the services that ecosystems provide for us, such as fisheries. One could argue that to maintain ecosystem services we don’t need to protect Biodiversity but rather, we only need to protect the species and functional groups that fill the keystone roles. However, there are a couple of problems with this idea. First of all, for most ecosystems we don’t know which species are the keystones! Ecosystems are so complex that we are still discovering which species play vital roles in maintaining them. In some cases its groups of species not just one species that are vital for the ecosystem. Second, even if we did complete the enormous task of identifying and protecting all keystone species, what back-up plan would we have if an unforseen event (e.g. pollution or disease) led to the demise of these ‘keystone’ species? Would there be another species to save the day and take over this role? Classifying some species as ‘keystone’ implies that the others are not important. This may lead to the non-keystone species being considered ecologically worthless and subsequently over-exploited. Sometimes we may not even know which species are likely to fill the keystone roles. An example of this was discovered on Australia’s Great Barrier Reef. This research examined what would happen to a coral reef if it were over-fished. The “over-fishing” was simulated by fencing off coral bommies thereby excluding and removing fish from them for three years. By the end of the experiment, the reefs had changed from a coral to an algae dominated ecosystem – the coral became overgrown with algae. When the time came to remove the fences the researchers expected herbivorous species of fish like the parrot fish (Scarus spp.) to eat the algae and enable the reef to switch back to a coral dominated ecosystem. But, surprisingly, the shift back to coral was driven by a supposed ‘unimportant’ species – the bat fish (Platax pinnatus). The bat fish was previously thought to feed on invertebrates – small crabs and shrimp, but when offered a big patch of algae it turned into a hungry herbivore – a cow of the sea – grazing the algae in no time. So a fish previously thought to be ‘unimportant’ is actually a keystone species in the recovery of coral reefs overgrown by algae! Who knows how many other species are out there with unknown ecosystem roles! In some cases it’s easy to see who the keystone species are but in many ecosystems seemingly unimportant or redundant species are also capable of changing niches and maintaining ecosystems. The more Biodiversityiverse an ecosystem is, the more likely these species will be present and the more resilient an ecosystem is to future impacts. Presently we’re only scratching the surface of understanding the full importance of Biodiversity and how it helps maintain ecosystem function. The scope of this task is immense. In the meantime, a wise insurance policy for maintaining ecosystem services would be to conserve Biodiversity. In doing so, we increase the chance of maintaining our ecosystem services in the event of future impacts such as disease, invasive species and of course, climate change. This is the international year of Biodiversity – a time to recognize that Biodiversity makes our survival on this planet possible and that our protection of Biodiversity maintains this service.

### plan

#### Plan: The United States Federal Government should substantially increase commercial loan guarantees to develop and deploy Integral Fast Reactors for the purpose of energy production in the United States.

### 1AC solvency

#### Loan guarantees are key to establishing pyro-processing.

Stephen Berry & George S. Tolley, 11-29-2010, James Franck Distinguished Service Professor Emeritus at the University of Chicago, Fellow, American Academy of Arts and Sciences, foreign Member, Royal Danish Academy of Sciences, member and Home Secretary, National Academy of Sciences, J. Heyrovsky Honorary Medal for Merit in the Chemical Sciences, Academy of Sciences of the Czech Republic, Alexander von Humboldt-Stiftung Senior Scientist Award, Phi Beta Kappa National Lecturer, George S. Tolley is a professor emeritus in Economics at the University of Chicago, fellow, American Association for the Advancement of Science, honorary editor, Resource and Energy Economics, honorary Ph.D., North Carolina State University, “Nuclear Fuel Reprocessing Future Prospects and Viability,” p. 38, <http://humanities.uchicago.edu/orgs/institute/bigproblems/Team7-1210.pdf>

The construction of an aqueous solvent extraction plant would be out of date, especially when the more promising option of pyroprocessing is on the horizon. In comparison, to current available methods, pyroprocessing produces virtually no waste, can be done on-site, and offers the option of fabricating proliferation resistant fuel from plutonium as well as uranium. The second question in regard to domestic reprocessing is, “how much direct involvement should the government have in the reprocessing business?” Government involvement could be justified on the grounds of the externalities present in nuclear waste disposal. This could take on a variety of forms - government research efforts, subsidizing reprocessing (or offering tax credits and loan guarantees), or even operating a reprocessing center on its own. Through its actions, the government will be able to influence the development and growth of the nuclear reprocessing industry in the United States. These efforts in support of pyroprocessing and other advanced fuel cycle technologies represent a small portion of the Department of Energy budget - only $142,652,000 out of a total of $33,856,453,000 in discretionary funding in FY 2009, or less than half of one percent98. Furthermore, private companies do not have sufficient independent incentives to reduce the long-term health and environmental consequences of nuclear waste disposal. While it is beyond the scope of this paper to present a formal costbenefit analysis of R&D efforts, given the minimal costs and the large potential benefits, the chances of success do not need to be very high to justify continued government expenditures in this area.

#### U.S. commitment to pyro-processing sustains the nuclear industry – prices and management.

Stephen Berry & George S. Tolley, 11-29-2010, James Franck Distinguished Service Professor Emeritus at the University of Chicago, Fellow, American Academy of Arts and Sciences, foreign Member, Royal Danish Academy of Sciences, member and Home Secretary, National Academy of Sciences, J. Heyrovsky Honorary Medal for Merit in the Chemical Sciences, Academy of Sciences of the Czech Republic, Alexander von Humboldt-Stiftung Senior Scientist Award, Phi Beta Kappa National Lecturer, George S. Tolley is a professor emeritus in Economics at the University of Chicago, fellow, American Association for the Advancement of Science, honorary editor, Resource and Energy Economics, honorary Ph.D., North Carolina State University, “Nuclear Fuel Reprocessing Future Prospects and Viability,” p. 39, <http://humanities.uchicago.edu/orgs/institute/bigproblems/Team7-1210.pdf>

Increasing government support of advancements in reprocessing in the U.S. would encourage growth and investment in this technology. Therefore, continued government commitment to researching pyroprocessing and other advanced fuel cycle technologies is vital to the nuclear industry, especially if we envision this technology maturing internationally. As unsustainable as our current nuclear waste disposal strategies are, we believe in the current political climate, commercial reprocessing in the United States are not a viable option due to high environmental and technological costs, as well as having significant nuclear proliferation threats. However, in order for the U.S. to employ pyroprocessing in the future, the government must begin now to incentivize the technology for firms and investors. As uranium prices are expected to increase in the future, as well as an increasing concern regarding the management of nuclear waste worldwide, reprocessing may become a promising solution provided investments are made to address current challenges in the field.

#### Pyro-processing is developed now and is comparatively better than existing reactors.

Tom Blees, 5-31-2011, is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Idaho Samizdat: Nuke Notes, “Critique of MIT Nuclear Fuel Cycle Report,” <http://djysrv.blogspot.com/2011/05/critique-of-mit-nuclear-fuel-cycle.html>

The public views adequate nuclear waste management as a critical linchpin in further development of nuclear energy. The technical community, therefore, needs to provide a practical approach to deal with the waste issue. The Fukushima accidents call attention to the importance of managing spent fuel safely. It appears the best technical approach is extracting the actinides from spent fuel, which reduces the effective lifetime of nuclear wastes from ~300,000 years to ~300 years. Extracting actinides (and using them to generate power) is by far the best technical approach to dealing with nuclear wastes. The MIT Study fails to mention this important possibility. If actinide extraction is chosen as a pathway for waste “disposal,” the recovered actinides still must be transmuted to fissile material or fissioned directly. This can be done only in fast reactors. Actinides can be burned in fast reactors, generating energy and at the same time creating more fissile material for the future. A key advantage of fast reactors is that they can be utilized as “burners” when excess plutonium inventories exist, and then converted to “breeders” whenever needed. Only fast reactors can satisfy the waste-disposal mission simply and effectively while extending utilization of the uranium resources by more than two orders of magnitude. Thermal reactors—such as LWRs and high-temperature gas-cooled reactors—utilize less than 1% of uranium resources, even with recycling of plutonium and some of the uranium. Thermal-spectrum reactors, even optimized, can extend the resource utilization only marginally, and they cannot burn actinides effectively. Actinide recycling also requires an efficient processing technology, with improved economics and nonproliferation characteristics. The pyroprocessing technique based on electrorefining, developed in the IFR program, has the potential to recover the actinides from LWR spent fuel as well as to fully recycle fuel in fast reactors. The fundamentals of pyroprocessing have already been demonstrated – this is not new science. The technology is now ready for pilot-scale demonstration, and it should be given the highest priority. We do not need decades of R&D to pursue all esoteric ideas. We already have in our hands on the most advanced technology, technology that no other countries possess. The MIT Study also talks about the inter-generational equity considerations. We believe that our generation should demonstrate the technologies that will solve the energy supply and waste management problems, rather than proposing a century-long interim storage of the spent nuclear fuel.

#### Fast reactors are 100% safe – multiple redundancies eliminating human error and impregnable\*\*

Barry Brook et. al, 2-21-2009, a leading environmental scientist, holding the Sir Hubert Wilkins Chair of Climate Change at the School of Earth and Environmental Sciences, and is also Director of Climate Science at the University of Adelaide’s Environment Institute, published three books, over 200 refereed scientific papers, is a highly cited researcher, received a number of distinguished awards for his research excellence including the Australian Academy of Science Fenner Medal, is an International Award Committee member for the Global Energy Prize, Australian Research Council Future Fellow, ISI Researcher, Ph.D., Macquarie University in Environmental Engineering, Science Council for Global Initiatives, Edgeworth David Medal Royal Society of NSW, Cosmos Bright Sparks Award, Tom Blees is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, George S. Stanford is a nuclear reactor physicist, part of the team that developed the Integral Fast Reactor, PhD from Stanford University in Physics, Masters from University of Virginia in Engineering, worked at Argonne National Laboratory, Graham R.L. Cowan, "Boron: A Better Energy Carrier than Hydrogen?" in 2001, published "How Fire Can Be Tamed," BraveNewClimate, “Response to an Integral Fast Reactor (IFR) critique,” <http://bravenewclimate.com/2009/02/21/response-to-an-integral-fast-reactor-ifr-critique/>

[BWB] The laws of physics say that this is not nonsense. For instance, the metal fuel pins’ composition is such that if they begin to overheat, the resulting expansion decreases their density to the point where the fission reaction simply shuts down. This is not speculation — it’s been tested and verified. I quote: “The IFR gains safety advantages through a combination of metal fuel (an alloy of uranium, plutonium, and zirconium), and sodium cooling. By providing a fuel which readily conducts heat from the fuel to the coolant, and which operates at relatively low temperatures, the IFR takes maximum advantage of expansion of the coolant, fuel, and structure during off-normal events which increase temperatures. The expansion of the fuel and structure in an off-normal situation causes the system to shut down even without human operator intervention. In April of 1986, two special tests were performed on the Experimental Breeder Reactor II (EBR-II), in which the main primary cooling pumps were shut off with the reactor at full power (62.5 Megawatts, thermal) – By not allowing the normal shutdown systems to interfere, the reactor power dropped to near zero within about 300 seconds. No damage to the fuel or the reactor resulted. This test demonstrated that even with a loss of all electrical power and the capability to shut down the reactor using the normal systems, the reactor will simply shut down without danger or damage. The same day, this demonstration was followed by another important test. With the reactor again at full power, flow in the secondary cooling system was stopped. This test caused the temperature to increase, since there was nowhere for the reactor heat to go. As the primary (reactor) cooling system became hotter, the fuel, sodium coolant, and structure expanded, and the reactor shut down. This test showed that an IFR type reactor will shut down using inherent features such as thermal expansion, even if the ability to remove heat from the primary cooling system is lost. Events such as the loss of water to the steam system would cause a condition such as the test demonstrated. Another major feature of the IFR concept is that the reactor uses a coolant, sodium, which does not boil during normal operation nor even in overpower transients such as described above. This means that the coolant is not under significant pressure. When coolant is not under pressure, the reactor can be placed in a “pool” of coolant, contained in a double tank, so that there is no real possibility for a loss of coolant. Even if the normal pumps are lost, some coolant flow through the reactor occurs due to natural convection. The features described above allow for greater simplification of a nuclear plant, resulting in cost savings, greater ease in operation, and a safety system that relies on natural phenomenon that cannot be defeated by human error. “ [TB] Arguing that these reactors cannot be safe from meltdowns flies in the face of the laws of physics, which assure that very feature. Regarding terrorist attack, we can secure our airports chemical plants, etc, with not a lot of work, you can design these plants to be virtually impregnable by terrorists (e.g., burying the reactor building). The new Gen III LWRs, though, are so far advanced as to merit their designation as a different generation. The probabilistic risk assessment of the ESBWR is astronomical, one core melt accident every 29 million reactor-years. Since we don’t have enough nuclear waste to load new IFRs quickly enough to meet the 2050 goal of zero emissions, the newest LWRs could be built to fill any gap that renewables and IFRs couldn’t fill and can be expected to perform safely. Their safety features are far beyond our current reactors by orders of magnitude.

#### No new U.S. booms in expansion for nuclear power – high costs and no storage.

Michael Bastasch, 3-8-2012, The Daily Caller, “Fukushima disaster halts progress of nuclear power in the US,” <http://dailycaller.com/2012/03/08/fukushima-disaster-halts-progress-of-nuclear-power-in-the-us/>

After the Fukushima disaster, all of these initiatives were halted in their tracks. Other obstacles to expanding nuclear power include concerns over the high costs of nuclear plants, the shale revolution that is exploiting America’s rich natural gas deposits and the inability of Congress to find an adequate place to store nuclear waste. The Energy Policy Act of 2005 “provides loan guarantees of up to 80% of a project’s cost and a production tax credit of 1.8 cents per kilowatt hour for new nuclear capacity beginning operation by 2020,” according to the Institute for Energy Research (IER). The act incentivized many new applications for plant approvals to be filed with the Nuclear Regulatory Commission, but high capital costs are still keeping these plants from being built, according to IER. As for nuclear waste disposal, the future seems uncertain. Currently, waste is stored on site at 104 nuclear plants in the U.S., but those facilities were supposed to be temporary. California, Illinois, Maine, Massachusetts, Virginia and West Virginia say they won’t lift their nuclear moratoriums until a permanent and safe solution is discovered, according to the National Conference of State Legislatures. Nevada’s Yucca Mountain was thought to be the solution to this problem, but in 2009 the Obama administration withdrew its support for Yucca Mountain due to fierce political opposition in Nevada. Nuclear power proponents hoped that the administration would again consider the site, but a recent report by the president’s Blue Ribbon Commission did not consider Yucca Mountain’s feasibility. There are even doubts surrounding the newly-approved Georgia reactors, as the plants may begin generating electricity eight months later than expected, according the Augusta Chronicle. Supporters of nuclear power, however, still retain some optimism because of the approval of the Georgia reactors and a dual reactor plant in South Carolina. A poll by the Nuclear Energy Institute says that 81 percent of Americans view nuclear energy as “important to meeting the nation’s future electricity needs,” and 64 percent of respondents favoring the use of nuclear power in the U.S.

## 2AC

### 2AC prolif

#### Green is a hack who lacks any actual credibility he misuses references in papers and does not understand fast reactors and radiation effects.

Ben Heard, 3-28-2012, is Director of Adelaide-based advisory firm ThinkClimate Consulting, a Masters graduate of Monash University in Corporate Environmental Sustainability, and a member of the TIA Environmental and Sustainability Action Committee, after several years with major consulting firms, founded ThinkClimate and has since assisted a range of government, private and not-for profit organisations to measure, manage and reduce their greenhouse gas emissions and move towards more sustainable operations, Decarbonise SA, “IQ2 Debate: “We’ve seen the energy,” <http://bravenewclimate.com/2012/03/28/jim-green-hatchet-man/>

Publicly accusing someone of spreading misinformation is a serious charge. Anyone doing so should make sure their own house is in order first. This time, my questions for Green are as follows: How much of your work depends on “very preliminary order of magnitude guesstimates?” Are you aware that your own reference warns against the very serious consequences of the misunderstanding of radiation risk? If so, why have you contributed to the problem? If not, why not? Do you not read references completely? Green’s misuse and abuse of references, whether the result of laziness or something worse, leave him with little credibility. This does not stop him and others continuing to make great hay out of Barry’s erroneous prognostications early in the unfolding Fukushima event. But there are two things they don’t ever, ever do: Point out where Barry, on his own site, revisits this mistake, corrects the record and engages in some searching self-criticism Follow Barry’s example in the now innumerable examples of incorrect, foolish and downright dangerous misinformation that has been spread about nuclear power, such as those highlighted above For example, in response to my own recent piece on activists deliberately stoking outrage, Green put the hard word on the Brisbane branch of FoE who were continuing to highlight a (medically impossible) link between Fukushima and a “spike in deaths” in the USA in the immediate aftermath of the accident. Apparently even Green has his limits. But will you find a retraction from FoE? No. A correction? Certainly not. Some self-criticism as to how such absolute claptrap could have been posted under their good name? No way. Acknowledgement that is was only through sheer embarrassment caused by an independent blogger that they finally removed it in the first place? You get the picture. I have not enjoyed writing this, nor indeed needing to write it in the first place. I don’t like seeing a cheap hatchet job on one of our best and brightest scientists, not just because he is a friend of mine, but because he is an outstanding Australian and a caring leader in our global community. I don’t like knowing someone has bastardised references, only to find it is way, way worse than I would even have expected. I don’t like watching environmental organisations, some of which I supported with both my money and my time when I was younger, sink this low and keep sinking, seemingly proud of their efforts. I really don’t like that it seems impossible to give a firm rebuttal without taking an individual to task, and I hate that someone undecided on nuclear power may read this and think that I just hate FoE. But bullshit like this has got to stop, and it stops when people start taking a stand. The schism in environmentalism over nuclear power is now well underway. It is sad that the other side seem to have decided in their righteousness that they are allowed to play dirty and go after individuals, using the same cherry-picking abuse of science that is all too familiar in climate change denial. Based on the way so many issues play out, I think it would be a real tactical mistake to presume that this sort of cheap, tabloid activism does not work, and to think we can fight this without getting into the mud. If you indentify as someone who cares about the environment, you DO have a choice to make in the next few years: you are either pro-nuclear or anti-nuclear. There are two camps. Please, look carefully. Think critically. Choose wisely.

### 2AC warming

#### Nuclear power is cost competitive.

Alexander DeVolpi, 2-28-2010, been active in nuclear-arms policy and treaty-verification technology studies for over 25 years, Argonne National Laboratory, Argonne, Illinois (and other national laboratories) involved nearly 40 years of lab, field, and analytical activities in instrumentation, nuclear physics, nuclear engineering, reactor safety, radioisotopes, experiments, verification technology, and arms control, the Defense Nuclear Agency, On-Site Inspection Agency, all the Department of Energy weapons labs, with the Departments of Defense and State, author or coauthor of several books, Ph.D. in physics (and MS in nuclear engineering physics) from Virginia Polytechnic Institute, certificate from the Argonne International Institute of Nuclear Science and Engineering, managing nuclear diagnostics for the Reactor Analysis and Safety Division at Argonne, and becoming technical manager of the arms-control and nonproliferation program, Who’s Who in Frontiers of Science and Technology, American Men and Women of Science, fellow of the American Physical Society, technical consultant in the Federation of American Scientists/Natural Resources Defense Council joint project, ScienceTechnologyHistory, “NUCLEAR EXPERTISE: The Amory Lovins Charade,” <http://sciencetechnologyhistory.wordpress.com/article/nuclear-expertise-the-amory-lovins-1gsyt5k142kc5-20/>

Nuclear power is not only commercially competitive, but extremely safe (no coal miners dying), no air pollution at all, no greenhouse gas emissions (such as carbon-dioxide). Nuclear-plant lifetime is being doubled from 30 to 60 years (which utilities, investors, and ratepayers appreciate). If Lovins had his way 30 years ago, considerably more particulates and gases would have been vented to the local and regional atmosphere from coal-fired plants (aside from the greenhouse gases emitted). Moreover, if Lovins had his way, we would not have conserved the electricity-equivalent in domestic coal, imported and domestic oil, and domestic and imported natural-gas resources and reserves that we have for 30 years. A typical nuclear power plant each year avoids consumption of 3.4 million short tons of coal, or 65.8 billion cubic feet of natural gas, or 14 billion barrels of oil. (The United States has ample uranium resources.) So Lovins was wrong in implying that nuclear had no overriding societal or environmental benefits. Incidentally, it’s no accident that Illinois has the highest concentration of nuclear-power plants in the United States: Argonne National Laboratory can be proud of its half-century nuclear stewardship. (California, by the way, generates more electricity from geothermal, solar, and wind energy sources combined than any other State.) Lovins displayed complex viewgraphs that, he purports, show that nuclear is the costliest of “low-or-non-nuclear resources.” Yet, in the last 30 years, nuclear has displaced half the fossil-fuel combustion in Illinois while still being competitive. Inasmuch as nuclear-power plants emit no byproduct carbon-dioxide to the atmosphere, surely his claim that it is the costliest of low-carbon-emission sources fails the smell test. Most of Lovins’ pricing and cost/benefit comparisons are based on “new delivered electricity” which frames the cost of U.S. domestic nuclear construction in the least favorable light. He declares nuclear power an economic failure. Can someone explain that to my bank account which has benefitted from compounding competitive electric power savings for the past 30 years? His rimy claim certainly fails the ripeness test. On the issue of electrical-grid reliability, Lovins asserts that there is no such thing as a “outage-free” source of electrical power. He must think that nuclear power runs by government fiat. Nuclear is a fixture on the grid because it is more economical to operate as base-load supply, while sources less reliable, intermittent, and more costly (such as wind, solar, and gas) provide supplementary power. During the past 30 years in Illinois, I don’t recall having the electricity supply and cost problems that California has had after it prohibited nuclear-power plants from being built within its borders. By the way, average U.S. nuclear capacity factor was about 92% in 2007. That’s excellent. Lovins pitiful effort to undermine the reliability of nuclear power egregiously fails the smell test.

#### Only the aff can pull us back from the edge – displaces coal to bring down ppm amounts.

Steve Kirsch, 11-25-2009, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “Why We Should Build an Integral Fast Reactor Now,” <http://skirsch.wordpress.com/2009/11/25/ifr/>

\*\*\*cites Charles Till, former Associate Director, Argonne National Laboratory, The National Academy Studies, James Hansen, Director, NASA Goddard Institute for Space Studies, Ray Hunter, former Deputy Director of the Office of Nuclear Energy, Science and Technology in the U.S. Department of Energy (DOE), Leonard Koch, winner of the Global Energy International Prize, Barry Brook Sir Hubert Wilkins Chair of Climate Change\*\*\*The bottom line is that without the IFR (or a yet-to-be-invented technology with similar ability to replace the coal burner with a cheaper alternative), it is unlikely that we’ll be able to keep CO2 under 450 ppm. Today, the IFR is the only technology with the potential to displace the coal burner. That is why restarting the IFR is so critical and why Jim Hansen has listed it as one of the top five things we must do to avert a climate disaster.[4] Without eliminating virtually all coal emissions by 2030, the sum total of all of our other climate mitigation efforts will be inconsequential. Hansen often refers to the near complete phase-out of carbon emissions from coal plants worldwide by 2030 as the sine qua non for climate stabilization (see for example, the top of page 6 in his August 4, 2008 trip report). To stay under 450ppm, we would have to install about 13,000 GWe of new carbon-free power over the next 25 years. That number was calculated by Nathan Lewis of Caltech for the Atlantic, but others such as Saul Griffith have independently derived a very similar number and White House Science Advisor John Holdren used 5,600 GWe to 7,200 GWe in his presentation to the Energy Bar Association Annual Meeting on April 23, 2009. That means that if we want to save the planet, we must install more than 1 GWe per day of clean power every single day for the next 25 years. That is a very, very tough goal. It is equivalent to building one large nuclear reactor per day, or 1,500 huge wind turbines per day, or 80,000 37 foot diameter solar dishes covering 100 square miles every day, or some linear combination of these or other carbon free power generation technologies. Note that the required rate is actually higher than this because Hansen and Rajendra Pachauri, the chair of the IPCC, now both agree that 350ppm is a more realistic “not to exceed” number (and we’ve already exceeded it). Today, we are nowhere close to that installation rate with renewables alone. For example, in 2008, the average power delivered by solar worldwide was only 2 GWe (which is to be distinguished from the peak solar capacity of 13.4GWe). That is why every renewable expert at the 2009 Aspen Institute Environment Forum agreed that nuclear must be part of the solution. Al Gore also acknowledges that nuclear must play an important role.

#### Apocalyptic rhetoric motivates environmentalism.

Michael Salvador & Todd, 2-18-2011, is an Associate Professor in the Edward R. Murrow College of Communication at Washington State University and Todd Norton is an Assistant Professor in the Edward R. Murrow College of Communication at Washington State University, “The Flood Myth in the Age of Global Climate Change,” <http://dx.doi.org/10.1080/17524032.2010.544749>

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

#### Framing environmental threats in terms of extinction necessary for survival.

Richard J. Epstein & Y. Zhao, Winter 2009, Lab of Medicine at Hong Kong, Laboratory of Computational Oncology, Department of Medicine, University of Hong Kong, Perspectives in Biology and Medicine, Vol. 52 No. 1, “The Threat That Dare Not Speak Its Name; Human Extinction,” JSTOR

Final ends for all species are the same, but the journeys will be different. If we cannot influence the end of our species, can we influence the journey? To do so—even in a small way—would be a crowning achievement for human evolution and give new meaning to the term civilization. Only by elevating the topic [End Page 121] of human extinction to the level of serious professional discourse can we begin to prepare ourselves for the challenges that lie ahead. Table 3.   Human Thinking Modes Relevant to Extinction: from Ego-Think to Eco-Think  The difficulty of the required transition should not be underestimated. This is depicted in Table 3 as a painful multistep progression from the 20th-century philosophical norm of Ego-Think—defined therein as a short-term state of mind valuing individual material self-interest above all other considerations—to Eco-Think, in which humans come to adopt a broader Gaia-like outlook on themselves as but one part of an infinitely larger reality. Making this change must involve communicating the non-sensationalist message to all global citizens that “things are serious” and “we are in this together”—or, in blunter language, that the road to extinction and its related agonies does indeed lie ahead. Consistent with this prospect, the risks of human extinction—and the cost-benefit of attempting to reduce these risks—have been quantified in a recent sobering analysis (Matheny 2007).  Once complacency has been shaken off and a sense of collective purpose created, the battle against self-seeking anthropocentric human instincts will have only just begun. It is often said that human beings suffer from the ability to appreciate their own mortality—an existential agony that has given rise to the great religions— but in the present age of religious decline, we must begin to bear the added burden of anticipating the demise of our species. Indeed, as argued here, there are compelling reasons for encouraging this collective mind-shift. For in the best of all possible worlds, the realization that our species has long-term survival criteria distinct from our short-term tribal priorities could spark a new social ethic to upgrade what we now all too often dismiss as “human nature” (Tudge 1989). [End Page 122]

#### Environmental security is key to address climate change – only way solve the advantage.

Jeffrey Mazo, March 2010, PhD in Paleoclimatology from UCLA, Managing Editor, Survival and Research Fellow for Environmental Security and Science Policy at the International Institute for Strategic Studies in London, “Climate Conflict: How global warming threatens security and what to do about it,” p. 12-3

The expected consequences of climate change include rising sea levels and population displacement, increasing severity of typhoons and hurricanes, droughts, floods, disruption of water resources, extinctions and other ecological disruptions, wild- fires, severe disease outbreaks, and declining crop yields and food stocks. Combining the historical precedents with current thinking on state stability, internal conflict and state failure suggests that adaptive capacity is the most important factor in avoiding climate-related instability. Specific global and regional climate projections for the next three decades, in light of other drivers of instability and state failure, help identify regions and countries which will see an increased risk from climate change. They are not necessarily the most fragile states, nor those which face the greatest physical effects of climate change. The global security threat posed by fragile and failing states is well known. It is in the interest of the world’s more affluent countries to take measures both to reduce the degree of global warming and climate change and to cushion the impact in those parts of the world where climate change will increase that threat. Neither course of action will be cheap, but inaction will be costlier. Efficient targeting of the right kind of assistance where it is most needed is one way of reducing the cost, and understanding how and why different societies respond to climate change is one way of making that possible.

### 2AC Solvency

#### Psychological ties to consumption ensures radical elimination will cause conflict.

Alejandro Nadal, 2010, Professor at the Centre for Economic Studies of El Colegio de Mexico, “Is De-Growth Compatible With Capitalism?,” <http://triplecrisis.com/is-de-growth-compatible-with-capitalism/>

The problem with this perspective is that the cause of growth becomes psychological, a question of mentalities and even fashion. The idea that growth could originate from endogenous forces in capitalist economies is ignored. Growth is not only a cultural phenomenon or a feature of a maniac mentality. It is the direct consequence of how capitalist economies operate. This is true of capitalism as it operated in Genoa in the sixteenth century, and it is true today with the mega-corporations that rule global markets. The purpose of capital is to produce profits without end, that’s the meaning of its particular form of circulation. Its purpose is not to produce useful things or useless stuff, its object is to produce profits without end and produce more capital. This is the engine of accumulation and it is fuelled by inter-capitalist competition. In the words of Marx’s Grundrisse, “Conceptually, competition is nothing other than the inner nature of capital, its essential character, appearing in and realized as the reciprocal interaction of many capitals with one another, the inner tendency [presents itself] as external necessity. Capital exists and can only exist as many capitals, and its self-determination therefore appears as their reciprocal interaction with one another.” By the forces of competition, “capital is continuously harassed: March! March!” Thus, Marx’s analysis shows convincingly that capital can only exist as private centres of accumulation that are driven by (inter-capitalist) competition. This is why, in its quest to expand and survive (as an independent centre of accumulation) capital is continuously opening new spaces for profitability: new products, new markets. The corollary of this is that the only way in which we can get rid of “growth mania” is by getting rid of capitalism. It is not possible to have capitalism without growth. Is there a technological fix out of this? In other words, can we have such an efficient technological infrastructure (in buildings, energy and transport systems, manufacturing, etc.) that even with growth the ecological footprint could be reduced? This remains to be seen, but one phenomenon seems to conspire against this: the rebound effect. As technologies become more efficient and unit costs become smaller, consumption increases. Either existing consumers deepen their consumption, or more people have access to the objects or services being put on the marketplace. The end result is that the positive effects of greater efficiency are cancelled by deepening consumption rates. And let’s not forget what happens when consumption stops or slows down: those centres of accumulation cannot sell their commodities, inventories grow, unemployment soars and we have recessions, depressions and crises. From the side of production, for those individual centres of accumulation every gadget, every nook and cranny in the world, or any vast expanse of geographical space is a space waiting to be occupied for profits. From pep pills to tranquilizers, food and water, health and even genetic resources or nano-materials, to the anxious eyes of capital all of these dimensions are but spaces for profitability. Talk about investing in “natural capital” as a way out to the dilemma is devoid of any sense. It could very well be that, in the words of Richard Smith we either save capitalism or save ourselves, we cannot do both

#### Their cards don’t assume the world of the aff – IFRs transform economic and geopolitical paradigms – creating new methods of sustainable consumption.

Tom Blees, 2008, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Prescription for the Planet, p. 335-6

When the material comforts of existence are seen as being limited, then consumption beyond one’s needs does indeed carry an undeniable ethical weight. As Ralph Waldo Emerson put it lo those many years ago, “Superfluity is theft.” Even when the energy and raw materials involved are plentiful, there remains the often conveniently ignored issue of the conditions under which goods have been produced, be they agricultural or manufactured commodities. It is disingenuous in the extreme to point to the abolition of slavery as evidence of the social evolution of mankind when millions of desperately poor people labor under conditions that can still honestly be considered as slavery. The fact that we don’t335have slaves in our home is hardly confirmation of our benevolence. The moral questions of economic fairness will not be settled by availing ourselves of the technologies promoted in this book, but should command our attention and concern indefinitely. My point is not to justify exploitation of either human or material resources, but to point out that a transformation of energy and raw material technologies as proposed herein will present a radically transformed palette upon which to paint the picture of humanity’s future. Our new course will remove the limitations by which finite natural resources and energy supplies have circumscribed our existence. Unlimited energy coupled with virtually complete recycling of materials and the production of consumer goods from plentiful or renewable resources will finally allow humanity to be unshackled from the zero-sum mentality. Raising the living standards of our billions of disadvantaged brethren will be seen as a positive development by even the most voracious consumer societies, rather than perceived with foreboding as somehow detrimental to their way of life. Admittedly this will take some getting used to. The revolution will be not just technological and political, but psychological. The passion with which consumerism is pursued is frequently grotesque in its extremes, yet the revulsion it engenders may not be so strong when it can be viewed more as shallow foolishness than callous selfishness. Much of what is considered virtuous today will be seen more as simply a matter of personal preference in a world where creature comforts are no longer in limited supply. The concept of self-denial will have to be looked at anew. Rather than concentrating on husbanding limited resources, our attention can be turned to welcoming the rest of our fellow humans into a new reality where creature comforts are the universal norm. Abundant energy and wise336use of basic resources are the keys. Clearly the technologies are already within our grasp. This won’t happen overnight, but it would be foolish to dally. The conversion of primary power systems to fast reactors will necessarily be a gradual process, which in the best-case scenario will take a few decades. Conversion of the vehicle industry to boron, however, is another story. It is entirely conceivable that boron fueled vehicles could be driving on our highways within five years. Ironically the first boron recycling plants that would be a corollary of the conversion may end up operating with natural gas for their heat requirements, since the IFR program simply won’t be able to be implemented as quickly as the boron system, and it’s questionable whether existing electrical generation systems would be able to handle the increased demand of electrically powered boron recycling plants. This would, however, be only an interim fix, and would allow the vehicle fleets to get off to a quick start. If the plasma conversion method proves feasible, though, then garbage alone will provide all the energy we need for boron recycling. Long before the conversion to boron is complete, the demand for oil will have dropped to the point where the USA, one of the world’s thirstiest countries when it comes to oil, will be able to rely solely on North American supplies, resulting in geopolitical and economic realignments that will be a harbinger of things to come. Even though oil prices will surely plummet worldwide, and while the temporary price of boron recycling may well be higher than it will be once IFRs are able to provide all the power necessary to support the system, the price disparity will easily be great enough and the environmental benefits so overwhelming that boron vehicles will surely carry the day even in the near term.

#### The plan over comes apocalyptic fear - coupling rhetoric with a solution solves.

Matthew Feinberg & Robb Willer, January 2011, Psychology Dept and Sociology Dept, UC Berkeley, Psychological Science, Vol. 11 No. 1, "Apocalypse Soon? Dire Messages Reduce Belief in Global Warming by Contradicting Just-World Beliefs,” Ebsco Host

These results demonstrate how dire messages warning of the severity of global warming and its presumed dangers can backfire, paradoxically increasing skepticism about global warming by contradicting individuals’ deeply held beliefs that the world is fundamentally just. In addition, we found evidence that this dire messaging led to reduced intentions among participants to reduce their carbon footprint – an effect driven by their increased global warming skepticism. Our results imply that because dire messaging regarding global warming is at odds with the strongly established cognition that the world is fair and stable, people may dismiss the factual content of messages that emphasize global warming’s dire consequences. But if the same messages are delivered coupled with a potential solution, it allows the information to be communicated without creating substantial threat to these individuals’ deeply held beliefs. Our findings extend past research showing that fear-based appeals, especially when not coupled with a clear solution, can backfire and undermine the intended effects of messages (Witte, 1992; 1994). In addition, our results complement recent research showing that framing environmentalism as patriotic can successfully increase proenvironmental behavioral intentions in those most attached to the status quo (Feygina, Jost, & Goldsmith, 2010). Taken together, these findings stress the importance of framing global warming messages so they do not contradict individuals’ deeply held beliefs. Additionally, our results suggest that reducing individuals’ just world beliefs could result in decreased global warming skepticism. Although we were able to manipulate such beliefs in Study 2, it remains to be seen how just world beliefs could be changed longer-term in field settings.

### 2AC lead-cooled reactors CP

#### A lead-cooled reactor is a high fissile material risk and also easily freezes solid.

Dylan Ryan, 2011, Masters in Mechanical Engineering, specialization in technical aided engineering & materials, and a PhD in engineering energy systems from Stanford University, 15 years’ experience in natural convection and heat transfer, daryanenergyblog , “The Molten Salt Reactor concept,” <http://daryanenergyblog.wordpress.com/ca/part-8-msr-lftr/>

Ironically, another “poor choice” of candidate is the IAEA’s proposed Generation IV reactor the modular lead cooled fast reactor. This reactor is remarkably similar to the BM-40A used on the Soviet Alfa class submarines of the cold war. The Alfa class was one of the best submarines the soviets ever built, small, capable of going much deeper than any Western boat, highly maneuverable and blisteringly fast – so fast and maneuverable that they could actually out run and out turn a number of allied torpedoes of the era! However, the US navy Admirals slept quietly in their beds over the Alfa as it has two drawbacks, they were noisy (thus easily tracked) and it got this performance from its Lead-cooled reactor. The Lead had to be kept heated at above 125 °C or the core froze solid. In practical terms this meant keeping the reactor running 24/7 which made maintenance a nightmare. Of 7 Alfa class boats, 4 had problems with their cores freezing solid, in one case while the boat was at sea! For most of the boats this meant decommissioning and after it happened to the final boat in service, K-123, it seems that even the Soviet navy ran out of patience with the Lead-cooled reactor as they cut it out of the sub and replaced it with a standard PWR type. While the developers of the LCFR claim to have solved this “freezing” core problem, the experience of the Russian navy suggests that this is not the sort of reactor we want to be putting in the hands of amateurs. Also, as it relies on running on highly enriched uranium, there are a number of potential proliferation issues which means we don’t want to be handing them out willy nilly… not without them drawing terrorists to them like moths to a flame!

#### No impact to replacing water and nitric acid with sodium in fast reactors – separate atmosphere and lack of pressure.

Barry Brook et. al, 2-21-2009, a leading environmental scientist, holding the Sir Hubert Wilkins Chair of Climate Change at the School of Earth and Environmental Sciences, and is also Director of Climate Science at the University of Adelaide’s Environment Institute, published three books, over 200 refereed scientific papers, is a highly cited researcher, received a number of distinguished awards for his research excellence including the Australian Academy of Science Fenner Medal, is an International Award Committee member for the Global Energy Prize, Australian Research Council Future Fellow, ISI Researcher, Ph.D., Macquarie University in Environmental Engineering, Science Council for Global Initiatives, Edgeworth David Medal Royal Society of NSW, Cosmos Bright Sparks Award, Tom Blees is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, George S. Stanford is a nuclear reactor physicist, part of the team that developed the Integral Fast Reactor, PhD from Stanford University in Physics, Masters from University of Virginia in Engineering, worked at Argonne National Laboratory, Graham R.L. Cowan, "Boron: A Better Energy Carrier than Hydrogen?" in 2001, published "How Fire Can Be Tamed," BraveNewClimate, “Response to an Integral Fast Reactor (IFR) critique,” <http://bravenewclimate.com/2009/02/21/response-to-an-integral-fast-reactor-ifr-critique/>

[BWB] The liquid sodium would be housed in a reactor pool with an inert argon overtopping atmosphere. The room in which the secondary sodium loop exchanged heat with the water loop would also be housed in an argon-filled room – a room separate to the reactor (see below Appendix for more information). [GS] ALMRs use liquid sodium for cooling and heat transfer, which makes the system intrinsically safer than one that uses water. That is because the molten sodium runs at atmospheric pressure, which means that there is no internal pressure to cause the type of accident that has to be carefully designed against in an LWR: a massive pipe rupture followed by “blowdown” of the coolant. Also, sodium is not corrosive (on steel) like water is.

#### Sodium fires are easily contained and prevented – any potential leaks have no safety risk and are only contained to protect plant investments.

Charles E. Till & Yoon Il Chang, 2011, longtime Associate Laboratory Director for Engineering Research at Argonne National Laboratory, directed civilian nuclear power reactor development at Argonne National Laboratory, PhD Engineering, Specialty Reactor Physics, Imperial College, University of London, National Research Council of Canada, United Kingdom Atomic Energy Authority , Fellow of the American Nuclear Society, awarded the Walker Cisler Medal, National Academy of Engineering, was at Argonne National Laboratory, General Manager of the Integral Fast Reactor Program, Associate Laboratory Director for Engineering Research, Interim Laboratory Director, Argonne Distinguished Fellow, Currently he also serves as the Chair of IAEA’s Technical Working Group on Nuclear Fuel Cycle Options and Spent Fuel Management, was awarded the U.S. Department of Energy’s prestigious E.O. Lawrence Award, a Fellow and a recipient of the Walker Cisler Medal of American Nuclear Society, M.E. in Nuclear Engineering from Texas A&M University, and his Ph.D. in Nuclear Science from The University of Michigan, Science Council for Global Initiatives (SCGI), Plentiful Energy: The Story of the Integral Fast Reactor, p. 162-3

Liquid sodium reacts readily with air, and the oxidation reaction can be rapid and lead to a sodium fire. Burning sodium produces a dense white sodium oxide smoke. The heat, though, is much less than that of conventional hydrocarbon fires. The flame height is also an order of magnitude lower. Both allow a close approach for firefighting. The ignition temperature varies widely depending on the form of sodium, its moisture content in air, and other factors. Solid chunks cannot be ignited quickly even with a torch. A stirred liquid pool can be ignited at a temperature as low as 120◦C. For sodium fires, conventional firefighting agents are normally useless. In general, fluids cannot be used, because either they are flammable or they react violently with sodium. Only inorganic powders are used for extinguishing sodium fires. Dry silica sand, MET-L-X (fine, treated NaCl), and dry soda ash are all used. The dense cloud of aerosols does interfere with firefighting. Small sodium fires are readily extinguished by large sodium fires are difficult to extinguish. Reactors are designed to effectively limit sodium leaks and to control sodium fires. The sodium in the primary system is blanketed with inert gas and maintained in double containment. The reactor vessel has a guard vessel, and the pipes have guard pipes around them. Leak detection monitors are installed in the inert gas in the gaps between the vessels and between the pipes. A variety of sodium leak detection systems are used. The principal technique relies on the detection of sodium aerosols in the annulus gap between the vessels or pipes. The aerosols are produced by the chemical reaction of liquid sodium with oxygen or water vapor existing as minute impurities in the inert gas atmosphere. In the secondary sodium system, between the inert gas blanketed primary system and the steam generator, a variety of leak-detection techniques can be deployed. The methods commonly used for sodium fire detection include visual and remote television detection, electronic smoke detectors, flame photometers, atomic-absorption detectors, light-emission detectors, light-absorption detectors, and more. [15] Provisions are also made to collect leaking sodium in steel drip trays to avoid reaction of sodium with structural concrete. The main point to be made here is that in order to prevent the radioactive primary from sodium reacting with water or air, a non-radioactive secondary sodium system isolates the radioactive primary sodium from the steam system. As a result, potential sodium/water reactions or sodium fires can occur only in the non-radioactive secondary system. The primary system’s integrity is not involved and the prevention and mitigation systems are not safety-grade systems. Their role is to protect the plant investment only.

### China co-op add-on

#### Plan solves U.S.-China reprocessing cooperation.

Blythe J. Lyons et. al, March 2009, John R. Lyman, Mihaela Carstei, and General Richard L. Lawson (USAF), “United States-China Cooperation On Nuclear Power: An Opportunity for Fostering Sustainable Energy Security,” Atlantic Council, <http://www.acus.org/files/publication_pdfs/65/AtlanticCouncil-USChinaNuclearPower.pdf>

Cooperation on the development of advanced fuel cycle technologies, already underway in U.S.-China working groups, will provide significant opportunities to share rather than duplicate knowledge and funding. Generation IV (Gen IV) international collaboration on R&D is necessary and beneficial for all participants to share costs, facilities and experience. Specific fuel cycle R&D opportunities proposed by the State Nuclear Power Technology corporation (SNPTC) include the following: Advanced fuel, such as mixed oxide (MOX) fuel, and metal fuel; Transmutation technology, such as fast reactor and accelerator driven systems; Reprocessing technologies, such as MOX spent fuel reprocessing, dry processing, on-site recycle; and, Repository design technology. 14 . The Generation IV International Forum (GIF) will provide a good framework to deal with intellectual property issues. If prototype or demonstration plants were to be built under the aegis of the GIF, it could also provide experience in dealing with legal and regulatory issues. Issues such as design ownership, who would build the facility, cost sharing would have to be addressed. As countries have vested interests in certain types of technologies, resolution of such issues may be difficult. • • • 15 . The Global Nuclear Energy Partnership (GNEP): The U.S., which led the way in establishing the international collaborative effort to develop proliferation-resistant technologies and institutions, should take advantage of its leadership position to nurture and expand GNEP’s international activities. As in GIF, there are advantages to sharing technical expertise and pooling financial resources. GNEP is already in place and the Obama Administration can take advantage of the years of effort it took to set up the framework for international collaboration while adapting GNEP goals to current realities and domestic nuclear development policies. Consistency in U.S. nuclear energy policies, especially in relation to international efforts, is crucial to foster global acceptance of a safe, secure and sustainable nuclear power. The Chinese participants signaled their desire to improve both government-to-government cooperation and commercial sector ties. It appears that the U.S. government is equally interested in working with China to tackle the overarching challenges of developing a safe and secure commercial nuclear fuel cycle. By supporting and participating in this Dialogue, U.S. industry and government participants have demonstrated their commitment to dealing with the challenges to realize the burgeoning nuclear trade between the two countries.

#### This solves U.S.-China relations.

Timothy Gardner & Ayesha Rascoe, 1-19-2011, “Clean energy seen as ‘bright spot’ in U.S.-China relations”, Reuters, <http://www.reuters.com/article/2011/01/19/us-usa-china-energy-idUSTRE70H5WB20110119>

Cooperation on clean energy could be a high point in U.S.-China relations leading to benefits for both countries, government and business officials said ahead of a summit between Chinese President Hu Jintao and President Barack Obama. Disputes between the world's two largest economies and energy consumers over China's wind power subsidies and its slowdown in exports of rare earths minerals, used in everything from wind turbines to cell phones, have dominated headlines in recent months. The countries are also having wider arguments. The United States says China's currency, the yuan, is undervalued and Washington is pushing Beijing for help in persuading North Korea to abandon nuclear weapons. But with rising concerns about oil prices, now above $90 a barrel, energy security, and global warming, officials said the world's biggest developed country and the biggest developing country have much to learn from each other. Progress can be made on sharing technologies on efficiency, cleaner coal, and development of renewables like wind and solar power, they said. As China tries to transform its economy from the manufacturing of cheap goods into one developing and distributing sophisticated technologies, such as clean energy, spats over intellectual property rights have already troubled trade relations between the two countries. But pressure on both countries to reduce greenhouse gas emissions and reel in fossil fuel demand may push them to overcome these differences. Still, China's Minister of Science and Technology Wan Gang said at a forum on U.S-China clean energy cooperation hosted by the Brookings Institution that common interests between the two countries make clean energy an issue ripe for nurturing close ties. "I'm sure that this is one of the best points of convergence and cooperation between our two countries, and will be one of the bright spots in our future cooperation," Wan said on Tuesday.

#### Prevents extinction

Lawrence Wittner, 11-30-2011, prof. of history emeritus at SUNY Albany, Huffington Post World, 1<http://www.huffingtonpost.com/lawrence-wittner/nuclear-war-china_b_1116556.html>

While nuclear weapons exist, there remains a danger that they will be used. After all, for centuries international 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 their 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 5,000 nuclear warheads, while the Chinese government has a total inventory of roughly 300 . Moreover, only about 40 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? An attack with these Chinese nuclear weapons 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. Moreover, in another decade the extent of this catastrophe would be far worse. The Chinese government is currently expanding its nuclear arsenal, and by the year 2020 it is expected to more than double its number of nuclear weapons that can hit the United States. The U.S. government, in turn, has plans to spend hundreds of billions of dollars "modernizing" its nuclear weapons and nuclear production facilities over the next decade. To avert the enormous disaster of a U.S.-China nuclear war, there are two obvious actions that can be taken. The first is to get rid of nuclear weapons, as the nuclear powers have agreed to do but thus far have resisted doing. The second, conducted while the nuclear disarmament process is occurring, is to improve U.S.-China relations. If the American and Chinese people are interested in ensuring their survival and that of the world, they should be working to encourage these policies.

### 2AC “God”

#### Human life is inherently valuable.

Melinda Penner, 2005, Director of Operations – STR, Stand To Reason,“ End of Life Ethics: A Primer”, Stand to Reason, http://www.str.org/site/News2?page=NewsArticle&id=5223

Intrinsic value is very different. Things with intrinsic value are valued for their own sake. They don’t have to achieve any other goal to be valuable. They are goods in themselves. Beauty, pleasure, and virtue are likely examples. Family and friendship are examples. Something that’s intrinsically valuable might also be instrumentally valuable, but even if it loses its instrumental value, its intrinsic value remains. Intrinsic value is what people mean when they use the phrase "the sanctity of life." Now when someone argues that someone doesn’t have "quality of life" they are arguing that life is only valuable as long as it obtains something else with quality, and when it can’t accomplish this, it’s not worth anything anymore. It's only instrumentally valuable. The problem with this view is that it is entirely subjective and changeable with regards to what might give value to life. Value becomes a completely personal matter, and, as we all know, our personal interests change over time. There is no grounding for objective human value and human rights if it’s not intrinsic value. Our legal system is built on the notion that humans have intrinsic value. The Declaration of Independence: "We hold these truths to be self-evident, that all men are created equal, that each person is endowed by his Creator with certain unalienable rights...." If human beings only have instrumental value, then slavery can be justified because there is nothing objectively valuable that requires our respect. There is nothing other than intrinsic value that can ground the unalienable equal rights we recognize because there is nothing about all human beings that is universal and equal. Intrinsic human value is what binds our social contract of rights. So if human life is intrinsically valuable, then it remains valuable even when our capacities are limited. Human life is valuable even with tremendous limitations. Human life remains valuable because its value is not derived from being able to talk, or walk, or feed yourself, or even reason at a certain level. Human beings don’t have value only in virtue of states of being (e.g., happiness) they can experience. The "quality of life" view is a poison pill because once we swallow it, we’re led down a logical slippery slope. The exact same principle can be used to take the life of human beings in all kinds of limited conditions because I wouldn't want to live that way. Would you want to live the life of a baby with Down’s Syndrome? No? Then kill her. Would you want to live the life of an infant with cerebral palsy? No? Then kill him. Would you want to live the life of a baby born with a cleft lip? No? Then kill her. (In fact, they did.) Once we accept this principle, it justifies killing every infant born with a condition that we deem a life we don’t want to live. There’s no reason not to kill every handicapped person who can’t speak for himself — because I wouldn’t want to live that way. This, in fact, is what has happened in Holland with the Groningen Protocol. Dutch doctors euthanize severely ill newborns and their society has accepted it.

#### Political relationships outside of God can be good – there are positive forms of skepticism.

Michael Shermer, 2005, Founding Publisher of Skeptic magazine, the Director of the Skeptics Societ y, a monthly columnist for Scientific American, and the host of the Skeptics Distinguished Science Lecture Series at the California Institute of Technology, “The Power of Positive

Skepticism: A Reply to Deepak Chopra,” http://www.skeptic.com/eskeptic/05-09-28.html

In Matthew 7, versus 1–2, Jesus admonishes his listeners: “Judge not, that ye be not judged. For with what judgment ye judge, ye shall be judged.” This is a warning against self-righteous severity, as elaborated on in the Talm udic collection of commentary on Jewish custom and law called the Mishnah: “Do not judge your fellow until you are in his position” (Aboth 2:5). Deepak Chopra’s attitude toward skepticism is a common one we hear at Skeptic. Skeptics are said to be rigid, dogmatic, hypercritical, and closed-minded. We are accused of adding nothing to the fund of knowledge and wisdom, while we lurk in the shadows waiting for the opportunit y to douse the flame of hope that resides in the belief in unlimited human potential and alternative realities. Applying Jesus’ Judgment Principle, I begin by acknowledging that there are some skeptics who do indeed fit this description, and no doubt Deepak has encountered them in his very public crusade on the borderlands of science. (Big targets are easy to hit.) When I first became involved in the skeptics movement I met not a few grumpy old white guys complain ing that the world was overrun with pseudoscience and superstitions, pronouncing the end of Western Civilization if we didn’t don our debunking caps and make the world safe for science and reason. Fair enough. There is some hyperbole there. But the Jesus’ Judgment Principle cuts both ways . Skepticism has become a legitimate form of inquiry that Deepak parenthetically acknowledges (in a left-handed sort of way) as occasionally laudable, another refrain we often hea r in the form of “I’m a skeptic too, but…,” where skeptici sm is fine as long as it is someone else’s codswallo p under the microscope. When we made Deepak our cover story for Skeptic in 1998 (“Deepak’s Da ngerous Dogmas,” Vol. 6, No. 2), I instru cted the author, Phil Molé, to ignore the negative publicity in the news at that time about D eepak’s personal life, and instead focus strictly on his theories of quantum consciousness, health , and healing. There wasn’t a single line in the article that I would consider to be ad hominem. So there is a way to do positive skepticism. This brings me to the larger issue of two forms of skepticism, negative and positive . Stephen Jay Gould began his foreword to my 1997 book, Why People Believe Weird Things, by noting: “S kepticism or debunking often receives the bad rap reserved for activities — like garbage disposal — that absolutely must be done for a safe and sane life , but seem either unglamorous or unworthy of overt celebration.” Deepak has identified the negative form of skepticism, debunking, but let’s be honest, there is a lot of bunk in the world. Members of the “bunko squads” of police departments are debunkers, and we do not bemoan their service to society in busting scams, schemes, swindles, and stings. Gresham’s Law — bad money drives good money out of circulation — applies to ideas as well. By weeding out bad ideas, negative skepticism enables the good to flourish. Positive skepticism, however, involves much more than the negative disposal of false claims. In fact, the word “skeptic” comes from the Greek skeptikos, for “thoughtful.” According to the Oxford English Dictionary, “skepti cal” has also been used to mean “inquiring,” “reflective,” and, with variations in the ancient Greek, “watchman” or “mark to aim at.” What a positive meaning for what we do! We are thoughtful, inquiring, and reflective, and we are the watchmen who guard against bad ideas in order to discover good ideas, consumer advocates of critical thinking who, through the guidelines of science, establish a mark at which to aim. “Proper debunking is done in the intere st of an alternate model of explanation, not as a nihilistic exercise,” Gould concludes. “The alternate model is rationality itself, tied to moral decency — the most powerful joint instrument for good that our planet has ever known.” Rationality, reason, science, skepticism — all are synonyms for activities in our quest to understand how the world works. The why of it all — the meaning, purpose, and spiritual fulfillment behind our quest — is a related but ancillary activity . Positive skepticism is a way of thinking that leads to deeper understanding, and it is a vital tool in the science kits of practicing scientists. In this sense I define science in a very pragmatic way: Science is what scientists do.

#### Science and secular humanism solves all of their religion good offense - we do not have to be religious to enjoy life and find spiritual meaning.

Michael Shermer, 5-23-2008, founder of the Skeptics Society and Editor of Skeptic Magazine, "The Meaning of Life, the Universe, and Everything,” Commencement Speech at Whittier College, http://www.whittier.edu/News/Articles/2008CommencementSpeech.aspx

How can we find spiritual meaning in a scientific world view? Spirituality is a way of being in the world , a sense of one's place in the cosmos, a relationship to that whic h extends beyond ourselves. In this sense, science and spirituality are complementary , not conflicting; additive, not detractive. Anything that generates a sense of awe may be a source of spirituality. And, I think science does this in spades. I am deeply moved , for example, when I observe through my eight-inch telescope in my backyard the fuzzy little patch of light that is the Andromeda galaxy. It is not just because it is lovely, but because I also understand that the photons of light landing on my retina left Andromeda 3 million years ago, when our ancestors were tiny-brained hominids roaming the plains of Africa. I am doubly stirred because it was not until 1923 that the astronomer Edwin Hubble, using the 100-inch telescope on Mt. Wilson just above us here i n the San Gabriel mountains, discovered that this "nebula" was actually an extragalactic stellar system of immense size and distance. Hubble subsequently discovered that the light from most galaxies is shifted toward the red end of the electromagnetic spectrum, meaning that the universe is e xpanding away from an explosive creation. It was the first empirical ev idence indicating that the universe had a beginning. What could be more awe-inspiring— more numinous, magical, spiritual—than this cosmic visage? For my money, Mt. Wilson Observatory is the Chartres Cathedral of our time, and I recommend that you make the 25-mi le trek up Angeles Crest Highway (Highway 2, off the 210 freeway in La Canada, its a public venue so everyone can go) to see it and be moved that our species in our generation was able to widen our cosmic horizons by so much—from 1900 light years in Hubble's time to 13.7 billion light years in our time—the universe grew by seven orders of magnitude in our time alone. That's even more than the federal deficit! So in conclusion, what science tells us is that we are but one among hundreds of millions of species that evolved over the course of three and a half billion years on one tiny planet among many orbiting an ordinary star, itself one of possibly billions of solar systems in an ordinary galaxy that contains hundreds of billions of stars , itself located in a cluster of galaxies not so different from millions of other galaxy clusters, whirling away from one another in an accelerating expanding cosmic bubble universe, that very possibly is only one among a near infinite number of bubble universes . Herein lies the spiritual side of science—sciencuality, if you will pardon an awkward neologism but one that echoes the sensuality of discovery. If religion and spirituality are suppose to generate awe and humility in the face of the creator, what could be more awesome and humbling than the deep space discovered by Hubble and the cosmologists, and the deep time discovered by Darwin and the evolutionists? Through a natural process of evolution, and a cr eative course of culture, we have inherited the mantle of life's caretaker on earth, the only home we have ever known. The realization that we exist together for a narrow slice of time and a limited parsec of space, potentially elevates us all to a higher plane of humanity and humility, a passing proscenium in the drama of the cosmos.

#### The premise of their critique is false- equal chance of damnation.

Thad, 2007, The Ultimate Response to Pascal’s Wager, note: Atheist’s Wager Goes Down With It, http://www.thadguy.com/explanations/response-to-pascals-wager/28/

Pascal’s Wager has a premise that is often taken for granted. This premise is almost unsupportable, yet the whole argument relies upon it. Pascal’s Wager assumes that there are only two divine possibilities: An all knowing, all powerful, and perfectly moral God exists There is no God This premise is false. The world’s actual possibilities are sadly much more varied and more numerous. If we grant that a perfectly moral God is possible, many other deities are also logically possible. Sadly, the only way for a conception of the divine to be logically impossible is if it has a contradiction built into it. [For example a deity can't both exist and not exist.] To help illustrate how much Pascal’s Wager relies on this false assumption, let’s include a single additional possible deity. Let us call this god “The cruel deity”. This is a very powerful being that decides who goes to heaven and who to hell. However, this deity is not bound by morals or justice. In fact, it does the opposite of what morality would encourage. It sends those that do good deeds and believe in God to hell. Those who bring only suffering to their peers and refuse the idea of God are sent to heaven. The New Possibilities: The Cruel Deity Exists A Morally Perfect God Exists There is no God If we now consider that a cruel deity, a perfectly moral God, and no God are all possible, here are the after-death possibilities for one who believes in God: -or-or The Cruel Deity Exists A Morally Perfect God Exists There is no God Here are are the after death possibilities for one who does not believe in God: -or-or The Cruel Deity Exists A Morally Perfect God Exists There is no God It is also worth mentioning that challenging this assumption of Pascal’s Wager does just as much damage to the Atheist’s Wager. They are the same, and there is no clear reward or punishment associated with either believing in or disbelieving of God. The logic of Pascal’s Wager comes to a different conclusion. For those who really liked Pascal’s Wager, there is a way to salvage it. However, it is incredibly hard to support. Pascal’s Wager might still support the belief in God if the existence of a morally perfect God were more likely than the existence of other possibilities, like the cruel deity. To be honest, I think this is something we all want to believe. Who really wants a cruel deity to exist? However, it is worth pointing out that horribly cruel events transpire in the world all the time. Given this, showing that a morally perfect God and is more likely to exist than any other option is a truly difficult line to hold.

### 2AC Wilderson

#### Deliberative policymaking through debate over nuclear power is the crucial to solving the environment - reflecting as a critical intellectual is not enough.

Marian Herbick & Jon Isham, October 2010, Marian Herbick is a senior at the University of Vermont, where she is studying natural resource planning and wildlife biology, member of the Rubenstein School of Environment and Natural Resources and the Honors College, Jon Isham, department of economics and the program in environmental studies at Middlebury College. teaches in environmental economics, environmental policy, introductory microeconomics, social capital in Vermont, and global climate change, “The Promise of Deliberative Democracy,” <http://www.thesolutionsjournal.com/node/775>

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

#### Wilderson’s argument denies Black agency and fails to come up with effective solutions.

Saër Maty Ba, September 2011, Professor of Film – University of Portsmouth and Co-Editor – The Encyclopedia of Global Human Migration) “The US Decentred: From Black Social Death to Cultural Transformation,” Cultural Studies Review, 17(2), p. 385-87

A few pages into Red, White and Black, I feared that it would just be a matter of time before Wilderson’s blackassocialdeath idea and multiple attacks on issues and scholars he disagrees with run (him) into (theoretical) trouble. This happens in chapter two, ‘The Narcissistic Slave’, where he critiques black film theorists and books. For example, Wilderson declares that Gladstone Yearwood’s Black Film as Signifying Practice (2000) ‘betrays a kind of conceptual anxiety with respect to the historical object of study— ... it clings, anxiously, to the filmastextaslegitimateobject of Black cinema.’ (62) He then quotes from Yearwood’s book to highlight ‘just how vague the aesthetic foundation of Yearwood’s attempt to construct a canon can be’. (63) And yet Wilderson’s highlighting is problematic because it overlooks the ‘Diaspora’ or ‘African Diaspora’, a key component in Yearwood’s thesis that, crucially, neither navelgazes (that is, at the US or black America) nor pretends to properly engage with black film. Furthermore, Wilderson separates the different waves of black film theory and approaches them, only, in terms of how a most recent one might challenge its precedent. Again, his approach is problematic because it does not mention or emphasise the interconnectivity of/in black film theory. As a case in point, Wilderson does not link Tommy Lott’s mobilisation of Third Cinema for black film theory to Yearwood’s idea of African Diaspora. (64) Additionally, of course, Wilderson seems unaware that Third Cinema itself has been fundamentally questioned since Lott’s 1990s’ theory of black film was formulated. Yet another consequence of ignoring the African Diaspora is that it exposes Wilderson’s corpus of films as unable to carry the weight of the transnational argument he attempts to advance. Here, beyond the UScentricity or ‘social and political specificity of [his] filmography’, (95) I am talking about Wilderson’s choice of films. For example, Antwone Fisher (dir. Denzel Washington, 2002) is attacked unfairly for failing to acknowledge ‘a grid of captivity across spatial dimensions of the Black “body”, the Black “home”, and the Black “community”’ (111) while films like Alan and Albert Hughes’s Menace II Society (1993), overlooked, do acknowledge the same grid and, additionally, problematise Street Terrorism Enforcement and Prevention Act (STEP) policing. The above examples expose the fact of Wilderson’s dubious and questionable conclusions on black film. Red, White and Black is particularly undermined by Wilderson’s propensity for exaggeration and blinkeredness. In chapter nine, ‘“Savage” Negrophobia’, he writes: The philosophical anxiety of Skins is all too aware that through the Middle Passage, African culture became Black ‘style’ ... Blackness can be placed and displaced with limitless frequency and across untold territories, by whoever so chooses. Most important, there is nothing real Black people can do to either check or direct this process ... Anyone can say ‘nigger’ because anyone can be a ‘nigger’. (235)7 Similarly, in chapter ten, ‘A Crisis in the Commons’, Wilderson addresses the issue of ‘Black time’. Black is irredeemable, he argues, because, at no time in history had it been deemed, or deemed through the right historical moment and place. In other words, the black moment and place are not right because they are ‘the ship hold of the Middle Passage’: ‘the most coherent temporality ever deemed as Black time’ but also ‘the “moment” of no time at all on the map of no place at all’. (279) Not only does Pinho’s more mature analysis expose this point as preposterous (see below), I also wonder what Wilderson makes of the countless historians’ and sociologists’ works on slave ships, shipboard insurrections and/during the Middle Passage,8 or of groundbreaking jazzstudies books on crosscultural dialogue like The Other Side of Nowhere (2004). Nowhere has another side, but once Wilderson theorises blacks as socially and ontologically dead while dismissing jazz as ‘belonging nowhere and to no one, simply there for the taking’, (225) there seems to be no way back. It is therefore hardly surprising that Wilderson ducks the need to provide a solution or alternative to both his sustained bashing of blacks and anti Blackness.9 Last but not least, Red, White and Black ends like a badly plugged announcement of a bad Hollywood film’s badly planned sequel: ‘How does one deconstruct life? Who would benefit from such an undertaking? The coffle approaches with its answers in tow.’ (340)

#### They have an incomplete and unproductive frame for academic discussion.

Daniel E. Rossi-Keen, Winter 2008, Assistant Professor of Communication Studies at Stetson University in DeLand, Florida, Review Essay: The Life-Giving Gift of Acknowledgment, A Philosophical and Rhetorical Inquiry, Rhetoric & Public Affairs, Volume 11, Number 4, Winter 2008,

p. 659-77

Emphasis on philosophy abounds in the first half of the book. This is especially so in Hyde's treatment of the relationship between acknowledgment and the origins of existence (chapter 2), his examination of the reciprocity of acknowledgment and conscience (chapter 3), his consideration of how acknowledgment transforms space and time into common dwelling places (chapter 4), his explanation of the generation of a "home" by way of such rhetorical acts of acknowledgment (chapter 5), and his suggestion that acknowledgment functions as a caress (chapters 6 and 7). Though certainly not lacking [End Page 664] philosophical depth, the remaining chapters of the text are a bit more readily accessible to the nonspecialist. Herein, Hyde explores the relationship between acknowledgment and teaching (chapter 8), social death (chapter 9), and computer mediated culture (chapter 10). The book closes with an examination of the rhetoric surrounding the terrorist attacks of 9/11 (chapter 11), explaining how the rhetor may function in society as a hero. In the process of weaving together such seemingly disparate cases, Hyde gestures toward numerous resources for considering the role of rhetoric in guiding, shaping, and challenging prevailing enactments of public life. In fact, one of the most exciting features of this book is that it lends itself to so many extensions and applications. Within this text exists a philosophy of rhetoric, an ethic of human action, an anthropology, a statement both of humankind's origin and of its telos, a critique of contemporary culture, and much more. For this reason, Hyde's writing defies either simple categorization or casual reading. And this is, I think, precisely the strength and intent of the text. The text itself acts as what Hyde (2001) labels a "rhetorical interruption" (77–78), a call to stop and reckon with the state of the world as we currently perceive it. As such, The Life-Giving Gift of Acknowledgment does not always proceed in traditional ways, and some readers may therefore find themselves wanting more careful treatments of themes raised throughout the text. The rhetorician, for example, may wish for a more focused, traditional, and systematic treatment of the relationship between rhetoric and acknowledgment. The philosopher might hope for a more sustained analysis of Heidegger and Levinas. The scientist may call for further examination of the role of acknowledgment in the origins of existence. The theologian may be somewhat disappointed by Hyde's suggestive employment of religious themes. And the student of public affairs may wish for a more explicit statement of the implications of Hyde's work for communal human existence. In one sense, each of these disciplinarians would be justified in wanting more from Hyde's text, for Hyde admittedly leaves much unsaid and unexplored. In another sense, however, it is precisely this kind of narrowness that The Life-Giving Gift of Acknowledgment sets out to avoid. What Hyde has produced is an interdisciplinary treatment of the role of acknowledgment in varied aspects of human existence, and he justifiably demands that the reader do much of his or her own work in expanding and applying this theoretical construct.

#### Wilderson votes affirmative – their argument cannot be pure enough.

Shane Graham, October 2009, Associate Professor of English at Utah State University, “Incognegro: A Memoir of Exile and Apartheid,” review of the book by Frank B. Wilderson III, Safundi: The Journal of South African and American Studies, Vol. 10, No. 4, 479–94

Instead, Wilderson gives us a sprawling 500-page tome that attempts to serve not just as political memoir but also as autobiography, therapeutic exercise, and character assassination against former colleagues, to whom he gives very thinly veiled pseudonyms. As an account of growing up black in the white United States, Incognegro offers a few engaging stories: he visited Fred Hampton’s house in Chicago at age thirteen, soon after Hampton had been shot dead by police; and he took part in battles with the police and national guard in Berkeley in 1969. Otherwise, though, the book’s representation of the black experience in America covers familiar ground and adds little to our understanding of that experience beyond fresh layers of indignation and rage. Worse still are the chapters narrating Wilderson’s life after leaving South Africa in 1996, when he moved to California, started a relationship with a white woman, and became embroiled in the cutthroat and frequently racist politics at Cabrillo College, where he found employment. These sections of the book, frankly, are irritating to read for their tone of alternating self-loathing, self-pity, and selfrighteousness. Wilderson’s incessant outrage may often be justified, but it just as often seems petty and juvenile. For example, he describes one ‘‘diversity workshop’’ at Cabrillo at which he feels ‘‘I’d like to behave but I’m bored to tears’’ (428); and he takes great delight in comparing the liberal ideologues at Wits to tokoloshes1 in an extended metaphor that the author elaborates for many pages. After reading such scenes, as well as many others in which Wilderson behaves basely toward the people he is closest to, I began to wonder to what extent his radicalism is driven by principle, and to what extent it is simply a legitimizing front for a childish, hyperactive obstreperousness. As the comrade who recruited him for the ANC tells him, ‘‘You have no sense of your environment, and you seem not to care’’ (135). Even his mother tells him that he has a ‘‘Classic persecution complex’’ (486). The difficulty of reviewing a book such as this is that the author would no doubt respond to any criticism (of the book’s tone, for instance, or of its clumsy, selfconsciously postmodern structure, which jumps randomly between time frames) by attacking the reviewer as a deluded quisling of the global capitalist establishment and ‘‘blah, blah, blah’’ (to quote Wilderson’s own paraphrase of Mandela’s response to his aforementioned question). In my pre-emptive self-defence, I can only emphasize again that it is this memoir’s narcissism and self-indulgent tone that made it an unpleasant read for me, not its politics. There is no doubt that the revolution let down a lot of people. But it was always going to let down Frank Wilderson because it seems that, for him, nothing can ever be pure enough.

#### Methodological criticisms of our evidence base on the institutionalized nature of race does not warrant simply ignoring it.

Martyn Hammersley, 1993, Prof. Education and Social Research @ Centre for Childhood, Development and Learning, British Journal of Sociology, “Research and 'anti-racism': the case of Peter Foster and his critics,” 44.3, 11-93, JSTOR

Various sorts of criticism have been directed at the validity of Foster's work. Some is substantive in character, in other words it consists of a questioning of his claims on the basis of appeals to what is taken to be well-known from other sources. For example, critics sometimes rely on the findings of other research to throw doubt on the validity of Foster's conclusions. Thus, Connolly comments that the fact that Foster's findings challenge he growing" perceived wisdom" of a number of research and theoretical perspectives developed since the mid 1980s (. . .) raises numerous important issues concerning the study's political, ethical and theoretical orientation and, consequently, the research methods used.6 Accompanying these substantive criticisms, very often, are methodological criticisms: these question the inferences that Foster draws on the basis of his own or others' data. For instance, both Connolly and Gillborn and Drew challenge Foster's claim that there was little evidence of racism on the part of the teachers in the school he studied, on the grounds that he took insufficient account of black students' views.7 They argue that he explains away the unsolicited complaints of teacher racism voiced by three of the students he interviewed by treating these as products of a general anti-school attitude. The critics also argue that the fact that so few of the students reported the existence of teacher racism resulted from the influence on them of Foster's own status as a white middle class male whom they identified with the teachers. Another methodological criticism that has been made of Foster's study is that the school he investigated was atypical and therefore does not constitute a sound basis for generalisation to other schools.8 Interestingly, these methodological criticisms parallel in character, if not in force, those that Foster himself makes of other studies; indeed, of many of the studies on which his critics rely in their substantive criticisms. And he, and others, have responded to the attacks of the critics with further methodological arguments.9 What we have here, then, is a body of substantive and methodological arguments which are interpreted in conflicting ways by Foster and his critics. One response to this situation might be to call for further research designed to resolve the disagreement. I would not want to discourage this, but I doubt whether it would succeed. It seems to me that the roots of the disagreement lie more deeply than these substantive and methodological criticisms themselves. We get an inkling of this from the fact that Foster's critics sometimes combine such criticisms with what I will call meta-methodological arguments. These concerned effects in what they take to be the presuppositions n the basis of which Foster approached his own data and that of others. The clearest published example of such criticism is provided by Connolly. He argues that, as a result of his adoption of a Weberian orientation, Foster was unable to recognise the racism that was taking place 'under his nose' (p. 142) in the school he studied. Connolly sees Foster's work in terms of a deterministic model of research in which the findings are constrained by his starting assumptions, in such a way as to rule out the detection of many forms of racism. Gillborn and Drew hint at the same point, criticizing Foster's definition of racism as too narrow. l l In part, what seems to be implied in these arguments is that the evidence which Foster offers in his study, and his questioning of the findings of other studies, must be rejected because they are incompatible with the widely accepted theory that racism is institutionalized in British society, that it is part of the fundamental structure of that society on this basis his critics argue that while discrimination may not seem to be occurring in some particular setting, once we view this setting in the context of British (or English) society as a whole it will be seen to form part of a larger pattern of racism. So, here Foster's claims are being questioned on the grounds of his presumed commitment to an inadequate methodological framework, one which gives a misleading priority of micro-empirical evidence at the expense of macro-theoretical perspective. This can be summarised as the charged that Foster's work is empiricist1.2 And, of course this argument connects with much discussion of the methodology of qualitative research today, in which the empiricism of quantitative research, and of some qualitative work, is challenged on the basis of alternative epistemological ssumptions.l3 What is being rejected here can be more usefully (because more specifically) referred to as a foundationalist epistemology. This is the notion that research conclusions are founded, in some rigorously determinate fashion, on a body of evidence whose own validity is beyond question (for example, because it consists of reports of intersubjectively observable behaviour). Thus, Troyna criticizes Foster for 'methodological purism', which he interprets as requiring evidence that rules out all possible alternative interpretations.l4 Foundationalism has, of course, been subjected to very damaging criticism in philosophy, as well as in the social sciences, over the past 30 or 40 years, and I think it is clear that it is not defensible. There is no single, agreed alternative to foundationalism, but we can identify three radical alternatives that have become increasingly influential in social research in recent years; and whose influence is detectable in the writings of some of Foster's critics. These alternatives are: relativism, standpoint theory, and instrumentalism. These are not always clearly distinguished, and they are sometimes used in combination. However, I will try to show that none of them is very satisfactory. Applying relativism to the case under discussion, it would be argued that the validity of Foster's appeal to the canons of good research is relative to a particular methodological framework, namely positivism or post-positivism and that other frameworks would produce different conclusions. We may, for instance, decide to treat the claims of some black pupils that they and others have been subjected to racist treatment by teachers as necessarily true in their own terms, as reflecting their experience and the framework of assumptions that constitute it, that framework being incommensurable with the one adopted by Foster. Something like this may underlie Connolly's question: 'how can Foster as a White middle class male construct his own definition of racism to then use to judge the accuracy of Black working class students definitions?"5If treated as valid, this argument has the effect of apparently undercutting Foster's empirical research in the sense that it need no longer be treated by others as representing reality. Yet, at the same time, from this point of view Foster's arguments remain valid in their own terms; in fact, they remain as valid as those of his critics. This seems to lead to a sort of stalemate. And, of course, there is the problem that relativism is self-undermining: if it is true, then in its own terms it can only be true relative to a relativist framework; so that from other points of view it remains false.'6 As a non-relativist, this leaves Foster free to claim quite legitimately( even from the point of view of relativism) that his views represent reality, whereas a relativist critic could not make the same claim for her or his views but must treat them simply as representing a particular framework of beliefs to which he or she happens to be committed. The second view I want to consider is sometimes associated with versions of the first, but must be kept separate because it involves a quite distinctive and incompatible element. I will refer to this as standpoint theory. Here people's experience and knowledge is treated as valid or invalid by dint of their membership in some social category.'7 Here again Foster's arguments may be dismissed because they reflect his background and experience as a white, middle class, male teacher. However, this time the implication is that reality is obscured from those with this background because of the effects of ideology. By contrast, it is suggested, the oppressed (black, female and/or working class people) have privileged insight into the nature of society. This argument produces a victory for one side, not the stalemate that seems to result from relativism; the validity of Foster's views can therefore be dismissed. But in other respects this position is no more satisfactory than relativism. We must ask on what grounds we can decide that one group has superior insight into reality. This cannot be simply because they declare that they have this insight; otherwise everyone could make the same claim with the same legitimacy (we would be back to relativism). This means that some other form of ultimate justification is involved, but what could this be? In the Marxist version of this argument the working class (or, in practice, the Communist Party) are the group with privileged insight into the nature of social reality, but it is Marx and Marxist theorists who confer this privilege on them by means of a dubious philosophy of history.l8 Something similar occurs in the case of feminist standpoint theory, where the feminist theorist ascribes privileged insight to women, or to feminists engaged in the struggle for women’s emancipation. l9 However, while we must recognise that people in different social locations may have divergent perspectives, giving them distinctive insights, it is not clear why we should believe the implausible claim that some people have privileged access to knowledge while others are blinded by ideology.20

## 1AR

### 1AR prolif

#### Their arguments are wrong – their critique replicates hierarchies through effacing difference with generalizations of haves and have-nots.

Shampa Biswas, 2001, Whitman College Politics Professor, Alternatives 26.4, <http://findarticles.com/p/articles/mi_hb3225/is_4_26/ai_n28886584/>

Where does that leave us with the question of "nuclear apartheid"? As persuasive as the nuclear-apartheid argument may be at pointing to one set of global exclusions, its complicity in the production of boundaries that help sustain a whole other set of exclusions also makes it suspect. It is precisely the resonances of the concept of apartheid, and the strong visceral response it generates, that gives it the ability to bound and erase much more effectively. In one bold move, the nuclear-apartheid argument announces the place of nuclear weaponry as the arbiter of global power and status, and how its inaccessibility or unavailability to a racialized Third World relegates it forever to the dustheap of history. It thus makes it possible for "Indians" to imagine themselves as a "community of resistance." However, with that same stroke, the nuclear-apartheid position creates and sustains yet another racialized hierarchy, bringing into being an India that is exclusionary and oppressive. And it is precisely the boldness of this racial signifier that carries with it the ability to erase, mask, and exclude much more effectively. In the hands of the BJP, the "nuclear apartheid" position becomes dangerous--because the very boldness of this racial signifier makes it possible for the BJP to effect closure on its hegemonic vision of the Hindu/Indian nation. Hence, this article has argued, in taking seriously the racialized exclusions revealed by the use of the "nuclear apartheid" position at the international level, one must simultaneously reveal another set of racialized exclusions effected by the BJP in consolidating its hold on state power. I have argued that comprehending the force and effect of the invocation of "race" through the nuclear-apartheid position means to understand this mutually constitutive co-construction of racialized domestic and international hierarchical orders.

### 1AR Wilderson

#### Debate is key to engaging in a policy of liberalism and preventing misappropriation of security policy. And, debaters often transition to greatly impact real world politics in progressive ways.

Gordon R. Mitchell, et al., pub. date: June 2007, Assoc. Prof. of Communication and Dir. of the William Pitt Debating Union @ the Univ. of Pittsburgh, Eric English, Stephen Llano, Catherine E. Morrison, John Rief & Carly Woods, “Debate as a Weapon of Mass Destruction,” Communication and Critical/Cultural Studies, Vol. 4, No. 2, pp. 221 – 225, <http://www.pitt.edu/~gordonm/JPubs/EnglishDAWG.pdf>

Today’s intercollegiate debaters find themselves in a political landscape resembling 1954 in several respects. Once again, we find prominent political figures attempting to define the contours of public debate by portraying critics as unpatriotic. Vice President Cheney says that ‘‘disagreement, argument and debate are the essentials of democracy,’’ yet stipulates that charges of pre-war intelligence manipulation are ‘‘dishonest and reprehensible.’’9 Such contortions are typical examples of how skillfully McCarthy’s ideological descendants attack the process of democracy in the name of democracy. The conservative punditry also does its part. While Ann Coulter accuses Iraq war critics of treason, David Horowitz revives fears of a liberal (and therefore ‘‘dangerous’’) academic elite poisoning the minds of America’s young adults. Despite these and countless other examples of McCarthyist tendencies, many directed specifically at academia, there has been no outcry about college students ‘‘taking the side of terrorists’’ in competitive debate tournaments. Why? One answer is that intercollegiate policy debate has become remarkably isolated and esoteric. Competitive pressures have molded the activity into a highly technical art form, where students argue in jargon at breakneck speeds that regularly top 300 words per minute. Because so few people can participate in these debates, virtually no one observes them; untrained spectators are often baffled. The coin has two sides, for the isolation of this form of debate both protects it from criticism and prevents it from having a broader social effect. The result is an odd oasis of intellectual ferment bearing resemblance to the carefully demarcated ‘‘free speech zones’’ that dot the periphery of today’s controversial public events. Second, while the pedagogical benefits of switch-side debating for participants are compelling,10 some worry that the technique may perversely and unwittingly serve the ends of an aggressively militaristic foreign policy. In the context of the 1954 controversy, Ronald Walter Greene and Darrin Hicks suggest that the articulation of the debate community as a zone of dissent against McCarthyist tendencies developed into a larger and somewhat uncritical affirmation of switch-side debate as a ‘‘technology’’ of liberal participatory democracy. This technology is part and parcel of the post-McCarthy ethical citizen, prepared to discuss issues from multiple viewpoints. The problem for Greene and Hicks is that this notion of citizenship becomes tied to a normative conception of American democracy that justifies imperialism. They write, ‘‘The production and management of this field of governance allows liberalism to trade in cultural technologies in the global cosmopolitan marketplace at the same time as it creates a field of intervention to transform and change the world one subject (regime) at a time.’’11 Here, Greene and Hicks argue that this new conception of liberal governance, which epitomizes the ethical citizen as an individual trained in the switch-side technique, serves as a normative tool for judging other polities and justifying forcible regime change. One need look only to the Bush administration’s framing of war as an instrument of democracy promotion to grasp how the switch-side technique can be appropriated as a justification for violence. It is our position, however, that rather than acting as a cultural technology expanding American exceptionalism, switch-side debating originates from a civic attitude that serves as a bulwark against fundamentalism of all stripes. Several prominent voices reshaping the national dialogue on homeland security have come from the academic debate community and draw on its animating spirit of critical inquiry. For example, Georgetown University law professor Neal Katyal served as lead plaintiff ’s counsel in Hamdan , which challenged post-9/11 enemy combat definitions.12 The foundation for Katyal’s winning argument in Hamdan was laid some four years before, when he collaborated with former intercollegiate debate champion Laurence Tribe on an influential Yale Law Journal addressing a similar topic.13 Tribe won the National Debate Tournament in 1961 while competing as an undergraduate debater for Harvard University. Thirty years later, Katyal represented Dartmouth College at the same tournament and finished third. The imprint of this debate training is evident in Tribe and Katyal’s contemporary public interventions, which are characterized by meticulous research, sound argumentation, and a staunch commitment to democratic principles. Katyal’s reflection on his early days of debating at Loyola High School in Chicago’s North Shore provides a vivid illustration. ‘‘I came in as a shy freshman with dreams of going to medical school. Then Loyola’s debate team opened my eyes to a different world: one of argumentation and policy.’’ As Katyal recounts, ‘‘the most important preparation for my career came from my experiences as a member of Loyola’s debate team.’’14 The success of former debaters like Katyal, Tribe, and others in challenging the dominant dialogue on homeland security points to the efficacy of academic debate as a training ground for future advocates of progressive change. Moreover, a robust understanding of the switch-side technique and the classical liberalism which underpins it would help prevent misappropriation of the technique to bolster suspect homeland security policies. For buried within an inner-city debater’s files is a secret threat to absolutism: the refusal to be classified as ‘‘with us or against us,’’ the embracing of intellectual experimentation in an age of orthodoxy, and reflexivity in the face of fundamentalism. But by now, the irony of our story should be apparent \*the more effectively academic debating practice can be focused toward these ends, the greater the proclivity of McCarthy’s ideological heirs to brand the activity as a ‘‘weapon of mass destruction.’’

# KENTUCKY ROUND 3 - Minnesota

## 2AC

### 2AC prolif

#### Green is a hack who lacks any actual credibility he misuses references in papers and does not understand fast reactors and radiation effects.

Ben Heard, 3-28-2012, is Director of Adelaide-based advisory firm ThinkClimate Consulting, a Masters graduate of Monash University in Corporate Environmental Sustainability, and a member of the TIA Environmental and Sustainability Action Committee, after several years with major consulting firms, founded ThinkClimate and has since assisted a range of government, private and not-for profit organisations to measure, manage and reduce their greenhouse gas emissions and move towards more sustainable operations, Decarbonise SA, “IQ2 Debate: “We’ve seen the energy,” <http://bravenewclimate.com/2012/03/28/jim-green-hatchet-man/>

Publicly accusing someone of spreading misinformation is a serious charge. Anyone doing so should make sure their own house is in order first. This time, my questions for Green are as follows: How much of your work depends on “very preliminary order of magnitude guesstimates?” Are you aware that your own reference warns against the very serious consequences of the misunderstanding of radiation risk? If so, why have you contributed to the problem? If not, why not? Do you not read references completely? Green’s misuse and abuse of references, whether the result of laziness or something worse, leave him with little credibility. This does not stop him and others continuing to make great hay out of Barry’s erroneous prognostications early in the unfolding Fukushima event. But there are two things they don’t ever, ever do: Point out where Barry, on his own site, revisits this mistake, corrects the record and engages in some searching self-criticism Follow Barry’s example in the now innumerable examples of incorrect, foolish and downright dangerous misinformation that has been spread about nuclear power, such as those highlighted above For example, in response to my own recent piece on activists deliberately stoking outrage, Green put the hard word on the Brisbane branch of FoE who were continuing to highlight a (medically impossible) link between Fukushima and a “spike in deaths” in the USA in the immediate aftermath of the accident. Apparently even Green has his limits. But will you find a retraction from FoE? No. A correction? Certainly not.

#### Specifically behind on reprocessing.

Dale Klein, 3-10-2011, vice chancellor for research at the University of Texas, Ph.D., is associate vice chancellor for research at the University of Texas System and Associate Director of the Energy Institute at the University of Texas at Austin. He was a member of the Nuclear Regulatory Commission from 2006-2010 and served as its chairman from 2006-2009, “Nuclear Reprocessing: Waste not, want not,” The Energy Collective, http://theenergycollective.com/ansorg/53270/waste-not-want-not

Stubborn resistance to the reprocessing of spent nuclear fuel, driven by some long-held myths, has caused the United States to fall behind other countries as the rest of the world moves toward a “closed fuel cycle” by recycling its nuclear fuel. More than 30 years of inactivity in this area has diminished our technological capability and intellectual capital to compete internationally. Not surprisingly, little funding has been available for radio-chemistry in our universities during that time, to a point where we now are all but irrelevant on the world stage. France, Japan, the United Kingdom, Russia, India, and China all have invested substantially in programs to reprocess spent fuel. They have moved forward for two reasons: first, reprocessing recovers significant energy value from spent fuel that contributes to energy security. And, reprocessing substantially reduces the volume and radiotoxicity of high-level nuclear waste. The once-through nuclear fuel cycle, which is our practice here in the United States, is an enormous waste of potential energy. Part of the problem is one of perception: For decades, spent nuclear fuel has inaccurately been referred to as waste. But it is not waste. In fact, compared with other fuels used in the production of electricity, the energy density of uranium is remarkable–fully 95 percent of the energy value in a bundle of spent nuclear fuel rods remains available for re-use. The true waste is in our failure to capitalize on this valuable and abundant domestic source of clean energy. That’s something we can ill afford to do, particularly in a carbon constrained environment. Utilities operating nuclear power plants continue to store spent nuclear fuel rods on site in pools of water, as they have for more 30 years, before eventually moving them to dry cask storage. And while there is some debate over whether the casks should be located in one central storage site, the practice is widely accepted as safe and secure. That’s the first myth–that we don’t know how to safely store nuclear spent fuel. Critics of reprocessing also cite the potential for nuclear weapons proliferation as the biggest reason to oppose recycling. That, too, has acquired mythical status. The truth is that such concerns are largely unfounded. While it is true that the plutonium in recycled nuclear fuel is fissionable, no country in the world has ever made a nuclear weapon out of low-grade plutonium from recycled high burn-up nuclear fuel. It just doesn’t work for a strategic or a tactical nuclear weapon. If the United States is to get in the game and reverse decades of intransigence, it must establish an infrastructure for recycling nuclear fuel. The best way to do that, I believe, is by creating a public-private partnership that operates outside normal appropriations and has a charter to manage the fuel over a period of decades. The government’s Blue Ribbon Commission, chartered by the Department of Energy, is charged with making recommendations for the safe, long-term management of spent fuel. The 15-member commission is to issue a draft report this summer, with a final report to be completed in January 2012.Unless we act soon, within 10 years the United States will be the only major country in the world with nuclear power that lacks recycling capability.

### 2AC warming

#### Only the aff can pull us back from the edge – displaces coal to bring down ppm amounts.

Steve Kirsch, 11-25-2009, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “Why We Should Build an Integral Fast Reactor Now,” <http://skirsch.wordpress.com/2009/11/25/ifr/>

\*\*\*cites Charles Till, former Associate Director, Argonne National Laboratory, The National Academy Studies, James Hansen, Director, NASA Goddard Institute for Space Studies, Ray Hunter, former Deputy Director of the Office of Nuclear Energy, Science and Technology in the U.S. Department of Energy (DOE), Leonard Koch, winner of the Global Energy International Prize, Barry Brook Sir Hubert Wilkins Chair of Climate Change\*\*\*

The bottom line is that without the IFR (or a yet-to-be-invented technology with similar ability to replace the coal burner with a cheaper alternative), it is unlikely that we’ll be able to keep CO2 under 450 ppm. Today, the IFR is the only technology with the potential to displace the coal burner. That is why restarting the IFR is so critical and why Jim Hansen has listed it as one of the top five things we must do to avert a climate disaster.[4] Without eliminating virtually all coal emissions by 2030, the sum total of all of our other climate mitigation efforts will be inconsequential. Hansen often refers to the near complete phase-out of carbon emissions from coal plants worldwide by 2030 as the sine qua non for climate stabilization (see for example, the top of page 6 in his August 4, 2008 trip report). To stay under 450ppm, we would have to install about 13,000 GWe of new carbon-free power over the next 25 years. That number was calculated by Nathan Lewis of Caltech for the Atlantic, but others such as Saul Griffith have independently derived a very similar number and White House Science Advisor John Holdren used 5,600 GWe to 7,200 GWe in his presentation to the Energy Bar Association Annual Meeting on April 23, 2009. That means that if we want to save the planet, we must install more than 1 GWe per day of clean power every single day for the next 25 years. That is a very, very tough goal. It is equivalent to building one large nuclear reactor per day, or 1,500 huge wind turbines per day, or 80,000 37 foot diameter solar dishes covering 100 square miles every day, or some linear combination of these or other carbon free power generation technologies. Note that the required rate is actually higher than this because Hansen and Rajendra Pachauri, the chair of the IPCC, now both agree that 350ppm is a more realistic “not to exceed” number (and we’ve already exceeded it). Today, we are nowhere close to that installation rate with renewables alone. For example, in 2008, the average power delivered by solar worldwide was only 2 GWe (which is to be distinguished from the peak solar capacity of 13.4GWe). That is why every renewable expert at the 2009 Aspen Institute Environment Forum agreed that nuclear must be part of the solution. Al Gore also acknowledges that nuclear must play an important role.

### 2AC bubble DA

#### Scaling up of existing renewables is infeasible – only IFR’s can solve.

Charles Archambeau et. al, 2-1-2011, is currently President of Technology Research Associates corporation, consultant to the Departmant of Energy for seismic effects associated with geothermal energy production, consultant involved in the technical evaluation of the proposed high level nuclear waste repository at Yucca, board of directors for a number of U.S. and Canadian companies and has been active in their business management and scientific programs, Natural Resources Defense Council of the U.S., Randolph Ware, Sr. Research Associate at CIRES Visiting Scientist at NCAR, Founder, Chief Scientist at Radiometrics, Congressional Science Fellow at Office of Technology Assessment, Research Associate at Cooperative Institute for Research in the Environmental Sciences, Post Doctorate at Joint Institute for Laboratory Astrophysics, Tom Blees is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Yoon Chang, Argonne National Laboratory, General Manager of the Integral Fast Reactor Program, Associate Laboratory Director for Engineering Research, Interim Laboratory Director, serves as the Chair of IAEA’s Technical Working Group on Nuclear Fuel Cycle Options and Spent Fuel Management, Jerry Peterson is a professor of physics at the University of Colorado and a Jefferson Science Fellow for the U.S. Department of State, Robert Serafin was the director of the National Center for Atmospheric Research (NCAR), and past president of the AMS, Tom Wigley is a senior scientist in the Climate and Global Dynamics Division of the US National Center for Atmospheric Research and former Director of the CRU, an adjunct Professor at the University of Adelaide, “IFR: An optimized approach to meeting global energy needs (Part I),” <http://bravenewclimate.com/2011/02/01/ifr-optimized-source-for-global-energy-needs-part-i/>

Fossil fuels currently supply about 80% of humankind’s primary energy. Given the imperatives of climate change, pollution, energy security and dwindling supplies, and enormous technical, logistical and economic challenges of scaling up coal or gas power plants with carbon capture and storage to sequester all that carbon, we are faced with the necessity of a nearly complete transformation of the world’s energy systems. Objective analyses of the inherent constraints on wind, solar, and other less-mature renewable energy technologies inevitably demonstrate that they will fall far short of meeting today’s energy demands, let alone the certain increased demands of the future. Nuclear power, however, is capable of providing all the carbon-free energy that mankind requires, although the prospect of such a massive deployment raises questions of uranium shortages, increased energy and environmental impacts from mining and fuel enrichment, and so on. These potential roadblocks can all be dispensed with, however, through the use of fast neutron reactors and fuel recycling. The Integral Fast Reactor (IFR), developed at U.S. national laboratories in the latter years of the last century, can economically and cleanly supply all the energy the world needs without any further mining or enrichment of uranium. Instead of utilizing a mere 0.6% of the potential energy in uranium, IFRs capture all of it. Capable of utilizing troublesome waste products already at hand, IFRs can solve the thorny spent fuel problem while powering the planet with carbon-free energy for nearly a millennium before any more uranium mining would even have to be considered. Designed from the outset for unparalleled safety and proliferation resistance, with all major features proven out at the engineering scale, this technology is unrivaled in its ability to solve the most difficult energy problems facing humanity in the 21st century.

#### Even with current investment levels it won’t trade-off - intermittency.

Tom Blees, 12-24-2009, is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, “Unnatural gas,” <http://bravenewclimate.com/2009/12/24/unnatural-gas/>

But any type of power plant is going to experience undue wear and tear from the increased variability that is part and parcel of wind and solar integration into the grid (particularly wind, for obvious reasons, though solar power can dip quickly when clouds move in). In areas where gas turbines have been used to compensate for the vagaries of renewables, utility companies are finding that they’re taking quite a beating, with an expected diminution in their service lives. So how can wind and solar be best integrated into the power grid without relying on gas? And how can we do it without investing up to two trillion dollars in a smart grid? Let’s not. Let’s forget about integrating wind and solar power into the grid at all (except for small solar installations like rooftop solar, for those who want to go that route). Let’s remove the urgency of building a smart grid and rely instead on the gradually smartening grid we’ve already got. This relatively dumb grid works pretty well so far and we could take our time revamping it. If Gen III and Gen IV nuclear power plants are used to replace coal- and gas-fired generators we’ll get clean electricity quite reliably no matter how intelligent our grid is. This is not to suggest that we should abandon the building of wind and solar farms (the question of their economics is another issue beyond the scope of this article). Instead of hooking them to the grid, though, we could easily and cheaply build electrolysis systems at each site to generate hydrogen, and with that hydrogen we can make ammonia (That’s NH3. The nitrogen is simply taken from the air). Indeed, the economics may warrant building ammonia plants right at the site of wind and solar farms, or at least producing the hydrogen there and trucking it to nearby ammonia plants. This would take the problem of intermittency completely out of the picture. Hydrogen production would proceed as electricity supply allows, utilizing every watt no matter how variable its production. Similarly, electrolysis systems could be integrated into the grid at nuclear power plants so that they could run at full capacity around the clock regardless of demand. That hydrogen, too, could be utilized to produce ammonia.

#### IFRs are elastic with energy demand - they fit seamlessly with renewables.

Tom Blees, 2008, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Prescription for the Planet, p. 291-2

One of the problems with generating electricity is that you can’t store it all that easily. Converting it from one form to another and back again entails quite unacceptable losses. Another big problem is that demand is necessarily sporadic. Since power plants cost a lot of money to build, nobody wants to build too much capacity into the system knowing that much of the generating potential will be idled a lot of the time. The problem is only compounded when we begin to add in solar and wind power, for both suffer from the fickleness of nature’s whims. Wind is as flighty as, well, the wind. Solar is more predictable (but those cloudy days don’t help), though it obviously peaks in the early afternoon whether you like it or not, while residential demand tends to peak in the evening when people come home from work. This is especially critical during hot weather, when millions of air conditioners kick in at full blast around five o’clock, just about the time the sun is getting low in the sky. The cost of IFRs will be nothing to sneeze at, even taking mass production into account. We don’t want those plants sitting idle or running at half power. This is where the synergy of boron recycling to electrical generation can pay tremendous dividends and maximize efficiency of the total energy picture. For boron recycling plants need not run at full capacity all the time. They can run at whatever rate they can draw power. All they have to be able to do is to keep enough recycled boron available to meet local demand. Almost everyone’s had the experience of using rechargeable batteries, which can be very handy except when they start to get old and refuse to hold their charge. Any electricity storage system would292have to be able to avoid that problem, and boron fills the bill perfectly because it’s inert. Its potential energy today will be the same next week, next month, or next year. Thus it can act like a giant rechargeable battery to soak up excess electricity whenever it’s available. When electricity demand rises, the boron recycling plants would just throttle back and produce less boron. In extraordinary circumstances they could even shut down for a while altogether, though in an integrated energy system a balance would inescapably be found to maximize both the electrical generation and boron recycling systems. Thus the grids would be provided with ample power in any contingency without the costly necessity of building needless overcapacity into the system. Wind and solar contributions would fit in seamlessly, fully integrated into the energy symbiosis, while the power plants would be able to run at full power virtually around the clock. Hydroelectric plants, of course, are fully adjustable, and reducing their flow in times of low electricity demand would only leave more water in the reservoirs for later use.

#### Loan guarantees fill budget shortfalls – there is no creation of a bubble.

NEI, May 2011, Nuclear Energy Institute, “Financing New Nuclear Power Plants,” <http://www.nei.org/resourcesandstats/documentlibrary/newplants/policybrief/financingnewplants/>

The federal government manages a loan guarantee portfolio of $1.1 trillion. It uses loan guarantees widely and successfully to ensure investment in critical activities, including shipbuilding, transportation infrastructure, exports of U.S. goods and services, affordable housing, and many other purposes. The nuclear energy loan guarantee program is not a subsidy. Unlike other federal loan guarantee programs, including loan guarantees for renewable energy projects, nuclear project developers are required to pay the cost of the loan guarantee and the full cost of administering the Department of Energy program. The program addresses market imperfections that otherwise would restrict access to capital or impose inordinately high financing costs on projects. The Office of Management and Budget noted that federal credit programs, such as the energy loan guarantee program, “effectively fill the gaps created by market imperfections.” All clean-energy technologies are subject to the same rigorous due diligence to ensure that DOE’s loan guarantee program provides financing support only to viable projects that have an extremely high probability of being successful. Project-specific due diligence and underwriting evaluate the legal, technical and financial attributes of each project. DOE oversees this process in concert with outside legal and financial advisers, independent engineering consultants, and market experts. The analysis includes a rigorous assessment of the creditworthiness of the project, which can be measured accurately using well-established project financing ranking criteria. Opponents of nuclear energy have speculated about high default rates for new nuclear projects based on an outdated report by the Congressional Budget Office. The cited CBO estimate of a 50 percent default rate is an unsupported assertion from a 2003 CBO analysis of a different loan guarantee program that was never approved. A 2008 CBO report on the economics of new nuclear capacity found that nuclear energy would become a more attractive investment for new capacity than fossil-fueled power plants in a carbon-constrained world.

#### Nuclear power doesn’t skew the market - is cost competitive.

Alexander DeVolpi, 2-28-2010, been active in nuclear-arms policy and treaty-verification technology studies for over 25 years, Argonne National Laboratory, Argonne, Illinois (and other national laboratories) involved nearly 40 years of lab, field, and analytical activities in instrumentation, nuclear physics, nuclear engineering, reactor safety, radioisotopes, experiments, verification technology, and arms control, the Defense Nuclear Agency, On-Site Inspection Agency, all the Department of Energy weapons labs, with the Departments of Defense and State, author or coauthor of several books, Ph.D. in physics (and MS in nuclear engineering physics) from Virginia Polytechnic Institute, certificate from the Argonne International Institute of Nuclear Science and Engineering, managing nuclear diagnostics for the Reactor Analysis and Safety Division at Argonne, and becoming technical manager of the arms-control and nonproliferation program, Who’s Who in Frontiers of Science and Technology, American Men and Women of Science, fellow of the American Physical Society, technical consultant in the Federation of American Scientists/Natural Resources Defense Council joint project, ScienceTechnologyHistory, “NUCLEAR EXPERTISE: The Amory Lovins Charade,” <http://sciencetechnologyhistory.wordpress.com/article/nuclear-expertise-the-amory-lovins-1gsyt5k142kc5-20/>

Nuclear power is not only commercially competitive, but extremely safe (no coal miners dying), no air pollution at all, no greenhouse gas emissions (such as carbon-dioxide). Nuclear-plant lifetime is being doubled from 30 to 60 years (which utilities, investors, and ratepayers appreciate). If Lovins had his way 30 years ago, considerably more particulates and gases would have been vented to the local and regional atmosphere from coal-fired plants (aside from the greenhouse gases emitted). Moreover, if Lovins had his way, we would not have conserved the electricity-equivalent in domestic coal, imported and domestic oil, and domestic and imported natural-gas resources and reserves that we have for 30 years. A typical nuclear power plant each year avoids consumption of 3.4 million short tons of coal, or 65.8 billion cubic feet of natural gas, or 14 billion barrels of oil. (The United States has ample uranium resources.) So Lovins was wrong in implying that nuclear had no overriding societal or environmental benefits. Incidentally, it’s no accident that Illinois has the highest concentration of nuclear-power plants in the United States: Argonne National Laboratory can be proud of its half-century nuclear stewardship. (California, by the way, generates more electricity from geothermal, solar, and wind energy sources combined than any other State.) Lovins displayed complex viewgraphs that, he purports, show that nuclear is the costliest of “low-or-non-nuclear resources.” Yet, in the last 30 years, nuclear has displaced half the fossil-fuel combustion in Illinois while still being competitive. Inasmuch as nuclear-power plants emit no byproduct carbon-dioxide to the atmosphere, surely his claim that it is the costliest of low-carbon-emission sources fails the smell test. Most of Lovins’ pricing and cost/benefit comparisons are based on “new delivered electricity” which frames the cost of U.S. domestic nuclear construction in the least favorable light. He declares nuclear power an economic failure. Can someone explain that to my bank account which has benefitted from compounding competitive electric power savings for the past 30 years? His rimy claim certainly fails the ripeness test. On the issue of electrical-grid reliability, Lovins asserts that there is no such thing as a “outage-free” source of electrical power. He must think that nuclear power runs by government fiat. Nuclear is a fixture on the grid because it is more economical to operate as base-load supply, while sources less reliable, intermittent, and more costly (such as wind, solar, and gas) provide supplementary power. During the past 30 years in Illinois, I don’t recall having the electricity supply and cost problems that California has had after it prohibited nuclear-power plants from being built within its borders. By the way, average U.S. nuclear capacity factor was about 92% in 2007. That’s excellent. Lovins pitiful effort to undermine the reliability of nuclear power egregiously fails the smell test.

### 2AC capitalism bad

#### Weighing consequences is inevitable – look to case impacts.

Joshua Green, November 2002, Assistant Professor Department of Psychology Harvard University, The Terrible, Horrible, No Good, Very Bad Truth About Morality And What To Do About It, p. 314

Some people who talk of balancing rights may think there is an algorithm for deciding which rights take priority over which. If that’s what we mean by 302 “balancing rights,” then we are wise to shun this sort of talk. Attempting to solve moral problems using a complex deontological algorithm is dogmatism at its most esoteric, but dogmatism all the same. However, it’s likely that when some people talk about “balancing competing rights and obligations” they are already thinking like consequentialists in spite of their use of deontological language. Once again, what deontological language does best is express the thoughts of people struck by strong, emotional moral intuitions: “It doesn’t matter that you can save five people by pushing him to his death. To do this would be a violation of his rights!”19 That is why angry protesters say things like, “Animals Have Rights, Too!” rather than, “Animal Testing: The Harms Outweigh the Benefits!” Once again, rights talk captures the apparent clarity of the issue and absoluteness of the answer. But sometimes rights talk persists long after the sense of clarity and absoluteness has faded. One thinks, for example, of the thousands of children whose lives are saved by drugs that were tested on animals and the “rights” of those children. One finds oneself balancing the “rights” on both sides by asking how many rabbit lives one is willing to sacrifice in order to save one human life, and so on, and at the end of the day one’s underlying thought is as thoroughly consequentialist as can be, despite the deontological gloss. And what’s wrong with that? Nothing, except for the fact that the deontological gloss adds nothing and furthers the myth that there really are “rights,” etc. Best to drop it. When deontological talk gets sophisticated, the thought it represents is either dogmatic in an esoteric sort of way or covertly consequentialist.

#### No collapse - capitalism is self-correcting in terms of energy – responsibility and regulations limits plundering.

Jeffrey Hollender & Bill Breen, 2010, Founder of the American Sustainable Business Council, a progressive alternative to the Chamber of Commerce, Editorial Director of the Fast Company, The Responsibility Revolution: How the Next Generation of Businesses will Win, p. xix

The responsibility revolution is about more than cutting carbon, reducing energy use, monitoring factories, or donating to charities. It’s about reimagining companies from within: innovating new ways of working, instilling a new logic of competing, identifying new possibilities for leading, and redefining the very purpose of business. Consequently, we’ve drawn on the best thinking not only from the corporate responsibility arena, but also from the realms of strategy, leadership, and management. Others, to whom we are indebted, have developed some of this book’s core principles. (We will acknowledge them as we present their ideas.) Our intent is to show how an emerging breed of business revolutionaries is turning theory into practice and building organizations that grow revenue by contributing to the greater good. This is a book about change, but it seeks to help companies change on the inside—change their priorities, the way they organize, how they compete, and the way they interact with the world. We fully concede that many companies, perhaps even most companies, won’t willingly alter their behavior. But they will change nonetheless, and it won’t be because they’ve suddenly seen the light. It will be because massive numbers of consumers, a spreading swarm of competitors, values-driven employees, and even that laggard indicator, the federal government, makes them change. Change is under way. The responsibility revolution spreads. Perhaps you’ve seen the insurrection begin to roil your industry, and you’re determined to get out in front of it. If so, welcome to the cause.

#### Prefer our evidence – they conflate bad human decision making with capitalism.

Jay Richards, 2009, PhD with honors in Philosophy and Theology from Princeton, Money, Greed, and God: Why Capitalism Is the Solution and Not the Problem, p. 164

Too many critics confuse the free market with the bad choices free people make. Rod Dreher, for instance, chastises fellow conservatives, saying, “We look down on the liberal libertine who asserts the moral primacy of sexual free choice, but some- how miss that the free market we so uncritically accepts exalts personal fulfillment through individual choice as the summit of human existence.”9 Perhaps they miss that fact because it’s not a fact. The free market doesn’t exalt anything. Human beings exalt and denounce things like sexual free choice. Human beings might exalt “individual choice as the summit of human exis- tence,” but a system of free exchange doesn’t do that. In a free economy, sinful entrepreneurs may entice customers with pornography, and sinful customers may buy it. But having free choices in the market doesn’t dictate what people will choose. That’s the whole point of freedom: it always involves costs—that is, trade-offs. To choose one path is to foreclose the opposite path. Even God accepted trade-offs. He chose to create a world with free beings, one that allowed those beings to turn against him. And they did. But their freedom didn’t cause them to choose the bad. It just allowed them to. So, too, with a free economy. Critics notice all the vice present in free societies. But it is only in free societies that we can fully exercise our virtue. Charity is charity, for instance, only if it’s not coerced. Besides, there’s no evidence that state control of the economy makes a citizenry more virtuous. Every social ill in modern- day America, from widespread abortion and alcoholism to family breakdown, was much worse in statist and communist countries.

#### The move to IFR is necessary to solve the root causes of exploitation - ends want and war – great divide is based on mis-understanding.

David Walters, 6-14-2011, worked as a union power plant operator for 24 years in California, currently a member of Socialist Organizer, US Section of the Fourth International, Permanent Revolution, “FUKUSHIMA, NUCLEAR ENERGY AND A SOCIALIST PROGRAM,” <http://climateandcapitalism.com/2011/06/14/socialist-arguments-for-nuclear-power/>

We have serious issues facing our class, our planet. From economic development of the productive forces in the oppressed neo-colonial world to raise their standard of living, to the phasing out of climate-changing fossil fuel use, we are going to require more, not, less energy, specifically electricity. Most on the left are at best confused by this and at worse, seek a return to some sort of pastoral green, “democratic” pre-industrial utopia. As Marxists we should reject this “we use too much” scenario that has infected the left across the world. We certainly should use energy more wisely, more efficiently and with a sense of conservation. This can happen only when the profit motive is removed and scarcity in basic necessities is a thing of the past. No one should object to this. But these things do not produce one watt of power, especially if you consider what we have to do. These include: Switching off from fossil fuels completely (they should be used only as chemical feedstock, i.e. as the basic material to make chemicals and lubricants) Increasing the development of the productive forces especially in the developing world. This means developing whole electrical grids, new, primarily non-fossil fuel, forms of generation and the infrastructure to support this, for the billions without any electrical usage at all Freeing up the productive forces to eliminate all forms of want as the material basis for a true socialist mode of production. Using nuclear energy is both the cheapest and safest way to do this. George Monbiot in his latest entry on his blog\* challenges the renewable energy advocates with some hard questions. No socialist by any means, Monbiot has brought attention to the issue of energy and what it will take to reduce carbon emissions. He notes, writing on Britain, among other things: “1. Reducing greenhouse gas emissions means increasing electricity production. It is hard to see a way around this. Because low-carbon electricity is the best means of replacing the fossil fuels used for heating and transport, electricity generation will rise, even if we manage to engineer a massive reduction in overall energy consumption. The Zero Carbon Britain report published by the Centre for Alternative Technology envisages a 55% cut in overall energy demand by 2030 – and a near-doubling of electricity production.” How is this electricity going to be produced in a sustained and regular way? We know wind generated power is erratic and variable, a problem only partially solvable by new continental wide electricity grids. We know other forms of low carbon power – tidal, coal with carbon capture and storage, large scale solar – are experimental and even if viable are likely to turn out more expensive than nuclear. We get no answer from so-called socialist Greens on this problem, at least not yet. They simply have not considered the real issues. Monbiot goes on: “3. The only viable low-carbon alternative we have at the moment is nuclear power. This has the advantage of being confined to compact industrial sites, rather than sprawling over the countryside, and of requiring fewer new grid connections (especially if new plants are built next to the old ones). It has the following disadvantages: “a. The current generation of power stations require uranium mining, which destroys habitats and pollutes land and water. Though its global impacts are much smaller than the global impacts of coal, the damage it causes cannot be overlooked. “b. The waste it produces must be stored for long enough to be rendered safe. It is not technically difficult to do this, with vitrification, encasement and deep burial, but governments keep delaying their decisions as a result of public opposition. “Both these issues (as well as concerns about proliferation and security) could be addressed through the replacement of conventional nuclear power with thorium or integral fast reactors but, partly as a result of public resistance to atomic energy, neither technology has yet been developed. (I’ll explore the potential of both approaches in a later column).” I want to address this last point. Monbiot is slowly seeing his way to something that has taken a long time: that nuclear energy is really the only way to go, even in light of the “big three” accidents: Three Mile Island, Chernobyl and Fukushima. These new technologies he mentions, the Liquid Fluoride Thorium Reactor (which doesn’t require any uranium mining, enrichment or long term disposal of spent fuel) and the Integral Fast Reactor, provide the material basis for eliminating all fossil fuels and for a future society without want, wars or exploitation that is a socialist one. Where Monbiot and I come together is not, obviously, the socialist requirement to get rid of capitalism. It is over the need for more energy, not less. It is over the realization that renewables cannot do it except in the most utopian of fantasies. The real “Great Divide” is between those among the Greens who run on fear and fantasy, and those socialists that have a materialist understanding of the need to move toward a society based not just on current human needs alone, but on expanding humanity’s ability to power such a society. Only nuclear can do this.

#### Their impact cards don’t assume the world of the aff – IFRs transform economic and geopolitical paradigms – eliminating gross inequality.

Tom Blees, 2008, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Prescription for the Planet, p. 335-6

When the material comforts of existence are seen as being limited, then consumption beyond one’s needs does indeed carry an undeniable ethical weight. As Ralph Waldo Emerson put it lo those many years ago, “Superfluity is theft.” Even when the energy and raw materials involved are plentiful, there remains the often conveniently ignored issue of the conditions under which goods have been produced, be they agricultural or manufactured commodities. It is disingenuous in the extreme to point to the abolition of slavery as evidence of the social evolution of mankind when millions of desperately poor people labor under conditions that can still honestly be considered as slavery. The fact that we don’t335have slaves in our home is hardly confirmation of our benevolence. The moral questions of economic fairness will not be settled by availing ourselves of the technologies promoted in this book, but should command our attention and concern indefinitely. My point is not to justify exploitation of either human or material resources, but to point out that a transformation of energy and raw material technologies as proposed herein will present a radically transformed palette upon which to paint the picture of humanity’s future. Our new course will remove the limitations by which finite natural resources and energy supplies have circumscribed our existence. Unlimited energy coupled with virtually complete recycling of materials and the production of consumer goods from plentiful or renewable resources will finally allow humanity to be unshackled from the zero-sum mentality. Raising the living standards of our billions of disadvantaged brethren will be seen as a positive development by even the most voracious consumer societies, rather than perceived with foreboding as somehow detrimental to their way of life. Admittedly this will take some getting used to. The revolution will be not just technological and political, but psychological. The passion with which consumerism is pursued is frequently grotesque in its extremes, yet the revulsion it engenders may not be so strong when it can be viewed more as shallow foolishness than callous selfishness. Much of what is considered virtuous today will be seen more as simply a matter of personal preference in a world where creature comforts are no longer in limited supply. The concept of self-denial will have to be looked at anew. Rather than concentrating on husbanding limited resources, our attention can be turned to welcoming the rest of our fellow humans into a new reality where creature comforts are the universal norm. Abundant energy and wise336use of basic resources are the keys. Clearly the technologies are already within our grasp. This won’t happen overnight, but it would be foolish to dally. The conversion of primary power systems to fast reactors will necessarily be a gradual process, which in the best-case scenario will take a few decades. Conversion of the vehicle industry to boron, however, is another story. It is entirely conceivable that boron fueled vehicles could be driving on our highways within five years. Ironically the first boron recycling plants that would be a corollary of the conversion may end up operating with natural gas for their heat requirements, since the IFR program simply won’t be able to be implemented as quickly as the boron system, and it’s questionable whether existing electrical generation systems would be able to handle the increased demand of electrically powered boron recycling plants. This would, however, be only an interim fix, and would allow the vehicle fleets to get off to a quick start. If the plasma conversion method proves feasible, though, then garbage alone will provide all the energy we need for boron recycling. Long before the conversion to boron is complete, the demand for oil will have dropped to the point where the USA, one of the world’s thirstiest countries when it comes to oil, will be able to rely solely on North American supplies, resulting in geopolitical and economic realignments that will be a harbinger of things to come. Even though oil prices will surely plummet worldwide, and while the temporary price of boron recycling may well be higher than it will be once IFRs are able to provide all the power necessary to support the system, the price disparity will easily be great enough and the environmental benefits so overwhelming that boron vehicles will surely carry the day even in the near term.

#### This means the plan is a pre-requisite - criticizing the current economic system is insufficient without a specific and workable alternative – a moral stand is not enough to start a revolution.

Lawrence Grossburg, 1992, Professor of COMS at UNC, Communication Studies Professor at UNC, We Gotta Get Out of This Place, p. 388-89

If it is capitalism that is at stake, our moral opposition to it has to be tempered by the realities of the world and the possibilities of political change. Taking a simple negative relation to it, as if the moral condemnaotion of the evil of capitalism is sufficient (granting that it does establish grotesque systems of inequality and oppression) is not likely to establish a viable political agenda. First, it is not at all clear what it would mean to overthrow capitalism in the current situation. Unfortunately, despite our desires, the “masses” are not waiting to be led into revolution, and it is not simply a case of their failure to recognize their own best interests, as if we did. Are we to decide—rather undemocratically, I might add—to overthrow capitalism in spite of their legitimate desires? Second, as much as capitalism is the cause of many of the major threats facing the world, at the moment it may also be one of the few forces of stability, unity and even, within limits, a certain “civility” in the world. The working system is, unfortunately, simply too precarious and the alternative options not all that promising. Finally, the appeal of an as yet unarticulated and even unimagined future, while perhaps powerful as a moral imperative, is simply too weak in the current context to effectively organize people, and too vague to provide any direction. Instead, the Left must think of ways to rearticulate capitalism without either giving up the critique or naively assuming that it can create capitalism with a human heart.”

### 2AC Quadrennial Energy Review CP

#### ‘Should’ does not mean mandatory.

Atlas, 1999, Collaboration, “Use of shall, should, may can,” rd13doc.cern.ch/Atlas/DaqSoft/sde/inspect/shall.html

shall' describes something that is mandatory. If a requirement uses 'shall', then that requirement \_will\_ be satisfied without fail. Noncompliance is not allowed. Failure to comply with one single 'shall' is sufficient reason to reject the entire product. Indeed, it must be rejected under these circumstances. Examples: "Requirements shall make use of the word 'shall' only where compliance is mandatory." This is a good example. "C++ code shall have comments every 5th line." This is a bad example. Using 'shall' here is too strong. should 'should' is weaker. It describes something that might not be satisfied in the final product, but that is desirable enough that any noncompliance shall be explicitly justified. Any use of 'should' should be examined carefully, as it probably means that something is not being stated clearly. If a 'should' can be replaced by a 'shall', or can be discarded entirely, so much the better.

#### QER fails to translate into policy – a comprehensive energy policy like IFRs is managed across the whole government.

David Rothkopf, 10-26-2011, is President and CEO of Garten Rothkopf, an international advisory firm specializing in transformational global trends, notably those associated with energy, scholar at the Carnegie Endowment for International Peace, chairs the Carnegie Economic Strategy Roundtable, chairman of the National Strategic Investment Forum Dialogue, advisory board of the U.S. Institute of Peace, the John Hopkins/Bloomberg School of Public Health, the Center for Global Development, and the Center for the Study of the Presidency, Foreign Policy, “The time for a White House-led national energy policy is right now,” <http://rothkopf.foreignpolicy.com/Obama>

One area in which such an effort is not just needed but is effectively several generations overdue is energy policy. To date, the administration's efforts in the area of energy have concentrated on greening the U.S. energy mix and the jobs that green energy might bring. While worthy, the efforts have been bogged down and undercut for a variety of reasons: ranging from the tactical decision to put health care ahead of energy among policy priorities, the inflated and dubious nature of many green job provisions, the success of climate skeptics in impeding the cap-and-trade debate, and the recent kerfuffle over Solyndra (and, by extension, government energy loan programs, alternative energy programs in general, and the whole idea of "picking winners" associated with some elements of green energy policy).The Energy Department even initiated a worthy Quadrennial Technology Review that mimicked the Quadrennial Defense Review, Quadrennial Homeland Security Review, and the Quadrennial Diplomacy and Development Review processes at Defense, Homeland Security, and State respectively. But it was not a broad-gauge energy policy and the United States has been in need of such a policy for decades. There have been abortive efforts in that direction but they have been compromised or stopped short of becoming a regular element of U.S. government policy making. One reason for the problem is that despite the fact that the Department of Energy was created to help ensure the creation of such policies during the 1970s, it is simply incapable of overseeing the development of the kind of comprehensive policy that is needed. Unlike defense policy or diplomacy policy, critical components of a true energy policy are managed not in one agency but across the entirety of the U.S. government. It is a domestic and an international issue, a security and an economic issue, a regulatory, financial, diplomatic, and environmental issue.

#### QER inclusion of the plan will fail and will be politically contentious – directed funds will have no policy specifics cause patchwork implementation.

Andrew C. Revkin, 9-30-2011, senior fellow at the Pace Academy for Applied Environmental Studies at Pace University, The New York Times, “Short-Termism and Energy Revolutions,” <http://dotearth.blogs.nytimes.com/2011/09/30/short-termism-and-energy-revolutions/>

You can also look at the first Quadrennial Technology Review produced by the Department of Energy (summarized by Climate Progress earlier this week). The review was conducted after the President’s Council of Advisers on Science and Technology wisely recommended regular reviews of this sort as part of its prescription for accelerating change in energy technologies. This excerpt from the new review articulates the tension pretty transparently for a government report: There is a tension between supporting work that industry doesn’t— which biases the department’s portfolio toward the long term—and the urgency of the nation’s energy challenges. The appropriate balance requires the department to focus on accelerating innovation relevant to today’s energy technologies, since such evolutionary advances are more likely to have near- to mid-term impact on the nation’s challenges. We found that too much effort in the department is devoted to research on technologies that are multiple generations away from practical use at the expense of analyses, modeling and simulation, or other highly relevant fundamental engineering research activities that could influence the private sector in the nearer term. Both near-term and long-term effort and investment are needed, of course. This is a question of balance, specifically within the limited amount of money designated for research and development. In finding that balance, I’m not sure it’s possible to overcome the political pressures tugging agencies and officials to stress refinement and deployment of known and maturing technologies (even though that’s where industry and private investors are most focused).On the left, the pressure is for resources to deploy today’s “green” technology. On the right, as illustrated in a Heritage Foundation report on ways to cut President Obama’s budget for the Energy Department, the philosophy seems to be to discourage all government spending on basic inquiry related to energy. According to Heritage, science “in service of a critical national interest that is not being met by the private sector” is fine if that interest is national defense, but not fine if it’s finding secure and sustainable (environmentally and economically) sources of energy. I solicited reactions to the Energy Department review from a variety of technology and innovation analysts. The first to weigh in are Daniel M. Kammen, an energy technology researcher at the University of California, Berkeley, who is on leave working for the World Bank, and Robert D Atkinson, the founder and president of the Information Technology and Innovation Foundation. Here’s Kammen: The idea of a regular review and status report on both energy innovation and deployment spending is a good one. Some of the findings in the QTR review are useful, although little is new. Overall, though, this is a useful exercise, and one that should be a requirement from any major programmatic effort. There are some very curious omissions from the report, such as more detail on the need to both generate and report on jobs created in this sector — a political ‘must’ these days (see, e.g., the “green jobs” review by the Renewable and Appropriate Energy Laboratory at Berkeley) — and straightforward comparisons in the way of ‘report cards’ on how the US is stacking up relative to other key players (e.g. China, Germany…).Perhaps the biggest worry in this report, however, is the missing logic and value of a ‘shift to near term priorities in energy efficiency and in electric vehicles.’ This may be a useful deployment of some resources, but a range of questions are simply never addressed. Among the questions that need firmer answers are:- Following record levels funding made available to the energy industry through the [stimulus package of spending], what are the clearly identified market failures that exist in this area that added funding will solve? Funding is always welcome, but energy efficiency in particular, can be strongly driven by regulation and standards, and because good energy efficiency innovations have such rapid payback times, would regulatory approaches, or state-federal partnerships in regulation and incentives not accomplish a great deal of what can be done in this area? Congressman Holt raises a number of key questions on related issues, while pointing to some very hopeful experiences, notably in the Apollo program, in his 16 September editorial in Science. Nobody will complain if funds come their way, but given the state-by-state laboratories we already have of differing approaches to energy efficiency, the logic of spending in this area remains to be proven (as much as we all rightly love and value and benefit from energy efficiency).- Near-term electric vehicle deployment. A similar story could be told here. As the director of the University of California at Berkeley’s Transportation Sustainability Research Center (http://tsrc.berkeley.edu) I am huge believer in electric vehicles [EVs]. However, the review does not make clear what advances in this area are already supported through [the Advanced Research Projects Agency for Energy], and what areas of near-term research are also not best driven though regulation, such as low-carbon fuel standards, R&D tax credits, ‘feebates’ that transfer funds from those individuals who purchase inefficient vehicles to those who purchase efficient ones. Similar to the story in energy efficiency, we do have already an important set of state-by-state experiments that have been in place for some time, and these warrant an assessment of how much innovation they have driven, and which ones do and do not have an application in scale-up at the federal level. Finally, the electric vehicle landscape is already very rich in terms of plans for deployment by automakers. What are the barriers five-plus years out that the companies see research-versus-deployment and market-expansion support as the most effective way to drive change in the industry? Where will this focus put the U.S. industry relative to China? Finally — and while I in some ways cringe at returning to an old story — the real need in the R&D sector is continuity and matching an increasing portfolio of strategic research with market expansion. My former student and colleague Greg Nemet have written consistently on this:- U.S. energy research and development: Declining investment, increasing need, and the feasibility of expansion- Reversing the Incredible Shrinking Energy R&D Budget How this will be achieved in the current political climate in Washington, D.C., is vital to any ‘near term’ strategy for energy R&D. Here’s Robert Atkinson: If DOE is shifting toward a more short-term focus, this is quite disturbing. It would mean that DOE has given up on addressing the challenge of climate change and instead is just focused on the near term goal of reducing oil imports and modestly reducing the expansion the coal fired power plants. If DOE thinks it is still focused on climate change, do they think they are fighting “American warming”? If so, cutting the growth of our emissions make sense. But its global warming and solving this means supporting the development of scalable, cheap low or no-carbon energy so that every country, rich and poor, will have an economic incentive to transitioning to cheap energy. Increasing building efficiency, modernizing the electric grid, alternative hydrocarbon fuels, and increasing vehicle efficiency do virtually nothing to meet this goal. They are “American warming” solutions. This is also troubling because (as you point out) who else is going to invest in the long-term, more fundamental, high risk, breakthrough research than the U.S. government. It certainly won’t be VCs. And it won’t be the Chinese who are principally interested in cutting their energy imports and exporting current generation clean energy, not developing technology to save the planet. Of course all the folks out there who have been pushing the mistaken view that we have all the clean technologies we need will hail this as the right direction. But it’s doing what the rest of the market has been doing in recent years – shifting from high risk, long-term research to short-term, low risk. If the federal government is doing this it is troubling to say the least.

#### Regulatory predictability is critical to investment in nuclear power.

Angelina Howard, 6-18-2007, Nuclear Energy Institute (NEI), “PANEL II OF A COUNCIL ON FOREIGN RELATIONS SYMPOSIUM; SUBJECT: CAN NUCLEAR ENERGY GO BEYOND THE ENERGY POLICY ACT OF 2005?,” Lexis Nexis

MS. HOWARD: Well, the incentives in the Energy Policy Act --- (laughter) -- well, the incentives in the Energy Policy Act, I think the thinking on that has evolved over -- since 2005, like many other things. And as we -- we saw a significant number of companies make the decisions to go forward with the combined construction and operant rating license after the act was passed and they -- they saw the production tax credits being included and some level of stand-by support, because the real uncertainty for nuclear was not in the technology; it was in the regulatory aspect, and would the new licensing process really work like it was intended to work? And so -- and, you know, there were reflections and memories of(Shoreham ?) and others that took so long or else were -- were never, you know, went into operation. So those were very important at the time, in 2005, as well as the loan guarantee.

#### Loan guarantees are not included in the QER – inclusion of the plan will not steer spending – government scrutiny.

Tiffany Kaiser, 9-30-2011, Daily Tech, “DOE Review: EVs, Grid Modernization to be Focus of 2013 Spending,” <http://www.dailytech.com/DOE+Review+EVs+Grid+Modernization+to+be+Focus+of+2013+Spending/article22888.htm>

The Quadrennial Technology Review will be used to steer spending for fiscal 2013, and a budget proposal will be released in 2012 The U.S. Department of Energy (DOE) has released a new "Quadrennial Technology Review," which reveals the government's alternative energy plans for fiscal 2013. The Quadrennial Technology Review pushes alternative energy technology that can be commercialized in a 10-year period, and according to its first report, the DOE wants to focus more of its $3 billion research budget on the adoption of electric vehicles and the modernization of the power grid. The review noted that the DOE "underinvested" in transportation in fiscal 2011, where only 26 percent of spending was dedicated to this particular area. Nine percent went to electric vehicles in fiscal 2011, 4 percent went to adding fuel efficiency to vehicles, and the rest went to alternative fuels. "Currently, DOE focuses too much effort on researching technologies that are multiple generations away from practical use," said The Quadrennial Technology Review. The DOE now plans to concentrate on advanced biofuels as well as "technology that does not require new fuel-station infrastructure." Much of fiscal 2011's budget was devoted to clean electricity at 51 percent of spending, but in addition to transportation, the DOE will put aside more funding in the future for the modernization of the power grid, carbon capture/storage research, building and factory efficiency and technology that can be operated using less water like wind and solar photovoltaic. The DOE is currently facing scrutiny for a government loan to solar company Solyndra, which recently filed for bankruptcy. The government reportedly knew the company was destined to fail, according to emails the FBI found when raiding Solyndra in early September. The Quadrennial Technology Review does not address loan guarantees to private-sector companies, which was a $180 million program in fiscal 2011.

#### Inclusion of the plan won’t create an effective energy infrastructure – no specification of funding or policy instruments.

Alex Trembath, 9-27-2011, Policy Fellow at the Breakthrough Institute, Energetics, “DOE Releases First Quadrennial Technology Review,” <http://atrembath.blogspot.com/2011_09_01_archive.html>

The United States energy economy needs more than basic research, however. Fortunately, the QTR does not omit strategies for commercialization, maturation, and deployment of innovative clean energy technologies. As the report clarifies in its section on international competitiveness, "US economic competitiveness is a growing challenge in a world made even more competitive by developing countries striving to create sustainable economic growth and establish themselves as technology leaders." As such, the report recommends advanced technology policy to address deployment, innovation, and manufacturing. These areas are much in line with the competitiveness strategy outlined in Breakthrough's reports "Rising Tigers, Sleeping Giant" and "Post-Partisan Power," which have shown that the US needs a comprehensive and aggressive competitiveness policy in the face of increasing technology investment from China, Korea, Japan and other nations.But there are also important elements missing from the QTR. While the report effectively covers the broad energy imperatives facing the United States, specific policies and funding mechanisms are glossed over. A multi-year technology policy from DOE will require flexibility, but some policy instruments will prove essential if the nation is to achieve any of the goals laid out in the report: Increasing federal funding for energy technology R&D, as recommended by the President's Council of Advisors on Science and Technology last fall; creating a Clean Energy Deployment Administration (CEDA) to build public-private partnerships and bridge technologies from demonstration to full maturation; and reformed subsidy policies that prioritize innovation over deployment. Alternative and additional policy instruments are available, and including them in these discussions is important for building an ambitious and fruitful policy dialogue.

### 2AC Romney - China

#### Asia relations resilient won’t escalate.

Hu Xijin, 3-21-2012, editor in chief of the Global Times, translated by Isaac Stone Fish, an associate editor at Foreign Policy, “Hollow Threats,” http://www.foreignpolicy.com/articles/2012/03/21/hollow\_threats?page=full

Mitt Romney has said a lot of tough things about China. But his words haven't troubled the Chinese people. This is because, over the last 20 years, the China policies of U.S. presidents have always been milder than the threats the same men made on the campaign trail. In other words, no one seriously thinks that a candidate will actually implement these tough policies. The Chinese people have already mentally prepared for the possibility of Sino-U.S. relations growing tenser, but this is the result of Sino-U.S. competition rapidly growing fiercer, not the possibility of Romney becoming president.Romney's tough words toward China sound very empty, as if he's just communicating to the electorate his determination to be faithful to America's national interests. Attacking China on human rights and its political system and describing China as an "opponent" in military and economic areas makes the loyalty he has pledged to the United States seem more real. Barack Obama, as president, cannot directly attack China; Romney, as a candidate, will attack us every chance he gets -- if merely to make the point that Obama is constrained and weak. Romney's most striking attack line toward China is his stated desire to call China a currency-manipulating country on his first day in the White House. Will he really do this? I don't know. But what's certain is that if he does end up in the White House, he wouldn't dare provoke an all-out trade war between China and the United States. Even if he does call China a currency manipulator, the label will be meaningless because of the hugeness of Sino-U.S. trade.Sino-U.S. relations and those between the Soviet Union and the United States are completely different. The societies of the United States and the Soviet Union never came in contact with each other; their two countries' top officials decided everything about the relationship. But Sino-U.S. relations revolve around the two countries' robust societal and economic contacts. Their scale and prospects are big enough to trump the values and security interests that usually frame these two countries' relations.The leaders of the United States and China admittedly can personally affect Sino-U.S. relations, but only in a limited way. They can influence the atmosphere of the relationship and other surface matters, but the two countries' core interests guide Sino-U.S. relations.These relations could grow tenser in the future because the two countries' respective interests in the relationship have quietly changed since China's rise. If Romney gets elected, even if he doesn't continue to encourage anti-Chinese sentiment, there will be more friction between the two countries than there is today. The next U.S. president must work to limit the mistrust between the two countries and prevent them from exploding with suspicion.The possibility that the United States will be able to contain China is very small because China's rise is a natural process with many forces behind it. Containing China would be difficult. At best, the United States can dedicate itself to lessening the damage China's rise will have on America's interests and enjoying the opportunities created by China's development.I can understand America's vigilant attitude toward China. But I believe Americans will not be reckless in trying to contain China. In other words, as long as China doesn't provoke the United States, containing China won't become U.S. policy.As for the U.S.-China row over things like rare earths, the exchange rate, and even human rights, all these conflicts have been very specific, and they haven't capsized the whole relationship. We believe the person whom the Americans elect to enter the White House will, at the very least, have rational thoughts. Romney won't make the mistake of turning a specific conflict into a showdown with 1.3 billion Chinese people.

#### Plan solves U.S.-China reprocessing cooperation.

Blythe J. Lyons et. al, March 2009, John R. Lyman, Mihaela Carstei, and General Richard L. Lawson (USAF), “United States-China Cooperation On Nuclear Power: An Opportunity for Fostering Sustainable Energy Security,” Atlantic Council, <http://www.acus.org/files/publication_pdfs/65/AtlanticCouncil-USChinaNuclearPower.pdf>

Cooperation on the development of advanced fuel cycle technologies, already underway in U.S.-China working groups, will provide significant opportunities to share rather than duplicate knowledge and funding. Generation IV (Gen IV) international collaboration on R&D is necessary and beneficial for all participants to share costs, facilities and experience. Specific fuel cycle R&D opportunities proposed by the State Nuclear Power Technology corporation (SNPTC) include the following: Advanced fuel, such as mixed oxide (MOX) fuel, and metal fuel; Transmutation technology, such as fast reactor and accelerator driven systems; Reprocessing technologies, such as MOX spent fuel reprocessing, dry processing, on-site recycle; and, Repository design technology. 14 . The Generation IV International Forum (GIF) will provide a good framework to deal with intellectual property issues. If prototype or demonstration plants were to be built under the aegis of the GIF, it could also provide experience in dealing with legal and regulatory issues. Issues such as design ownership, who would build the facility, cost sharing would have to be addressed. As countries have vested interests in certain types of technologies, resolution of such issues may be difficult. • • • 15 . The Global Nuclear Energy Partnership (GNEP): The U.S., which led the way in establishing the international collaborative effort to develop proliferation-resistant technologies and institutions, should take advantage of its leadership position to nurture and expand GNEP’s international activities. As in GIF, there are advantages to sharing technical expertise and pooling financial resources. GNEP is already in place and the Obama Administration can take advantage of the years of effort it took to set up the framework for international collaboration while adapting GNEP goals to current realities and domestic nuclear development policies. Consistency in U.S. nuclear energy policies, especially in relation to international efforts, is crucial to foster global acceptance of a safe, secure and sustainable nuclear power. The Chinese participants signaled their desire to improve both government-to-government cooperation and commercial sector ties. It appears that the U.S. government is equally interested in working with China to tackle the overarching challenges of developing a safe and secure commercial nuclear fuel cycle. By supporting and participating in this Dialogue, U.S. industry and government participants have demonstrated their commitment to dealing with the challenges to realize the burgeoning nuclear trade between the two countries.

#### This solves U.S.-China relations.

Timothy Gardner & Ayesha Rascoe, 1-19-2011, “Clean energy seen as ‘bright spot’ in U.S.-China relations”, Reuters, <http://www.reuters.com/article/2011/01/19/us-usa-china-energy-idUSTRE70H5WB20110119>

Cooperation on clean energy could be a high point in U.S.-China relations leading to benefits for both countries, government and business officials said ahead of a summit between Chinese President Hu Jintao and President Barack Obama. Disputes between the world's two largest economies and energy consumers over China's wind power subsidies and its slowdown in exports of rare earths minerals, used in everything from wind turbines to cell phones, have dominated headlines in recent months. The countries are also having wider arguments. The United States says China's currency, the yuan, is undervalued and Washington is pushing Beijing for help in persuading North Korea to abandon nuclear weapons. But with rising concerns about oil prices, now above $90 a barrel, energy security, and global warming, officials said the world's biggest developed country and the biggest developing country have much to learn from each other. Progress can be made on sharing technologies on efficiency, cleaner coal, and development of renewables like wind and solar power, they said. As China tries to transform its economy from the manufacturing of cheap goods into one developing and distributing sophisticated technologies, such as clean energy, spats over intellectual property rights have already troubled trade relations between the two countries. But pressure on both countries to reduce greenhouse gas emissions and reel in fossil fuel demand may push them to overcome these differences. Still, China's Minister of Science and Technology Wan Gang said at a forum on U.S-China clean energy cooperation hosted by the Brookings Institution that common interests between the two countries make clean energy an issue ripe for nurturing close ties. "I'm sure that this is one of the best points of convergence and cooperation between our two countries, and will be one of the bright spots in our future cooperation," Wan said on Tuesday.

### 2AC elections DA – Obama good

#### Romney will win -

#### PAC spending, Obama myths, independent grab.

Darren Martin, 10-3-2012, Associate Editor, The Maroon Tiger, “Four Reasons Why Mitt Romney Will Win the Election,” <http://themaroontiger.com/four-reasons-why-mitt-romney-will-win-the-election/>

1. Mitt Romney Supporters and the Anti-Obama Stronghold Between now and Nov. 6, Mitt Romney supporters and anti-Obama PACs will spend a significant amount of money in advertising aimed at dissuading Americans from voting for President Barack Obama. According to a CBS news poll, more conservatives now than in 2008 believe that Obama is a Muslim and are not comfortable with his presumed beliefs. CBS says, “30 percent of Republicans and 34 percent of conservative Republicans think he is Muslim. Among those who think he is Muslim, just 26 percent are comfortable with his beliefs.” Whether misconstrued or true, these growing beliefs can substantially affect Obamas’ chances of being re-elected.2. Mitt Romney’s Billion-Dollar Donors the Romney PACs, billion-dollar donors, Karl Rove’s robust funding operation American Crossroads and non-profit organizations are ensuring that Romney’s pockets will never run dry. According to the New York Times, Romney has a presumed budget of $633 million with $530 million spent, in comparison to Obama’s budget of approximately $690 million with $615 million spent. Most of the money raised by Obama, however, was raised by grassroots donors who donated money in increments of $5-$20. Romney has supporters who can increase his budget at any time to outspend Obama. This presents a challenge for Obama as he would have to work three times as hard to ensure he stays up to par in campaign donations. One check could slide Romney into the White House. 3. Mitt Romney will lose the electoral vote but win the popular vote Remember Al Gore and the Electoral College vs. Popular vote scandal of 2000? History could easily repeat itself in 2012. Obama is leading the major polls but these leads are at or barely above the margin of error. Thus, in actuality, Obama and Romney can be 50/50 in the race on Nov. 6. While polls predict a Democratic win in the electoral vote, what will happen if Romney wins the popular vote? Of course the case would go to the Supreme Court and they will form a verdict, but the issue is that Obama is not as far ahead as voters may think.4. Gary Johnson, the third-party candidate, may swing the election towards Mitt Romney due to Americans who have a disdain for the president. There is a new twist in the election; three candidates are running for the presidency, not two. Former Governor of New Mexico Gary Johnson is a libertarian candidate who has generated buzz in the media as the presidential race continues. Johnson and his Live Free campaign have gained support throughout the country with approximately $650,000 raised by over 7,000 supporters. Although his campaign is not as substantial as Romney’s or Obama’s, this growing base of supporters may deter the independent votes that Obama needs to secure the election. Thus, Romney may develop a lead and snatch the presidency from Obama before our eyes.

#### Polls are inaccurate to predict the election.

Roger Kimball, 10-1-2012, PJ Media and The New Criterion, Kimball is the publisher of Encounter Books, PJ Media, “The Narrative in London,” <http://pjmedia.com/rogerkimball/2012/10/01/the-narrative-in-london/>

There was some surprise (not to say incredulity), then, when I repeated my frequent refrain (like a broken record) that I thought Mitt Romney would not only win but win big. I was not surprised by the wonder with which my prediction was greeted. The Narrative, nearly seamless in the United States, is positively monolithic in the UK. And there is this difference: in the U.S., the idea that Barack Obama has the election sewn up, while assiduously disseminated by the media, is at least treated to some of the skepticism it deserves by a large and vibrant dissenting commentariat, to whose mast your humble correspondent proudly nails his colors. That is one reason that, although you’ll rarely hear a peep of dissent on the “major” networks or politically correct organs like The New York Times, there is nevertheless a strong and indeed growing current of contrary sentiment, broadcast by venues like PJ Media but underwritten by a vast electorate that is seething with discontent over the top-down, socialist, spread-the-wealth-around policies of our handsome but shockingly incompetent president. It’s the latter that matters: what people like me (whatever their political persuasion) say is of interest only as a more or less accurate thermometer. The heat, the actual evidence of life, is produced by a pulsing body politic that goes about its business utterly unconcerned by what pundits say. This is as it should be but it is not, I think, as vividly appreciated as it should be. Hence the surprised skepticism that greeted my announced confidence that Romney would win. “But all the polls say Obama will win,” came a chorus of objection. Ah, the polls. I pointed out, as I have often pointed out here, that polls are often fragile, unreliable constructs: more the product of hope than the evidence of fact. I mentioned that Democrats are typically oversampled, that most polls (Rasmussen is an exception) canvass registered rather than likely voters, and that in general the whole scenario or context in which poll data is being assembled is predicated on 2008 patterns of turnout and voter enthusiasm. Need I observe that the situation in 2012 is very different from what it was in 2008? In 2008, Barack Obama outraised his rival by at least 3 to 1. (He officially raised $771 million to John McCain’s $239 million; the actual discrepancy was even bigger.) The autumn of 2008, remember, marked the beginning of the most shattering economic crisis the world has seen since the Great Depression: Obama came to town promising to change all that. Meanwhile, his opponent temporarily suspended his campaign “to deal with the economic crisis,” selected an astoundingly inappropriate running mate (much though I admire her personally), and generally ran the most anemic, unfocused campaign in recent memory. Obama also had the tremendous advantage of novelty: America’s first black (well, half-black, but good enough for government work) president! How that warmed the cockles of every liberal heart. And remember, too, how unpopular George Bush and the war in Iraq were. Obama was going to change all that too. He was going to make the seas stop rising and “heal the planet” (how emetic it seems now!). The moment he was inaugurated, he said, “Muslim hostility” would ease. (I wonder what Chris Stevens’s family thinks of that?) Take a look at the footage of Obama’s 2008 acceptance speech: has anything closer to the intoxication of Nuremberg been seen in American politics?

#### True interpretations of polling data shows Romney win – 2008 estimates.

LN, 10-3-2012, political analyst, conservative focus, “If the Election Were Held Today, Mitt Romney Would Be Elected President of the United States,” <http://www.freerepublic.com/focus/f-bloggers/2939643/posts>

I know the meme that has been going around is that the Romney campaign is in trouble and Obama has this thing won. Nothing could be further from the truth. People are basing this conclusion on polls that are using 2008 as a basis for their turnout estimates, which is just not going to happen. 2008 is what is called a "wave" year where one party has a tsunami of votes that pushes them to victory across the board. Besides winning the Presidency, the Democrats were able to pick up 21 additional House seats and a whopping 8 Senate seats, giving them a filibuster proof majority. This came on the heels of a two term Republican presidency in which the incumbent became very unpopular due to a financial meltdown, which coincided almost exactly with the election and the ongoing angst over the war in Iraq. It also didn't help the Republicans that their nominees for President and Vice President hardly exuded competence or readiness for the job. Besides Sarah Palin's disastrous media interviews there was that whole thing with McCain suspending his campaign to work on the financial crisis, then not doing anything. For obvious reasons, 2012 is very different. This time the Democrats are reaping what they have sowed with a 4 year recession, an inconceivably high debt and regulations that are felt nationwide. Based on Gallup data, there have been some major shifts from 2008 in terms of party identification. Let's take a look (h/t Michael Franc): Party identifications shift as does turnout. You can't assume that an election will look like the last one. In 2004 in Ohio, Republicans had a 5% advantage over Democrats, which turned into an 8% deficit in 2008, that's a 13 point swing in 4 years! As someone who works with models all the time (excel not fashion), one thing I've learned is that it is garbage in, garbage out. If you want to get a certain answer you almost always can get it, irrespective of the underlying data. In the polls we are seeing, it almost doesn't matter what people say, what is driving the results are the party turnout assumptions made by the analysts. What you have to do to combat this is look at the underlying data itself and try to make adjustments to the assumptions. Let's take a look at some polls. In the National Journal poll that came out today, Romney and Obama were both tied at 47%, however this was based on a Democratic advantage of 7 points over Republicans essentially in line with 2008, which is obviously not going to happen. Also, Romney is leading Obama by a full 8 points amongst Independents. It's not hard to see that if Republican and Democratic voting is even close to parity, Romney is going to win this thing, and probably by 5-7% I realize the National Journal poll is just one poll, so let's look at another one, CNN, which showed that Obama supposedly had a 3 point lead over Romney, 50-47. Once again, they used 2008 as their model with an 8 point Democrat voter advantage but once again Romney is winning amongst Independents by 8%.What about the state polls you ask? Most of them are highly questionable with methodologies all over the place. As we have seen from the Gallup table above, party identifications have shifted markedly since 2008 so as most pollsters are using 2008 numbers they are very wrong. In fact, in some cases pollsters seem to be expecting a year even worse for Republicans than 2008, which is laughable. In the Columbia Dispatch poll of Ohio voters, only 43% of their sample voted for McCain in 2008. He took Ohio with 47%. So that knocks off 4% off of Obama's 9% lead right there! If you go state by state, you see similar issues. In a We Ask America poll of Nevada voters, Obama supposedly has a 10 point lead over Romney despite the fact that Romney is actually winning independents by 15 points! Given that party identification is almost at parity according to Gallup, I'd put Nevada in Romney's column. And let's not forget the lesson from the Wisconsin recall election. The Wisconsin exit polls were a great reminder how wrong polls can be. Remember that they showed Walker tied with his opponent while in actuality he won by 7 whole points. These polls were conducted the exact same day as the election and interviewed people as they were leaving the voting booth. This means that you wouldn't get any skew due to people saying that they are likely voters when instead they are playing their PS3 on Election Day and yet it was still off by a whole 7 points! If Mitt Romney wins, I'm sure there will be liberals going nuts shouting how the Republicans stole the election because the results don't match the polls. Well guess what, that is what happens when you take polls at face value and don't look at the details.

#### Fast reactors developed and popular with the public – waste management.

Tom Blees, 5-31-2011, is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Idaho Samizdat: Nuke Notes, “Critique of MIT Nuclear Fuel Cycle Report,” <http://djysrv.blogspot.com/2011/05/critique-of-mit-nuclear-fuel-cycle.html>

The public views adequate nuclear waste management as a critical linchpin in further development of nuclear energy. The technical community, therefore, needs to provide a practical approach to deal with the waste issue. The Fukushima accidents call attention to the importance of managing spent fuel safely. It appears the best technical approach is extracting the actinides from spent fuel, which reduces the effective lifetime of nuclear wastes from ~300,000 years to ~300 years. Extracting actinides (and using them to generate power) is by far the best technical approach to dealing with nuclear wastes. The MIT Study fails to mention this important possibility. If actinide extraction is chosen as a pathway for waste “disposal,” the recovered actinides still must be transmuted to fissile material or fissioned directly. This can be done only in fast reactors. Actinides can be burned in fast reactors, generating energy and at the same time creating more fissile material for the future. A key advantage of fast reactors is that they can be utilized as “burners” when excess plutonium inventories exist, and then converted to “breeders” whenever needed. Only fast reactors can satisfy the waste-disposal mission simply and effectively while extending utilization of the uranium resources by more than two orders of magnitude. Thermal reactors—such as LWRs and high-temperature gas-cooled reactors—utilize less than 1% of uranium resources, even with recycling of plutonium and some of the uranium. Thermal-spectrum reactors, even optimized, can extend the resource utilization only marginally, and they cannot burn actinides effectively. Actinide recycling also requires an efficient processing technology, with improved economics and nonproliferation characteristics. The pyroprocessing technique based on electrorefining, developed in the IFR program, has the potential to recover the actinides from LWR spent fuel as well as to fully recycle fuel in fast reactors. The fundamentals of pyroprocessing have already been demonstrated – this is not new science. The technology is now ready for pilot-scale demonstration, and it should be given the highest priority. We do not need decades of R&D to pursue all esoteric ideas. We already have in our hands on the most advanced technology, technology that no other countries possess. The MIT Study also talks about the inter-generational equity considerations. We believe that our generation should demonstrate the technologies that will solve the energy supply and waste management problems, rather than proposing a century-long interim storage of the spent nuclear fuel.

#### Advocates of nuclear energy swamp unpopularity – strong media campaign.

Sharon Squassoni, November 2009, is a senior associate at the Carnegie Endowment for International Peace in the nonprolifera-tion program. Prior to joining Carnegie, she held various positions in the US government, including at the Congressional research Service, the Arms Control and Disarmament Agency, and the US State Department, is a frequent contributor to journals, magazines and books on nuclear proliferation and defense, The Centre for International Governance Innovation, No. 7, “The US Nuclear Industry: Current Status and Prospects under the Obama Administration,” p. 7-8, <http://www.carnegieendowment.org/files/Nuclear_Energy_7_0.pdf>

Advocates of nuclear energy have embarked on strong marketing campaigns. For example, the Nuclear Energy Institute (NEI) has run advertisements describing nuclear energy as “clean air” energy. The Clean and Safe Energy Todd Whitman and former Greenpeace activist Patrick Moore, has been funded by the nuclear industry. One industry slogan is “Know new nukes.” The slogan appears over a field of yellow soybean flowers. “Clean” energy appears to be a euphemism for renewables plus nuclear power, which is why anti-nuclear advocates were heart-ened by President Obama’s February address to Congress in which he spoke only of renewable energy, rather than clean energy (Wasserman, 2009). Opponents of nuclear energy generally have less money to spend on media campaigns, and their message is less pithy. They stress that nuclear power is not the solution to climate change and that it is dangerous, polluting, unsafe, and expensive. Only a few planned nuclear plants are in states that do not already have power plants, such as Utah, Missouri and Idaho. Most of the expected plants will be constructed on existing reactor sites, which make them more acceptable to the local public.

#### Recent polls say benefits trump Fukushima with voters.

Tim Gitzel, September 2012, senior vice-president and chief operating officer and was appointed president, President and CEO of Cameco, extensive experience in Canadian and international uranium mining activities, executive vice-president, mining business unit for AREVA, College of Law at the University of Saskatchewan, serves as vice-chair on both the Mining Association of Canada and the Canadian Nuclear Association boards of directors, past president of the Saskatchewan Mining Association, and has served on the boards of Sask Energy, co-chair of the Royal Care campaign, a recipient of the Centennial Medal, World Nuclear Association (WNA), “US Nuclear Power Policy,” <http://www.world-nuclear.org/info/inf41_US_nuclear_power_policy.html>

Public opinion regarding nuclear power has generally been fairly positive, and has grown more so as people have had to think about security of energy supplies. Different polls show continuing increase in public opinion favorable to nuclear power in the USA. More than three times as many strongly support nuclear energy than strongly oppose it. Two-thirds of self-described environmentalists favor it. A May 2008 survey (N=2925) by Zogby International showed 67% of Americans favored building new nuclear power plants, with 46% registering strong support; 23% were opposed10. Asked which kind of power plant they would prefer if it were sited in their community, 43% said nuclear, 26% gas, 8% coal. Men (60%) were more than twice as likely as women (28%) to be supportive of a nuclear power plant. A March 2010 Bisconti-GfK Roper survey showed that strong public support for nuclear energy was being sustained, with 74% in favor of it 11. In particular, 87% think nuclear will be important in meeting electricity needs in the years ahead, 87% support license renewal for nuclear plants, 84% believe utilities should prepare to build more nuclear plants, 72% supported an active federal role in encouraging investment in "energy technology that reduces greenhouse gases", 82% agree that US nuclear plants are safe and secure, 77% would support adding a new reactor at the nearest nuclear plant, and 70% say that USA should definitely build more plants in the future. Only 10% of people said they strongly opposed the use of nuclear energy. In relation to recycling used nuclear fuel, 79% supported this (contra past US policy), and the figure rose to 85% if "a panel of independent experts" recommended it. Although 59% were confident that used reactor fuel could be stored safely at nuclear power plant sites, 81% expressed a strong desire for the federal government to move used nuclear fuel to centralized, secure storage facilities away from the plant sites until a permanent disposal facility is ready. Half of those surveyed considered themselves to be environmentalists. A February 2011 Bisconti-GfK Roper survey showed similar figures, and that 89% of Americans agree that all low-carbon energy sources – including nuclear, hydro and renewable energy – should be taken advantage of to generate electricity while limiting greenhouse gas emissions. Just 10% disagreed. Also some 84% of respondents said that they associate nuclear energy "a lot" or "a little" with reliable electricity; 79% associate nuclear energy with affordable electricity; 79% associate nuclear energy with economic growth and job creation; and 77% associate nuclear energy and clean air. A more general March 2010 Gallup poll (N=1014) on energy showed 62% in favor of using nuclear power, including 28% strongly so, and 33% against, the most favorable figures since Gallup began polling the question in 1994. However, only 51% of Democrat voters were in favour12. An early March 2011 Gallup poll just before the Fukushima accident showed 57% in favor and 38% against, and in March 2012 (N=1024) still 57% in favor with 40% against (men: 72%-27%, women 42%-51%). Regarding plant safety, the polls showed consistent 56-58% positive views over 2009-12, but men-women split similar. A survey conducted in September 2011 by Bisconti Research Inc. with GfK Roper showed that although support for nuclear power decreased following the Fukushima accident and compared with a year earlier (a survey carried out in March 2010 by Bisconti Research found 74% of Americans favored nuclear power), 62% of the 1000 adults surveyed in the latest poll were supportive of utilizing nuclear power while 35% expressed opposition. The survey found that 82% of Americans believed that lessons had been learned from Fukushima and 67% of respondents considered US nuclear power plants safe (the same level as reported one month before the nuclear accident in Japan occurred). Also 85% of said that an extension of commercial operation should be granted to those plants that comply with federal safety standards, and 59% believed more nuclear power plants should definitely be built in the future, while 75% contend that “Electric utilities should prepare now so that new nuclear power plants could be built if needed in the next decade.” Finally, further expansion of the site of the nearest already operating nuclear power plant is supported by 67% and opposed by 28%. By February 2012 support had increased slightly to 64% supported using nuclear power, while 33% opposed it. Some 81% of respondents believed that nuclear energy will be important in meeting the USA's future electricity needs (compared with 80% in September), and 82% thought the USA should "take advantage of all low-carbon energy sources, including nuclear, hydro and renewable energy." Significantly, 74% believed that nuclear power plants operating in the USA are safe, up from 67% in both 2011 surveys. However, a Harris survey in February 2012 (N=2056) showed that only 40% of US adults believed that the benefits of nuclear outweigh its risks, while 41% thought the reverse. A similar poll conducted in 2011 before the Fukushima accident occurred, indicated that 42% thought that the benefits outweighed the risks, while 37% believed the opposite. In a 2009 poll, 44% thought the benefits outweighed the benefits, while 34% thought they did not. The southern states had the highest percentage of people believing the benefits outweigh the risks (at 43%), compared with 33% in the East and 41% in the Midwest and West. Some 42% of Americans thought that the benefits of using coal outweighed the risks (up from 38% positive in 2011), while 40% said the risks outweighed the benefits.

#### Loan guarantees specifically for nuclear is popular with congress – lower tax liability.

Sharon Squassoni, November 2009, is a senior associate at the Carnegie Endowment for International Peace in the nonprolifera-tion program. Prior to joining Carnegie, she held various positions in the US government, including at the Congressional research Service, the Arms Control and Disarmament Agency, and the US State Department, is a frequent contributor to journals, magazines and books on nuclear proliferation and defense, The Centre for International Governance Innovation, No. 7, “The US Nuclear Industry: Current Status and Prospects under the Obama Administration,” p. 8, <http://www.carnegieendowment.org/files/Nuclear_Energy_7_0.pdf>

The single most important spur to build new reactors in the United States is loan guarantees. In fact, industry sources indicate they are so critical that new plants may not be built without them. These guarantees are attractive to the US Congress because they offer a way to influence markets and incentivize specific projects, and because they are “scored” as a lower liability for the taxpayer than the actual amount. Thus, a potential US$50 billion in loan guarantees could be scored by the Congressional Budget Office as only costing the taxpayer US$500 million. As originally proposed in the Energy Policy Act (EPACT) of 2005, loan guarantees would only have applied to nuclear power, but this was broadened to apply to a wide range of “innovative energy technologies,” including renewable energy technologies, which further extends their attractiveness within Congress

#### Energy is not key to the election.

Cleantech Finance, 8-14-2012, “VP announcement reinforces stark differences on energy issues for November,” <http://www.cleantechfinance.net/tag/election/>

But this also raises another question. Just how important is energy policy to the voting public? Energy and environmental issues repeatedly rank low when it comes to issues that matter to the general electorate. In fact, a recent study by research organization Public Agenda found that more than half of Americans cannot name one type of renewable energy and nearly 40 percent can’t identify a fossil fuel. Many incorrectly believe that the US gets most of its oil from the Middle East. An Associated Press-NORC Center for Public Affairs Research poll found that less than 20 percent of Americans know important details about policies that could save them a lot of money, including energy efficiency rebates, tax credits, and other incentives.

#### Obama and Romney support new licensing for nuclear reactor designs – not a win for either candidate.

NEI (Nuclear Energy Insight), Summer 2012, “Obama, Romney Support Nuclear Energy, Offer Views on Financing, Regulation,” <http://www.nei.org/resourcesandstats/publicationsandmedia/insight/insightsummer2012/obama-romney-support-nuclear-energy-offer-views-on-financing-regulation/>

The Obama administration, in support of what it calls “prudent deployment of nuclear energy through loan guarantees,” has conditionally committed to use federal guarantees to reduce the cost of financing two Georgia reactors. That action alone would translate to millions of dollars in consumer savings. Romney also wants to spur nuclear power plant development. His 2011 energy plan calls for reform of the “cumbersome and restrictive” U.S. Nuclear Regulatory Commission. Romney wants the agency to review several new reactor designs and ensure that licensing decisions based on pre-approved designs are issued within two years. Romney in 2011 said he prefers streamlining the federal permitting process for the use of loan guarantees through the Department of Energy. If permits are not issued for approved sites and designs within a specified time period, the government should “refund the money to [nuclear energy utilities] that have invested to build the facility.”

## 1AR

### 1AR critique

#### Overemphasis on method destroys effectiveness of the discipline.

Alexander Wendt, 2002, Professor of International Security and PolSci, Ohio State, Handbook of IR, p. 68

It should be stressed that in advocating a pragmatic view we are not endorsing method-driven social science. Too much research in international relations chooses problems or things to be explained with a view to whether the analysis will provide support for one or another methodological ‘ism’. But the point of IR scholarship should be to answer questions about international politics that are of great normative concern, not to validate methods. Methods are means, not ends in themselves. As a matter of personal scholarly choice it may be reasonable to stick with one method and see how far it takes us. But since we do not know how far that is, if the goal of the discipline is insight into world politics then it makes little sense to rule out one or the other approach on a priori grounds. In that case a method indeed becomes a tacit ontology, which may lead to neglect of whatever problems it is poorly suited to address. Being conscious about these choices is why it is important to distinguish between the ontological, empirical and pragmatic levels of the rationalist-constructivist debate. We favor the pragmatic approach on heuristic grounds, but we certainly believe a conversation should continue on all three levels.

### 1AR politics

#### Romney won’t collapse the economy

Paul Krugman, 2-23-2012, American economist, Professor of Economics and International Affairs at the Woodrow Wilson School of Public and International Affairs at Princeton University, Centenary Professor at the London School of Economics, and an op-ed columnist for The New York Times, “Romney’s Economic Closet,” New York Times, <http://www.nytimes.com/2012/02/24/opinion/krugman-romneys-economic-closet.html>

According to Michael Kinsley, a gaffe is when a politician accidentally tells the truth. That’s certainly what happened to Mitt Romney on Tuesday, when in a rare moment of candor — and, in his case, such moments are really, really rare — he gave away the game. Speaking in Michigan, Mr. Romney was asked about deficit reduction, and he absent-mindedly said something completely reasonable: “If you just cut, if all you’re thinking about doing is cutting spending, as you cut spending you’ll slow down the economy.” A-ha. So he believes that cutting government spending hurts growth, other things equal. The right’s ideology police were, predictably, aghast; the Club for Growth quickly denounced the statement as showing that Mr. Romney is “not a limited-government conservative.” On the contrary, insisted the club, “If we balanced the budget tomorrow on spending cuts alone, it would be fantastic for the economy.” And a Romney spokesman tried to walk back the remark, claiming, “The governor’s point was that simply slashing the budget, with no affirmative pro-growth policies, is insufficient to get the economy turned around.” But that’s not what the candidate said, and it’s very unlikely that it’s what he meant. Almost surely, he is, in fact, a closet Keynesian. How do we know this? Well, for one thing, Mr. Romney is not a stupid man. And while his grasp of world affairs does sometimes seem shaky, he has to be aware of the havoc austerity policies are wreaking in Greece, Ireland and elsewhere. Beyond that, we know who he turns to for economic advice; heading the list are Glenn Hubbard of Columbia University and N. Gregory Mankiw of Harvard. While both men are loyal Republican spear-carriers — each served for a time as chairman of George W. Bush’s Council of Economic Advisers — both also have long track records as professional economists. And what these track records suggest is that neither of them believes any of the propositions that have become litmus tests for would-be G.O.P. presidential candidates. Consider Mr. Mankiw, in particular. Modern Republicans detest Keynes; Mr. Mankiw is the editor of a collection of papers titled “New Keynesian Economics.” In an early edition of his best-selling textbook, he dismissed supply-side economics — the doctrine embraced by the sainted Ronald Reagan — as the creation of “charlatans and cranks.” And, in 2009, he called for higher inflation as a solution to the economic crisis, a position anathema to Republicans like Representative Paul Ryan, the chairman of the House Budget Committee, who warn ominously about the evil of “debasing” our currency. Given his advisers, then, it seems safe to assume that what Mr. Romney blurted out Tuesday reflected his real economic beliefs — as opposed to the nonsense he pretends to believe, because it’s what the Republican base wants to hear.

#### Just rhetoric – on Russia.

Alexander Gasyuk, 6-13-2012, “Romney keeps the gloves off,” http://rbth.ru/articles/2012/06/13/romney\_keeps\_the\_gloves\_off\_15854.html

Given the sharp disagreements between the United States and Russia on Syria, which is now careening toward civil war, Republicans will harshly criticize every attempt by Obama to further emphasize any progress in bilateral relations. “Some realism regarding U.S.-Russia relations would be constructive for the White House if it wants to avoid Republican attacks,” Simes told Russia Now. But this doesn’t mean that presumptive GOP nominee Mitt Romney, if elected, will transform his public anti-Russian statements into political practice. “I believe that most likely Governor Romney believes in the statements he made, but that does not mean that in practice this rhetoric will be his guide for action,” Simes said. “Many statements from the GOP candidates including those on foreign affairs surely have to be taken in the context of the political and electoral reality in the U.S.,” Aron said. “It is not only possible, but highly probable,” that Mitt Romney’s views on Russia will evolve if he is elected, Simes said. American political history is rife with examples of strategic U-turns that begin the morning after the inauguration balls. When Dwight Eisenhower ran for president, his advisers—such as the famous John Foster Dulles—spoke of Harry Truman’s “cowardly” policy of containment of the Soviet Union and called for the speedy liberation of Eastern Europe. However President Eisenhower instead started the process of normalizing relations through personal meetings with Nikita Khrushchev in 1955 and 1959. President Richard Nixon was viewed as a leading anti-Communist, but it was Nixon who found the way toward detente. Nixon made the first-ever trip by an American president to then-Communist Russia in 1972, but also opened the door to dialogue with Communist China. No one should be too surprised that Mitt Romney, if elected, might rethink his position. When needed for supply routes, Russia is no longer America’s “number one geopolitical foe.” As a president, many observers believe he would take a more realistic approach to handling bilateral ties.

#### Political forecasts, economic data, swing-states, and accountability.

Peter Caughey & David Kelly, 10-4-2012, University of Colorado Boulder, “Updated election forecasting model still points to Romney win, University of Colorado study says,” <http://www.colorado.edu/news/releases/2012/10/04/updated-election-forecasting-model-still-points-romney-win-university>

According to their updated analysis, Romney is projected to receive 330 of the total 538 Electoral College votes. President Barack Obama is expected to receive 208 votes -- down five votes from their initial prediction -- and short of the 270 needed to win. The new forecast by political science professors Kenneth Bickers of CU-Boulder and Michael Berry of CU Denver is based on more recent economic data than their original Aug. 22 prediction. The model itself did not change. “We continue to show that the economic conditions favor Romney even though many polls show the president in the lead,” Bickers said. “Other published models point to the same result, but they looked at the national popular vote, while we stress state-level economic data.” While many election forecast models are based on the popular vote, the model developed by Bickers and Berry is based on the Electoral College and is the only one of its type to include more than one state-level measure of economic conditions. They included economic data from all 50 states and the District of Columbia. Their original prediction model was one of 13 published in August in PS: Political Science & Politics, a peer-reviewed journal of the American Political Science Association. The journal has published collections of presidential election models every four years since 1996, but this year the models showed the widest split in outcomes, Berry said. Five predicted an Obama win, five forecast a Romney win, and three rated the 2012 race as a toss-up. The Bickers and Berry model includes both state and national unemployment figures as well as changes in real per capita income, among other factors. The new analysis includes unemployment rates from August rather than May, and changes in per capita income from the end of June rather than March. It is the last update they will release before the election. Of the 13 battleground states identified in the model, the only one to change in the update was New Mexico -- now seen as a narrow victory for Romney. The model foresees Romney carrying New Mexico, North Carolina, Virginia, Iowa, New Hampshire, Colorado, Wisconsin, Minnesota, Pennsylvania, Ohio and Florida. Obama is predicted to win Michigan and Nevada. In Colorado, which Obama won in 2008; the model predicts that Romney will receive 53.3 percent of the vote to Obama’s 46.7 percent, with only the two major parties considered. While national polls continue to show the president in the lead, “the president seems to be reaching a ceiling at or below 50 percent in many of these states,” Bickers said. “Polls typically tighten up in October as people start paying attention and there are fewer undecided voters.” The state-by-state economic data used in their model have been available since 1980. When these data were applied retroactively to each election year, the model correctly classifies all presidential election winners, including the two years when independent candidates ran strongly: 1980 and 1992. It also correctly estimates the outcome in 2000, when Al Gore won the popular vote but George W. Bush won the election through the Electoral College. In addition to state and national unemployment rates, the authors analyzed changes in personal income from the time of the prior presidential election. Research shows that these two factors affect the major parties differently: Voters hold Democrats more responsible for unemployment rates, while Republicans are held more responsible for fluctuations in personal income. Accordingly -- and depending largely on which party is in the White House at the time -- each factor can either help or hurt the major parties disproportionately. In an examination of other factors, the authors found that none of the following had a statistically significant effect on whether a state ultimately went for a particular candidate: The location of a party’s national convention, the home state of the vice president or the partisanship of state governors.

#### Romney can lose states and pull out the election.

Joseph Cameron, 10-4-2012, The Hill, “GOP takes new tack: Romney can still win while losing Ohio,” <http://thehill.com/homenews/campaign/260133-gop-takes-new-tack-romney-can-still-win-while-losing-ohio>

Senior Republican strategists are talking openly about how Mitt Romney’s campaign can win the presidency even if it loses Ohio. That new tack suggests the path to victory could be narrowing for the GOP nominee, who has cut into President Obama’s lead nationally and in some states but continues to trail in the key swing state, which no Republican has ever lost while winning the presidency. The first presidential debate could greatly alter the campaign's strategy, however, following Romney's strong performance. The GOP nominee came out firing at Obama, who spent much of the evening on the defense. Party leaders, including Republican National Committee Chairman Reince Priebus and strategist Karl Rove, have argued in recent days that there is a path to victory for Romney without Ohio. “Ohio is extremely important but I also know that we have other good things going for us right now as well: Wisconsin, Iowa, Colorado, Nevada,” Priebus told The Hill on Wednesday morning. While he described Ohio as “extremely close,” he says he also sees “avenues to 270 [electoral votes] opening up for Mitt Romney in places that weren’t there in ’08.”

# KENTUCKY ROUND 6 – Louisville

## 1AC – NEW ADV!

### 1AC spent fuel advantage

#### ADVANTAGE: 1 spent fuel

#### Utilities currently store waste in interim storage on site – no reprocessing forces this option.

Robert Alvarez, May 2011, is a Senior Scholar at IPS, where he is currently focused on nuclear disarmament, environmental, and energy policies, former secretary in the DOE, “Spent Nuclear Fuel Pools in the U.S.: Reducing the Deadly Risks of Storage”, Institute for Policy Studies, <http://www.scribd.com/doc/95322584/Spent-Nuclear-FuelPools-in-the-U-S-Reducing-the-Deadly-Risks-of-Storage>

This tragic event is casting a spotlight on the spent fuel pools at U.S. nuclear reactors, which store some of the largest concentrations of radioactivity on the planet. For nearly 30 years, Nuclear Regula-tory Commission waste-storage requirements have been contingent on the timely opening of a permanent waste repository. This has allowed plant operators to legally store spent fuel in onsite cooling pools much longer, and at higher densities (on average four times higher), than was originally intended. Spent fuel pools were designed to be temporary and to store only a small fraction of what they currently hold. “Neither the AEC [Atomic Energy Com-mission, now the Energy Department] nor utilities anticipated the need to store large amounts of spent fuel at operating sites,” said a report by Dominion Power, the owner of the Millstone nuclear reactor in Waterford, Connecticut in October 2001. “Large-scale commercial reprocessing never materialized in the United States. As a result, operating nuclear sites were required to cope with ever-increasing amounts of irradiated fuel... This has become a fact of life for nuclear power stations.

#### U.S. spent fuel pools are a unique risk for mass radiation leaks due to poor protection.

Robert Alvarez, May 2011, is a Senior Scholar at IPS, where he is currently focused on nuclear disarmament, environmental, and energy policies, former secretary in the DOE, “Spent Nuclear Fuel Pools in the U.S.: Reducing the Deadly Risks of Storage”, Institute for Policy Studies, <http://www.scribd.com/doc/95322584/Spent-Nuclear-FuelPools-in-the-U-S-Reducing-the-Deadly-Risks-of-Storage>

Nearly 40 percent of the radioactivity in U.S. spent fuel is cesium-137 (4.5 billion curies) — roughly 20 times more than released from all atmospheric nuclear weapons tests. U.S. spent pools hold about15-30 times more cesium-137 than the Chernobyl ac-cident released. For instance, the pool at the Vermont Yankee reactor, a BWR Mark I, currently holds nearly three times the amount of spent fuel stored at Dai-Ichi's crippled Unit 4 reactor. The Vermont Yankee reactor also holds about seven percent more radioactivity than the combined total in the pools at the four troubled reactors at the Fukushima site. Even though they contain some of the larg-est concentrations of radioactivity on the planet, U.S. spent nuclear fuel pools are mostly contained in ordi-nary industrial structures designed to merely protect them against the elements. Some are made from ma-terials commonly used to house big-box stores and car dealerships. The United States has 31 boiling water reactors (BWR) with pools elevated several stories above ground, similar to those at the Fukushima Dai-Ichi station. Asin Japan, all spent fuel pools at nuclear power plants do not have steel-lined, concrete barriers that cover reactor vessels to prevent the escape of radioactivity. They are not required to have back-up generators to keep used fuel rods cool, if off site power is lost. The 69 Pressurized Water (PWR) reactors operating in the U.S. do not have elevated pools, and also lack proper containment and several have large cavities beneath them which could exacerbate leakage.

#### Accident is likely now - the majority of U.S. spent fuel pools are in earthquake zones.

Robert Alvarez, May 2011, is a Senior Scholar at IPS, where he is currently focused on nuclear disarmament, environmental, and energy policies, former secretary in the DOE, “Spent Nuclear Fuel Pools in the U.S.: Reducing the Deadly Risks of Storage”, Institute for Policy Studies, <http://www.scribd.com/doc/95322584/Spent-Nuclear-FuelPools-in-the-U-S-Reducing-the-Deadly-Risks-of-Storage>

There are 104 U.S. commercial nuclear reactors operating at 64 sites in 31 states that are holding some of the largest concentrations of radioactivity on the planet in onsite spent fuel pools. The pools, typically rectangular or L-shaped basins about 40to 50 feet deep, are made of reinforced concrete walls four to five feet thick and stainless steel liners. Basins without steel liners are more susceptible to cracks and corrosion. Most of the spent fuel ponds at boiling water reactors are housed in reactor buildings several stories above ground. Pools at pressurized water reactors are partially or fully embedded in the ground, sometimes above tunnels or underground rooms. According to estimates provided by the Department of Energy, as of this year this spent fuel contains a total of approximately 12 billion curies of long-lived radioactivity (Table 1).6 Of the 65,000 metric tons estimated by the Nuclear Energy Institute to be generated by the end of 2010, 75 percent is in pools, while the remainder is in dry storage casks. Several of these reactors are located in earthquake zones (Figure 5).

#### No time to contain a U.S. waste spill due to an earthquake.

Tony Dutzik, 3-17-2011, is senior policy analyst, “What Are the Risks Posed by Spent Fuel Pools in the United States?,” Frontier Group, http://www.frontiergroup.org/blogs/blog/fg/what-are-risks-posed-spent-fuel-pools-united-states

The risks of radiation releases from the loss of coolant from spent fuel pools are quite real. Indeed, the occurrence of an earthquake that exceeds the design basis of the nuclear plant has been identified as one of the most probable causes of a loss-of-coolant accident involving spent fuel. In 2006, the U.S. National Research Council issued a detailed report on the risk posed by a terrorist attack on spent fuel pools at nuclear reactors. Among the authors’ conclusions were that “under some conditions, a terrorist attack that partially or completely drained a spent fuel pool could lead to a propagating zirconium cladding fire and the release of large quantities of radioactive materials to the environment.” The report also cited a 2001 Nuclear Regulatory Commission study, summarizing it as follows: “The analysis suggested that large earthquakes and drops of fuel casks from an overhead crane during transfer operations were the two event initiators that could lead to a loss-of-pool-coolant accident. For cases where active cooling (but not the coolant) has been lost, the thermal-hydraulic analyses suggested that operators would have about 100 hours (more than four days) to act before the fuel was uncovered sufficiently through boiling of cooling water in the pool to allow the fuel rods to ignite. This time was characterized as an 'underestimate' given the simplifications assumed for the loss-of-pool-coolant scenario.”

#### Terrorists have multiple means to cause a spent fuel pool fire.

Hui Zhang, 2003, Senior Research Associate at INESAP, “Radiological Terrorism: Sabotage of Spent Fuel Pools,” INESAP: International Network of Engineers and Scientists against Proliferation, Issue 22, p. 75-8

Until today, no accident or sabotage happened to cause the release of radioactivity from a spent fuel pool. However, many scientists and nuclear security experts are very concerned about a significant release of radioactivity by a possible spent fuel fire, especially in the case of dense packing of pools - a method that has been used by many reactor operators worldwide including for most pools in the US. The most serious risk is the loss of pool water, which could expose spent fuel to the air, thus leading to an exothermal reactions of the zirconium cladding, which would catch fire at about 900 °C. Thus, the Cs-137 in the rods could be dispersed into the surrounding atmosphere. Based on a Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plant in 2000, the US Nuclear Regulatory Commission (NRC) conceded that "the possibility of a zirconium fire cannot be dismissed even many years after a final reactor shutdown." [10] Recently, a number of nuclear scientists outside the government agency arrived at the same conclusion. For example, the new technical study Reducing the hazards from stored spent power-reactor fuel in the United States by R. Alvarez et al. [11] points out that "In the absence of any cooling, a freshly discharged core generating decay heat at a rate of 100 kWt/tU would heat up adiabatically within an hour to about 600 °C, where the zircaloy cladding would be expected to rupture under the internal pressure from helium and fission product gases, and then to about 900 °C where the cladding would begin to burn in air." In addition, although the cooler fuel could not ignite on its own, many scientists are concerned that fire from freshly spent fuel could spread to adjacent cooler fuel by some mechanisms, including zircaloy oxidation propagation. [12] Finally, even for the case of non-dense-packed pools, there could still be some sabotage scenarios that cause a significant amount of radioactive release as discussed in the following section. Thus, a loss of pool cooling could cause a pool fire. Then the question is how such a loss of pool water is brought about. A terrorist group could cause a loss of cooling water in a number of ways, such as, causing the loss of cooling, thus boiling the water off through the failure of pumps or valves, through the destruction of heat exchangers, or through a loss of power for the cooling system. It is estimated that, in the case of a loss of cooling, the time it would take for a spent fuel pool to boil down to near the top of the spent fuel would be as short as several hours, depending on the cooling time of the discharge fuel. [13] Moreover, in the case of terrorist attack, the operators of nuclear facilities might not have enough time to provide emergency cooling. Causing the drainage of coolant inventory by piping failures or siphoning, and by gate and seal failures. Furthermore, a heavy load including a fuel transport cask could be dropped in the pools thus causing a collapse of the pool floor and a water leak. As reported, "The analysis exclusively considered drops severe enough to catastrophically damage the SFP so that pool inventory would be lost rapidly and it would be impossible to refill the pool using onsite or offsite resources. There is no possibility of mitigating the damage, only preventing it." "The staff assumes a catastrophic heavy load drop (creating a large leakage path in the pool) would lead directly to a zirconium fire." [14] puncturing the pool and causing a drainage by suicide airplanes, missiles, or other explosives. For the case that spent fuel pools are located above ground level, a suicide airplane could breach the pool bottom or sidewalls and cause a complete or partial drainage. A US NRC study estimated that a large aircraft (one weighing more than 5.4 tons) would have a 45% probability of penetrating the five-foot thick concrete wall of a spent fuel pool. The NRC staff has decided that it is prudent to assume that a turbine shaft of a large aircraft engine could penetrate and drain a spent fuel storage pool. [15]

#### It’s highly likely - spent fuel pools are the largest U.S. security vulnerability.

Steve Hargreaves, 4-1-2011, “Nuclear waste: America's 'biggest security threat',” CNN Money, http://money.cnn.com/2011/04/01/news/economy/nuclear\_waste/index.htm

In the United States, 63,000 tons of nuclear waste, the sum total of all the waste generated by decades of nuclear power, sits right where it was created -- at the power plants themselves. Often, these power plants are very close to major population centers -- Washington, Boston, New York City, Philadelphia and Chicago have reactors within the 50-mile fallout zone. If the waste catches fire, a situation Japanese officials are racing to prevent at Japan's Fukushima Daiichi plant, critics say it could effectively render an area the size of half of New Jersey permanently uninhabitable. "It's probably the single greatest security vulnerability in the United States," said Kevin Kamps, radioactive waste specialist at Beyond Nuclear, a watchdog group. How close is your home to a nuclear power plant? Kamps and many other industry critics want lawmakers to mandate that most of the waste, known as spent fuel, be stored away from the main reactors in certified steel and concrete casks, then have those casks placed in fortified buildings or earthen bunkers. "But it's fallen on deaf ears in Congress," Kamps said. Currently most of the waste sits close to the reactors in large pools that resemble swimming pools. A smaller amount is kept outside in casks that critics say are poorly guarded. The reason so much waste is being stored at the nuclear power plants themselves is that the government hasn't figured out what to do with it permanently. Storing the waste in this manner was supposed to be a temporary measure until it was permanently buried deep inside Nevada's Yucca mountain. But thanks to a mix of geology and politics, that site was recently deemed unsuitable. The hunt is on for a new long term repository, but finding and building one will likely take decades. The industry and the government say storing the waste at the power plants for decades isn't a problem. "The fuel is safe, in a cask or in a pool," said David McIntyre, a spokesman for the government's Nuclear Regulatory Commission. McIntyre said the government will take a look at waste storage as part of its comprehensive review following the events in Japan, but added that, at this time, "there's no safety reason to move it. "Industry critics couldn't disagree more. They say the radioactive spent fuel rods, which rely on circulating water to remain cool, are vulnerable to both natural disaster or terrorist attack. In a natural disaster, a power outage from an earthquake, hurricane, tornado or other event would cause the water pumps to fail. Yes, there are backup generators, but sometimes those fail too, as is the case in Japan. If that happens, it's only a matter of days until the fuel heats up to the point where it boils off the water and then catches fire. They note that the pools themselves are located outside the reactor's main containment dome. An explosion, like what occurred in Japan, would expose the pools to the open air. It’s also possible for terrorists to specifically target the pools. Reactors like the ones in Japan, of which there are 23 in the United States, are particularly vulnerable. The pools in that design are located several stories above ground, making them easy targets for shoulder-fired missiles or airplane attacks. Critics say the concrete and steel around the pools are designed to prevent radiation leaks, not to stop a missile.

#### IFRs utilize spent fuel pools as catalysts for energy - eliminates waste.

W.H. Hannum et. al, 2010, has been a senior official with the Department of Energy, H.F. McFarlane earned his Ph.D. in engineering science at California Institute of Technology, is currently associate director of the Technology Development Division at Argonne National Laboratory, D.C. Wade is a Senior Technical Advisor, Distinguished Fellow Engineer Nuclear Engineering Division Argonne National Laboratory, R.N. Hill is the Technical Director at Argonne National Laboratory, Nuclear Energy R&D Nuclear Engineering Division, “The Benefits of an Advanced Fast Reactor Fuel Cycle for Plutonium Management,” p. 18, <http://www.osti.gov/bridge/servlets/purl/459313-d9NYz8/webviewable/>

Plutonium is a fact. World inventories currently exceed 1000 tonnes, and are increasing at 60 to 80 tonnes per year. This can be considered a valuable energy resource or a political and environmental burden, The best approach is that which will maximize the benefits and minimize the burden. A closed fast reactor he1 cycle using an advanced recycle technology provides such an option by using plutonium as a catalyst to extract the full energy content from the world’s uranium reserves, while eliminating excess inventories of plutonium and of other long lived transuranic byproducts. Such a system is fully compatible with rigorous safeguards, and in fact presents few safeguard challenges beyond those which are associated with the once-thorough fuel cycle. The most important long-term contribution of the fast reactor approach to safeguards and prevention of proliferation is that it provides a positive means of managing the overall size of the world’s plutonium and transuranic inventory (Ref. 30). With a kel cycle management strategy driven by economics, the fast reactor can readily absorb excess plutonium stocks, leaving the world inventory sequestered in plants producing useful energy.

#### Existing reprocessing tech is not safe – sheer volume of solutes guarantees critical mass accidents resulting in deadly fallout worsening waste.

Stephen Berry & George S. Tolley, 11-29-2010, James Franck Distinguished Service Professor Emeritus at the University of Chicago, Fellow, American Academy of Arts and Sciences, foreign Member, Royal Danish Academy of Sciences, member and Home Secretary, National Academy of Sciences, J. Heyrovsky Honorary Medal for Merit in the Chemical Sciences, Academy of Sciences of the Czech Republic, Alexander von Humboldt-Stiftung Senior Scientist Award, Phi Beta Kappa National Lecturer, George S. Tolley is a professor emeritus in Economics at the University of Chicago, fellow, American Association for the Advancement of Science, honorary editor, Resource and Energy Economics, honorary Ph.D., North Carolina State University, “Nuclear Fuel Reprocessing Future Prospects and Viability,” p. 6, <http://humanities.uchicago.edu/orgs/institute/bigproblems/Team7-1210.pdf>

Although PUREX is a well-documented and widely used process today, it is far from perfect. Ideally, reprocessing should aim to reduce the radioactivity of waste. While PUREX accomplishes this in some regard, due to the sheer volume of solutes used the result is a much larger quantity of less radioactive waste. Another important concern is that with any buildup of uranium or plutonium there is a possibility of critical mass being attained. Although a chain reaction resulting from such a small amount of lowly enriched material would not be devastating, it could result in direct exposure of workers to high energy gamma and neutron radiation, minor concern for fallout of material into the environment, and decommissioning of the plant. The most recent example of such an accident was in 1999 at the Tokaimura reprocessing plant in Japan. The U-235 criticality achieved was a result of improperly trained workers circumventing standard mixing protocol to expedite the process. Two of the three workers responsible died from receiving a full body radiation dose ~10000 mSv (millisievert). Other workers in the plant as well as people in the surrounding area received radiation doses as well, but none of these exceeded ~50 mSv the average lethal dose being 8000 mSv.5 One could argue that such an accident would never occur if the facility was operated according to standard regulations, but the ability to ensure such fastidious observation of the rules in all workers is debatable.

#### Massive ionizing radiation release makes extinction inevitable.

Rosalie Bertell, 2000, American physician and epidemiologist and winner of several awards, including the Hans-Adalbert-Schweigart-Medal (1983), Right Livelihood Award (1986) World Federalist Peace Award, Ontario Premier's Council on Health, Health Innovator Award, the United Nations Environment Programme Global 500 award, and the Sean MacBride International Peace Prize, “Part One: The Problem: Nuclear Radiation and its Biological Effects,” No Immediate Danger, Prognosis for a Radioactive Earth, The Book Publishing Company, <http://www.ratical.org/radiation/NRBE/NRBE9.html>

In 1964 Hermann Müller published a paper, `Radiation and Heredity', spelling out clearly the implications of his research for genetic effects (damage to offspring) of ionizing radiation on the human species. [17] The paper, though accepted in medical/biological circles, appears not to have affected policy makers in the political or military circles who normally undertake their own critiques of published research. Müller predicted the gradual reduction of the survival ability of the human species as several generations were damaged through exposure to ionizing radiation. This problem of genetic damage continues to be mentioned in official radiation-health documents under the heading `mild mutations'[18] but these mutations are not `counted' as health effects when standards are set or predictions of health effects of exposure to radiation are made. There is a difficulty in distinguishing mutations caused artificially by radiation from nuclear activities from those which occur naturally from earth or cosmic radiation. A mild mutation may express itself in humans as an allergy, asthma, juvenile diabetes, hypertension, arthritis, high blood cholesterol level, slight muscular or bone defects, or other genetic `mistakes'. These defects in genetic make-up leave the individual slightly less able to cope with ordinary stresses and hazards in the environment. Increasing the number of such genetic `mistakes' in a family line, each passed on to the next generation, while at the same time increasing the stresses and hazards in the environment, leads to termination of the family line through eventual infertility and/or death prior to reproductive age. On a large scale, such a process leads to selective genocide of families or species suicide.

#### Environmental impact of a nuclear war.

Leah Ayala, Winter 2003, “Nuclear Power Companies the Department of Energy: A Legal Remedy Magnifying Nuclear Ends,” Nevada Law Journal, Lexis Nexis

A very small amount of nuclear waste can be disastrous. If an amount of plutonium about the same size as a beach ball was properly dispersed, it could cause lung cancer in everyone on earth. R. Routley & V. Routley, Nuclear Energy and Obligations to the Future, 21 INQUIRY 133, 136 (1978). See generally Robin Dusek, Lost in Space?: The Legal Feasibility of Nuclear Waste Disposal in Outer Space, 22 WM. & MARY ENVTL. L. & POL'Y REV. 181 (1997). Some estimate that a large release of nuclear waste from Yucca Mountain, which has a capacity to hold 77,000 metric tons of waste, would exceed the environmental impact of a nuclear war. This is a huge amount of waste compared to the "few dozen pounds" of waste released in the Chernobyl explosion that is estimated will result in between 17,000 to 475,000 human deaths from cancer. Broad, supra note 132. Each of the spent fuel assemblies that will be stored in the repository contains a similar amount of radioactivity as ten Hiroshima bombs. Lazarus, supra note 1 (citing Klaus Schumann, a Green Party activist and member of the San Luis Obispo County Nuclear Waste Management Committee).

#### The fallout would spread well beyond the U.S.

Science Daily, 5-22-2012, “Severe Nuclear Reactor Accidents Likely Every 10 to 20 Years, European Study Suggests,” <http://www.sciencedaily.com/releases/2012/05/120522134942.htm>

Subsequently, the researchers determined the geographic distribution of radioactive gases and particles around a possible accident site using a computer model that describes Earth's atmosphere. The model calculates meteorological conditions and flows, and also accounts for chemical reactions in the atmosphere. The model can compute the global distribution of trace gases, for example, and can also simulate the spreading of radioactive gases and particles. To approximate the radioactive contamination, the researchers calculated how the particles of radioactive caesium-137 (137Cs) disperse in the atmosphere, where they deposit on Earth's surface and in what quantities. The 137Cs isotope is a product of the nuclear fission of uranium. It has a half-life of 30 years and was one of the key elements in the radioactive contamination following the disasters of Chernobyl and Fukushima.The computer simulations revealed that, on average, only eight percent of the 137Cs particles are expected to deposit within an area of 50 kilometres around the nuclear accident site. Around 50 percent of the particles would be deposited outside a radius of 1,000 kilometres, and around 25 percent would spread even further than 2,000 kilometres. These results underscore that reactor accidents are likely to cause radioactive contamination well beyond national borders.

#### U.S. nuclear spent fuel storage is worse than Japan - has four times the quantity of spent fuel.

Edward Klump & Mike Lee, 3-19-2011, “Atomic Fuel Stored at U.S. Plants Poses Risks Similar to Japan Facilities,” Bloomberg, http://www.bloomberg.com/news/2011-03-19/atomic-fuel-stored-at-u-s-plants-poses-risks-similar-to-japan-facilities.html

U.S. nuclear power plants that store thousands of metric tons of spent atomic fuel pose risks of a crisis like the one unfolding in Japan, where crews are battling to prevent a meltdown of stored fuel, nuclear safety experts said. U.S. nuclear plants had an estimated 63,000 metric tons (138.9 million pounds) of spent fuel stored on site as of January 2010, according to a report from the U.S. Nuclear Regulatory Commission. About 2,000 metric tons a year is expected to be added to that total, the NRC said. The fuel, which contains uranium and radioactive byproducts, is taken from reactors and stored at least five years in water-filled cooling pools, then sometimes sealed in steel-and-concrete casks for longer-term storage. Without cooling, the spent fuel would overheat and release harmful radiation. “In the U.S., we are worse off, said David Lochbaum, a nuclear engineer for the Union of Concerned Scientists who is a former safety instructor for the NRC. ‘‘Our spent-fuel pools are more full than in Japan.’’ Storing radioactive waste has been a key sticking point in the expansion of nuclear power in the U.S. as landowners and environmental groups oppose plans for fuel dumps. A storage site at Yucca Mountain in Nevada was canceled by the Obama administration in 2009 after 20 years of planning and a cost of $9 billion.

#### Spent fuel coolant causes severe environmental problems – leads to massive ground water contamination.

Stephen Berry & George S. Tolley, 11-29-2010, James Franck Distinguished Service Professor Emeritus at the University of Chicago, Fellow, American Academy of Arts and Sciences, foreign Member, Royal Danish Academy of Sciences, member and Home Secretary, National Academy of Sciences, J. Heyrovsky Honorary Medal for Merit in the Chemical Sciences, Academy of Sciences of the Czech Republic, Alexander von Humboldt-Stiftung Senior Scientist Award, Phi Beta Kappa National Lecturer, George S. Tolley is a professor emeritus in Economics at the University of Chicago, fellow, American Association for the Advancement of Science, honorary editor, Resource and Energy Economics, honorary Ph.D., North Carolina State University, “Nuclear Fuel Reprocessing Future Prospects and Viability,” p. 14, <http://humanities.uchicago.edu/orgs/institute/bigproblems/Team7-1210.pdf>

There is also an environmental record regarding PUREX accidents. The countries that currently reprocess nuclear material are the United Kingdom, France, Germany, and Japan. Though the environmental effects of reprocessing may not be directly related to climate change, they are significant. There are annual protest blockades in Germany related to the movement of reprocessed waste. Reprocessing plants have an extensive shutdown history outside of the United States. Many plants internationally have a great deal of trouble managing coolants and other chemicals involved in the reprocessing process. The “Superphenix” reactor in France was shut down in 1987 after leaking 20 tons of sodium coolant. The “Monju” fast breeder reactor in Japan was shut down permanently in 1995. This was due to a three ton sodium leak causing the reactor to overheat and burn holes in the cooling pipes. 17Sodium poses a very large problem in many ecosystems. The median level toxicity for mosquito fish is 125 ppm. This makes sodium moderately toxic. However, the true danger of sodium compounds is that they are extremely soluble in water, easily becoming sodium hydroxide which leaches very quickly through soil. Sodium spills are extremely expensive to contain due to their ability to find and contaminate ground water. Moderate sodium concentrations can have adverse health effects, such as irritation and coughing. Severe exposure can lead to caustic burns, difficulty breathing, and blindness.

#### Lowering the pH in freshwater aquifers taints the Ogallala.

Mark G. Little, & Robert B. Jackson, 10-26-2010, Center on Global Change, Duke University, “Potential Impacts of Leakage from Deep CO2 Geosequestration on Overlying Freshwater Aquifers,” Environmental Science and Technology, p. 9225–92322

Because freshwater aquifers used for drinking water, industry, and agriculture lie directly above possible geosequestration locations, leaks could form carbonic acid in groundwater resources before surface leakage of CO2 were detected (e.g., refs 10, 19, and 20). Although increases in carbonic acid may be buffered by carbonate dissolution, a lowering of aquifer water pH may release harmful metals, such as arsenic and uranium, into the water (21-23). Such impacts on shallow aquifer composition have been investigated previously in field injection studies (23, 24), model simulations (25, 26), and short-term batch-reaction experiments (27). Our study focuses on the long-term impacts of CO2 leakage on four relatively shallow aquifer systems overlying possible deep saline geosequestration sites: Aquia and Virginia Beach in the Virginia and Maryland tidewater region; Mahomet in Illinois; and Ogallala in southern high plains of Texas. We performed laboratory incubations under oxidizing conditions for more than 300 days to 1) understand how CO2 leaks from deep geosequestration may affect water quality in overlying shallow drinking-water aquifers; 2) develop selection criteria for sequestration sites based on inorganic metal contamination caused by CO2 leaks; and 3) identify geochemical signatures in affected waters which could be used as early detection criteria.

#### Aquifer shortages cause food cises by making cropland unproductive.

Mark Edwards, 2008, Holds PhDs in Mechanical Engineering , oceanography and meteorology and Marketing and Consumer behavior, proftessor of food marketing and world entrepreneurship at Arizona State. Consulted for 400 Food industry and Energy Inudstriy Firms and Served as a director for a fortune 50 transportation and foods company, worked with Monsanto, Dupont, Pioneer Seeds, Nabisco, Quaker Oats, General Mills, Borden and several other agribusiness companies, worked with senior executives at 15 large US oil and gas firms as well as BP and Saudi Aramco. Worked with several pipeline and energy distribution firms, Biowar I: Why Battles over Food and Fuel Lead to World Hunger, p. 113-5

Corn draws water from already depleted underground sources such as the Ogallala aquifer. Three leading corn states, Texas, Nebraska and Kansas, each get 80% of their water from the Ogallala aquifer, which is essentially fossil water with little recharge. The Ogallala aquifer began to run dry in the 1970's in parts of Texas, Oklahoma and Kansas.289 Today, the circular sprinkler tracks are visible from the air but the green fields are now brown and fallow. When fossil water aquifers are depleted, they are not rechargeable and the land must be abandoned, Figure 6.2. Some sections of the aquifer still produce fossil water but larger pumps drilled much deeper produce less than half as much water as 30 years ago. The USDA reports that the Ogallala aquifer water level has dropped over 200 feet in many areas, making it too expensive to pump water for corn or other crops and causing bankruptcy for farmers. In parts of Arizona, groundwater pumping depletes water at more than 10 times the aquifer recharge rate.290 Water overdraft, the extraction of water over the recharge rate, from the Ogallala aquifer will make millions of acres of vital U.S. croplands nonproductive for agriculture by 2030 or sooner.

#### This causes food cascades and insecurities that drive impulses to hoard – aquifer collapse eliminates the ability to rebound.

Mark Edwards, 2008, Holds PhDs in Mechanical Engineering , oceanography and meteorology and Marketing and Consumer behavior, proftessor of food marketing and world entrepreneurship at Arizona State. Consulted for 400 Food industry and Energy Inudstriy Firms and Served as a director for a fortune 50 transportation and foods company, worked with Monsanto, Dupont, Pioneer Seeds, Nabisco, Quaker Oats, General Mills, Borden and several other agribusiness companies, worked with senior executives at 15 large US oil and gas firms as well as BP and Saudi Aramco. Worked with several pipeline and energy distribution firms, Biowar I: Why Battles over Food and Fuel Lead to World Hunger, p. 183-9

Growing corn depends on a complex set of parameters, sufficient good water but not too much, precise daily temperatures and lack of storms. Small disruptions in any of the many critical growing or processing factors can create a chain reaction that causes major disruptions. My father, a farmer, frequently said: Climate is what you expect. Weather is what you get. Chaos theory shows how a tiny difference can make a big difference. For example, a small butterfly's wings flapping in Brazil might create a slight disturbance in a microclimate that ultimately causes a tornado in Texas.393 A tiny change in initial conditions causes a chain reaction leading to large scale phenomena. The factor that will ignite a food cascade comes from a flaw in the ethanol refinery business model called access swing. Hundred million dollar refineries, financed often at 70%, are built in remote locations where local producers can supply the corn with minimum transportation costs. The business model assumes local corn will be available. The viability of most of the 200+ refineries relies on local production, or failing that, on regional production. When a tiny local crop failure occurs, an earth shaking food cascade will follow. Food cascade The last decade's weather has been good to farmers and allowed ethanol policy makers to practice myopic meteorology. Based on historical patterns, farmers' luck is 80% likely to run out for at least one year and possibly several in the next decade.394 One or two bad weather years for corn may reduce production by only 30% but create a series of choke points when each market player acts in the farm or firm's best interest. Farms not under a production contract will sell their corn to the highest bidder. Some farmers under contract will ignore their contract for the promise of more money. Weather prediction remains a combination of art and science. However, one consistent weather pattern that is absolutely predictable is that good corn growing weather over a corn producing area such as Iowa experiences patches of crop variability from year to year. Nearly every year, a few counties have bad weather for corn but others have good weather so total corn supply stays fairly balanced. In a normal year, 2006, about 12% of farmland was affected by severe drought. In the same year, other areas received too much rain and farmers could not get tractors in their fields to plant. Others who had planted watched the rain drown their expensive seeds while their irreplaceable topsoil, filled with fertilizer, flowed downstream. In several years in the past century, notably 1934, 1954 and 1956, weather patterns caused widespread crop failure because 50% of cropland experienced severe or extreme drought. Other years experienced too much rain, drowning plants, or severe storms that knocked down cornfields, making them impossible to harvest. Global warming appears to be magnifying weather variability and the probability of drought has increased as has the intensity of storms. The World Meteorology Organization reports that North Americans can expect earlier spring, increased temperatures, less snow pack – more run-off and less surface water – and more violent storms.395 Each of these effects can devastate corn production, especially locally or across several states. When local corn production fails, a food cascade will begin with food fights. Food fights. Food processors will demand scarce corn for human and animal foods and may feel they have rights to the limited corn supply on a historical basis. However, they will not be able to pay inflated prices and will have little corn to process for food or additives such as sweeteners. Meat producers who cannot find animal feed at reasonable prices will have no choice but to kill their livestock, foul and fish. Meat producers will be locked out of buying other feedstocks such as wheat or soybeans because those prices will rise sharply for human foods. Corn plantings will have replaced production for a variety of crops – further limiting supply.Ethanol processors will experience the access swing problem when they find their remotely placed refinery has no local corn. They will be forced to swing through a wider area and bid up the price of corn available to keep their highly leveraged refinery afloat. They will have to pay substantial transportation costs – if they can get corn. The price of corn that doubled in 2006 may be bid up 10 times regionally. The announced 40% of corn burned for fuel may rise to 80% of available stocks in order to keep the refineries operating. The U.S. corn stores, the hold-back for reserves, will be consumed for fuel quickly. Refineries must continue to operate, even at a loss, because the business model demands it. The government created a regulated ethanol market but neglected to put a governor on feedstock supply shortages. In a shortage situation, the deeper pocket wins and the refineries will prevail over food providers. Food exporters will be starved for product. Grains available will go first to human foods and sweeteners and then animal feed which will have higher value than exports, primarily due to transportation costs. Not only will the U.S. have no grain to export, there will be no meat or dairy exports either due to lower supply and higher costs. Scarcity psychology. Scarcity psychology operates like a run on a bank; a contagion where every step and every noise accelerates the effect. Fear leads to food hoarding which diminishes supply and accelerates upward prices. Major food retailers have strategic plans for regional catastrophes like hurricanes and earthquakes. How could they adjust if every consumer bought just a few extra bags of flour? Scarcity psychology operates at a gut instinct level where people hoard not be because food is not available but due to their fear of loss.396 Hoarding will be driven by people's fear that food may not be available in the future. The same type of fear causes a bank run where people act vicious and nasty. The difference between the event chain for a bank run and a food cascade is that people in bank run have less to fight over – only money. In a stock market sell-off, the government may step in and infuse markets with cash taken from reserves to stabilize the market. Similar action occurs in an oil crisis when the government taps reserves. The government's response in a food cascade will be limited or nil because food reserves are insufficient for other than a minor market disturbance. Hidden taxes escalate. The rise in corn prices will create a ripple effect driving up the prices of all foods, probably on the order of 4 to 8 times as illustrated in Figure 9.2. The $14 B hidden tax U.S. consumers paid in 2007 for higher priced food escalates to $90 B. Consumers may not notice small food price increases but they will be very upset when they must pay $25 for a hamburger. U.S. food insecurity. Today about 37 Million Americans live in poverty and have trouble getting enough food. Increasing food prices will multiply this number by at least three. This means one out of three American households face hunger. Unfortunately, America's children will bear the brunt of the hunger and collateral damage. The increased food costs will impose ruinous impacts on education, economic prosperity and health. U.S. food supply. The available food supply will become a "strategic" issue for politicians who will make the pretense of surprise that America's food supply became suddenly insufficient. They will point fingers and call for Congressional hearings that show that not one but many politicians from both parties joined the ethanol express and pushed the food for fuel policies. Politicians will be too late to respond to the crisis because Biowar I's ethanol subsidies, added to the cost from the Iraq war, will have seriously depleted the U.S. treasury. If weather or other factors disrupt production in other global food growing regions, even the U.S. may be challenged to find the funds to import sufficient food. Would China allow the U.S. to buy food on credit? Other nations are likely to remind the U.S. that they believed (and made public statements) that burning food for fuel was a foolish policy and created Biowar I and the world food catastrophe. Restocking U.S. food stores may take years and will depend on the return of good weather for food crops. Even good weather will not bail out the High Plains after the aquifers have crashed.

#### This behavior will cause global food wars.

Javier Blas, 7-1-2008, commodities Correspondent at Financial Times, The University of Sheffield political Activities and Societies: Erasmus fellowship, "Feeding Frenzy: New World Order - Food Shortages and International Conflict," The National Interest, Lexis Nexis

FOOD. MAN'S most-essential resource. And now a cause of war? For years, strategists, policy makers and the rest of the foreign-policy cadre worried the world's vanishing resources would be the cause of conflict. But of course, with energy assets concentrated in the Middle East and crude-oil prices rising from a historical average of $18 a barrel to more than $100 a barrel today, most scenarios centered on a war over oil. At their most imaginative, people have planned for water shortages as a trigger. What no one seemed to be expecting was serious political instability caused by a lack of food. This is not just threat mongering. Experts around the world have voiced concern. Horst Seehofer, Germany's agriculture minister, has warned that "food conflicts" lurk around the corner. UN Secretary-General Ban Ki-moon recently told a conference that "if not handled properly, this crisis could result in a cascade" of others. It could become % multidimensional problem affecting economic growth, social progress and even political security around the world." Josette Sheeran, head of the World Food Program (WFP), added that riots in more than thirty countries were "stark reminders that food insecurity threatens not only the hungry but peace and stability itself." The World Bank estimates that about 100 million people in 2007 were absorbed into the ranks of the poor and hungry because of the surge in food costs, reversing rich countries' steady efforts to halve global hunger by 2015. Jacques Diouf, head of the UN's Food and Agriculture Organization (FAO), said in April he was surprised the UN Security Council had not yet called on him to explain the crisis. Food shortages and price increases have a long history of triggering political turmoil. They were precursors to the French revolutionary movements in the 1700s, and they played a key role in Egypt's 1977 popular uproar--the bread intifada--which challenged President Anwar el-Sadat's rule. But it looked like the problem was solved because the last time food prices were even considered an issue was twenty years ago, when the world's seven richest countries met at their 1987 summit in Venice, Italy. But then, the concern was low prices and "agricultural commodities in surplus," rather than scarcity and inflation. The cozy notion that our food problems are over is under assault after prices, measured by the FAO's index, jumped almost 60 percent in the last year. Staples such as wheat, corn, soybeans and rice, for decades considered abundant, are today scarce and much-more expensive. Although it is unlikely that the ongoing food crisis will trigger full-scale wars, it is clear rising food prices have become a threat to global stability, shaking several poor countries' governments and disrupting international trade. [ILLUSTRATION OMITTED] In the first-few months of 2008, the government of Haiti fell amid sharp price increases in staples, particularly rice. Countries as far apart as Egypt and Bangladesh suffered riots. Indeed, according to the World Bank, up to thirty-five countries have experienced food riots, and many more have been forced to make policy U-turns--increasing subsidies, raising civil-servant salaries or restricting basic-foods trade. TWO LONG-term trends are at the heart of this current crisis: swelling demand and sluggish supply growth. What we see now, ironically, is that the rise in global demand for food has come about as a result of the successes of globalization. The subsequent reduction in world poverty, growth of emerging countries like China--large purchasers of protein foodstuffs such as dairy products or meat--and increases in wealth there all left a sharp increase in demand. At the same time, though, there were mass decreases in production. Farming productivity slowed down after years of strong growth because of a reduction in global research in new high-yielding seeds and decreased spending in agronomics like irrigation. Adverse weather, which destroyed crops and hampered farming, and the needs of the biofuel industry, which requires vast amounts of grains, particularly corn, drained supplies even further. And the rise in oil prices made agricultural commodities more expensive, as modern agriculture--very intensive and mechanized--suffered under higher fertilizer and transportation costs. These factors combined to drive agricultural-commodity prices to record levels. All this is leading to waves of food-price crises, each one impacting and compounding the next. The rise in prices began to reach crisis proportions as early as late 2006, when rising biofuel demand pushed corn prices up. Prices of other cereals, particularly wheat and barley, jumped too, propelled by a drought in Australia. Making matters worse, a gradual change in agricultural policies in rich countries, mainly the United States and the European Union, had a major impact. There, reduced levels of subsidies have led to lower agricultural surplus production. A second wave of food inflation arrived in mid-2007, when agricultural commodities reached fresh record highs, prompting the first warnings from UN agencies like the FAO and WFP. The main driver of last year's rise in prices was bad weather, which severely damaged the global wheat crop. Plus, the world was at that point consuming more food--either for feeding humans or animals, or conversion into fuel--than it was producing, and prices reflected that simple fact. At first, though, policy makers blamed speculation in the commodities markets. In response, some countries, such as India, went as far as banning futures trading in certain commodities, including rice, wheat and pulses. But prices have continued to rise in spite of the futures-trading bans, suggesting that fundamental factors, such as higher demand and lagging supply, were behind the price jump, rather than financial speculation. But it is countries' responses to the crises that are making real food shortages more dangerous. Precisely these unhealthy reactions from states like India drove the third--and, so far, last--wave of food inflation. It started in late 2007 and early 2008, as price increases in staples triggered a sharp response from agricultural-commodity-producing countries. They first imposed export restrictions like high tariffs or minimum export prices. Later, as the price of key agricultural commodities like rice--the staple food for almost half the world's population, whose price has, in the past, proven capable of ruining governments--continued to increase, they turned the restrictions into outright trade bans. The extension of these bans sparked panic buying by importing countries, setting off even-sharper price increases. Food inflation, on average, appears to have peaked during the spring, with wheat prices declining to a six-month low, soybeans down sharply from record highs, and the price of sugar and dairy products well below their peaks--though it is expected that the price of some commodities, such as corn, could rise further because of the unrelenting rising demand of the biofuel industry. Even if average food inflation has indeed already hit its ceiling, prices are expected to remain high by historical standards and could easily spike again at any sign of bad weather. We now live in a world with an oversensitive and at-risk food market. WHAT MAKES this all particularly dangerous for global security is "the new face of hunger," as termed by the head of the WFP. The current crisis is hitting the urban poor the hardest, rather than those living in the countryside. And this new face means greater political repercussions and a higher risk of political instability in developing countries; urbanites are better organized than rural farmers and can easily demonstrate against their governments by taking to the streets of their countries' capitals. So states are likely to try to regain social peace and maintain their political power through increased spending--be it higher salaries or subsidies--that favors poor urban populations, instead of investing in long-term economic productivity. The trade-off will be political stability in exchange for lower economic growth as the investment infrastructure and education necessary to sustain economic prosperity will be missing. Egypt, for example, spends more on food and fuel subsidies than on education. States need to create targeted safety nets for poor people--in particular programs such as at-school meals that usually help maintain attendance--while continuing to invest in long-term economic productivity. The effect of all this is that countries are trying to protect themselves, their markets and their supplies to avoid further domestic upheaval, and yet another and deeper wave of food-scarcity panic. But efforts to hedge at home have broader implications. Along with international instability, government policies are leading to disruptions of global trade, a cornerstone of the postcold-war international-relations system. [ILLUSTRATION OMITTED] Much of the damage from protectionist policies is already done, but it's going to get worse because of states' domestic focus, export bans, food subsidies and the hoarding of commodities. These trends will have a negative impact on global foreign policy, as they will drive states apart, rather than unite them making cross-border conflict over food more likely,.

### 1AC climate advantage

#### ADVANTAGE: 2 climate

#### Pyro-processing is key to stop climate change we’re close to the tipping point.

Steve Kirsch, 11-25-2009, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “Why We Should Build an Integral Fast Reactor Now,” <http://skirsch.wordpress.com/2009/11/25/ifr/>

\*\*\*cites Charles Till, former Associate Director, Argonne National Laboratory, The National Academy Studies, James Hansen, Director, NASA Goddard Institute for Space Studies, Ray Hunter, former Deputy Director of the Office of Nuclear Energy, Science and Technology in the U.S. Department of Energy (DOE), Leonard Koch, winner of the Global Energy International Prize, Barry Brook Sir Hubert Wilkins Chair of Climate Change\*\*\*

To prevent a climate disaster, we must eliminate virtually all coal plant emissions worldwide in 25 years. The best way and, for all practical purposes, the only way to get all countries off of coal is not with coercion; it is to make them want to replace their coal burners by giving them a plug-compatible technology that is less expensive. The IFR can do this. It is plug-compatible with the burners in a coal plant (see Nuclear Power: Going Fast). No other technology can upgrade a coal plant so it is greenhouse gas free while reducing operating costs at the same time. In fact, no other technology can achieve either of these goals. The IFR can achieve both. The bottom line is that without the IFR (or a yet-to-be-invented technology with similar ability to replace the coal burner with a cheaper alternative), it is unlikely that we’ll be able to keep CO2 under 450 ppm. Today, the IFR is the only technology with the potential to displace the coal burner. That is why restarting the IFR is so critical and why Jim Hansen has listed it as one of the top five things we must do to avert a climate disaster.[4] Without eliminating virtually all coal emissions by 2030, the sum total of all of our other climate mitigation efforts will be inconsequential. Hansen often refers to the near complete phase-out of carbon emissions from coal plants worldwide by 2030 as the sine qua non for climate stabilization (see for example, the top of page 6 in his August 4, 2008 trip report). To stay under 450ppm, we would have to install about 13,000 GWe of new carbon-free power over the next 25 years. That number was calculated by Nathan Lewis of Caltech for the Atlantic, but others such as Saul Griffith have independently derived a very similar number and White House Science Advisor John Holdren used 5,600 GWe to 7,200 GWe in his presentation to the Energy Bar Association Annual Meeting on April 23, 2009. That means that if we want to save the planet, we must install more than 1 GWe per day of clean power every single day for the next 25 years. That is a very, very tough goal. It is equivalent to building one large nuclear reactor per day, or 1,500 huge wind turbines per day, or 80,000 37 foot diameter solar dishes covering 100 square miles every day, or some linear combination of these or other carbon free power generation technologies. Note that the required rate is actually higher than this because Hansen and Rajendra Pachauri, the chair of the IPCC, now both agree that 350ppm is a more realistic “not to exceed” number (and we’ve already exceeded it). Today, we are nowhere close to that installation rate with renewables alone. For example, in 2008, the average power delivered by solar worldwide was only 2 GWe (which is to be distinguished from the peak solar capacity of 13.4GWe). That is why every renewable expert at the 2009 Aspen Institute Environment Forum agreed that nuclear must be part of the solution. Al Gore also acknowledges that nuclear must play an important role. Nuclear has always been the world’s largest source of carbon free power. In the US, for example, even though we haven’t built a new nuclear plant in the US for 30 years, nuclear still supplies 70% of our clean power!

#### Solving electricity is the first step to solve climate change because without nuclear power warming is inevitable.

Barry Brook et. al, 2-21-2009, a leading environmental scientist, holding the Sir Hubert Wilkins Chair of Climate Change at the School of Earth and Environmental Sciences, and is also Director of Climate Science at the University of Adelaide’s Environment Institute, published three books, over 200 refereed scientific papers, is a highly cited researcher, received a number of distinguished awards for his research excellence including the Australian Academy of Science Fenner Medal, is an International Award Committee member for the Global Energy Prize, Australian Research Council Future Fellow, ISI Researcher, Ph.D., Macquarie University in Environmental Engineering, Science Council for Global Initiatives, Edgeworth David Medal Royal Society of NSW, Cosmos Bright Sparks Award, Tom Blees is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, George S. Stanford is a nuclear reactor physicist, part of the team that developed the Integral Fast Reactor, PhD from Stanford University in Physics, Masters from University of Virginia in Engineering, worked at Argonne National Laboratory, Graham R.L. Cowan, "Boron: A Better Energy Carrier than Hydrogen?" in 2001, published "How Fire Can Be Tamed," BraveNewClimate, “Response to an Integral Fast Reactor (IFR) critique,” <http://bravenewclimate.com/2009/02/21/response-to-an-integral-fast-reactor-ifr-critique/>

[TB] Almost 80% of greenhouse gas emissions come from nuclear-capable countries anyway, so even if we just deployed them there we could make tremendous strides, though it would still be wise to create some sort of international oversight organization as I propose in the book. [BWB] This is at best grossly disingenuous (not to mention insulting to call Kirsch stupid). You need to solve the electricity carbon problem to fix the vehicular fuels problem, space heating and embedded energy in building and manufactured goods, and Tom has a solution for MSW [municipal solid waste] also. About half of agricultural emissions can also be solved if you have a zero-carbon energy source. Then you just need to worry about the ruminant methane and carbon from deforestation. But the bottom line is, if you fix electricity, everything else will quicktly start to fall into place. If we don’t stop coal in places like China and India, we’re hosed, irrespective of what we might do in the US and Oz (and even if we could do with without advanced nuclear, which we very likely cannot). I do wonder, what is Jim Green’s plan is for replacing the 484 GW of coal-fired power stations already installed in China, and the further 200 or so plants in the planning or construction pipeline?

#### We could start building hundreds of IFR’s by 2015 – cost competitive option.

Steve Kirsch, 2011, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “The Integral Fast Reactor (IFR) project: Q&A,” <http://skirsch.com/politics/globalwarming/ifrQandA.htm>

\*\*\*cites Charles Till, former Associate Director, Argonne National Laboratory, The National Academy Studies, James Hansen, Director, NASA Goddard Institute for Space Studies, Ray Hunter, former Deputy Director of the Office of Nuclear Energy, Science and Technology in the U.S. Department of Energy (DOE), Leonard Koch, winner of the Global Energy International Prize, Barry Brook Sir Hubert Wilkins Chair of Climate Change\*\*\*

I do not agree that nuclear energy would be "a costly option," especially given a level playing field (external health and environmental costs considered, for instance). Nuclear power is now competitive in many countries, and there is no reason to think that fast reactors, in the long run, will be significantly more expensive. They will require no mining, no milling, no enrichment, and the waste-management expense will be negligible. The raw material for the fuel (used fuel already on hand) is essentially free. Virtually the entire cost will be in infrastructure and operations. It's likely if we made this a national priority, it could move a lot faster (like we did with the Manhattan Project). The argument that it might take a long time is an argument for starting immediately. Nobody, even the critics, have suggested that waiting around makes it happen faster when we finally need to do it. We need to get out from under a "let's just pursue the quick fixes" mentality we have now. The time to do these longer term projects is before they are needed. Are we going to wait for our existing nuclear material to be depleted before it is a crisis? And then, once again, we will be too late. We need forward, visionary thinking in this country. It seems to be in short supply. Here's what Blees wrote in response to my answer above: I couldn't agree more. That said, I'm certain it could be done expeditiously and we could start building these things by the hundreds by 2015 or so. Meanwhile we could start building ABWRs and the other Gen III+ reactors so we could start shutting down coal plants. Nuclear waste is simply not an issue. And in terms of building both Gen III and IFRs in nuclear-capable countries, neither is economics. Or safety. Or proliferation. Those who maintain that we don't have the technology are either ignorant of the facts or lying. Not to put too fine a point on it or anything. That's not something I'd just toss out there, but just between you and me that's the way I see it.

#### Electricity demands are rising.

John Deutch & Ernest Moniz, 2003, CO CHAIR Institute Professor Department of Chemistry, MIT, and Ernest Moniz a co-chair in the Department of Physics, MIT Director of Energy Studies, Laboratory for Energy and the Environment, The Future of Nuclear Power – an interdisciplinary MIT Study, The Future of Nuclear Power: An Interdisciplinary MIT Study, “Chaired Effort to Identify Barriers and Solutions for Nuclear Option in Reducing Greenhouse Gases,” <http://web.mit.edu/nuclearpower/>

The U.S. National Academy of Engineering named electrification as the premier engineering achievement of the twentieth century3. This is a remarkable statement for the century of lasers, computers, airplanes, and other ubiquitous and important technologies and is indicative of the extraordinary impact of electricity in improving the quality of people’s lives. Accordingly, it should not be surprising that global electricity use is expected to increase dramatically in the years ahead, even taking into account improvements in end use efficiency. Growth in electricity use is expected especially in developing countries, as they strive to meet basic needs and to modernize and industrialize their economies. The U.S. Department of Energy’s EIA projects a 75% increase in global electricity use in two decades, from 2000 to 2020. By mid-century, a threefold increase or more is credible and, indeed, expected. Table 2.1 gives the growth rate for electricity use in different regions of the world as anticipated in the EIA “business-asusual” projections to the year 2020.4 There is a strong correlation between electricity consumption per capita and the United Nations “human development index” (HDI), which combines indicators of health, education, and economic prosperity.5 Industrialized countries have an HDI above 0.9 (on a scale of 0 to 1) and per capita energy consumption above 4000 kWe-hrs. Large developing countries, such as China, India, Pakistan, and Indonesia, are well below the industrialized country HDI and aspire to advance by rapid economic growth. Overall, energy consumption per capita in the developing world is currently less than a fifth of that in the developed world. Unless provided with assistance or incentives, these developing nations are likely to seek the lowest cost supply alternatives that can meet their growing industrial and consumer demand for electricity. This prospect clearly raises the specter of substantially increased greenhouse gas emissions, since coal is likely to be an economic choice for many developing countries, e.g. China and India. How these developing countries meet their electricity demand is of central interest to the discussion of global warming, since over time their choices will influence global emissions levels more than measures taken by the developed world. Greater electricity consumption is desirable because it accompanies social and economic advance, but we want the electricity production to take place in an economic and environmentally acceptable manner. The attractiveness of nuclear power as an option will be determined by many countryspecific factors. To understand how much nuclear power would be needed to make a significant contribution to reducing CO2 emissions by 2050, and where it might be deployed, we present, in Appendix 2, a simple scenario for electricity growth over the next fifty years.

#### Nuclear power is the most economic source of base-load power it’s key to solve GHG emissions by displacing pollutants.

Alexander DeVolpi, 2-28-2010, been active in nuclear-arms policy and treaty-verification technology studies for over 25 years, Argonne National Laboratory, Argonne, Illinois (and other national laboratories) involved nearly 40 years of lab, field, and analytical activities in instrumentation, nuclear physics, nuclear engineering, reactor safety, radioisotopes, experiments, verification technology, and arms control, the Defense Nuclear Agency, On-Site Inspection Agency, all the Department of Energy weapons labs, with the Departments of Defense and State, author or coauthor of several books, Ph.D. in physics (and MS in nuclear engineering physics) from Virginia Polytechnic Institute, certificate from the Argonne International Institute of Nuclear Science and Engineering, managing nuclear diagnostics for the Reactor Analysis and Safety Division at Argonne, and becoming technical manager of the arms-control and nonproliferation program, Who’s Who in Frontiers of Science and Technology, American Men and Women of Science, fellow of the American Physical Society, technical consultant in the Federation of American Scientists/Natural Resources Defense Council joint project, ScienceTechnologyHistory, “NUCLEAR EXPERTISE: The Amory Lovins Charade,” <http://sciencetechnologyhistory.wordpress.com/article/nuclear-expertise-the-amory-lovins-1gsyt5k142kc5-20/>

Nuclear power is not only commercially competitive, but extremely safe (no coal miners dying), no air pollution at all, no greenhouse gas emissions (such as carbon-dioxide). Nuclear-plant lifetime is being doubled from 30 to 60 years (which utilities, investors, and ratepayers appreciate). If Lovins had his way 30 years ago, considerably more particulates and gases would have been vented to the local and regional atmosphere from coal-fired plants (aside from the greenhouse gases emitted). Moreover, if Lovins had his way, we would not have conserved the electricity-equivalent in domestic coal, imported and domestic oil, and domestic and imported natural-gas resources and reserves that we have for 30 years. A typical nuclear power plant each year avoids consumption of 3.4 million short tons of coal, or 65.8 billion cubic feet of natural gas, or 14 billion barrels of oil. (The United States has ample uranium resources.) So Lovins was wrong in implying that nuclear had no overriding societal or environmental benefits. Incidentally, it’s no accident that Illinois has the highest concentration of nuclear-power plants in the United States: Argonne National Laboratory can be proud of its half-century nuclear stewardship. (California, by the way, generates more electricity from geothermal, solar, and wind energy sources combined than any other State.) Lovins displayed complex viewgraphs that, he purports, show that nuclear is the costliest of “low-or-non-nuclear resources.” Yet, in the last 30 years, nuclear has displaced half the fossil-fuel combustion in Illinois while still being competitive. Inasmuch as nuclear-power plants emit no byproduct carbon-dioxide to the atmosphere, surely his claim that it is the costliest of low-carbon-emission sources fails the smell test. Most of Lovins’ pricing and cost/benefit comparisons are based on “new delivered electricity” which frames the cost of U.S. domestic nuclear construction in the least favorable light. He declares nuclear power an economic failure. Can someone explain that to my bank account which has benefitted from compounding competitive electric power savings for the past 30 years? His rimy claim certainly fails the ripeness test. On the issue of electrical-grid reliability, Lovins asserts that there is no such thing as a “outage-free” source of electrical power. He must think that nuclear power runs by government fiat. Nuclear is a fixture on the grid because it is more economical to operate as base-load supply, while sources less reliable, intermittent, and more costly (such as wind, solar, and gas) provide supplementary power. During the past 30 years in Illinois, I don’t recall having the electricity supply and cost problems that California has had after it prohibited nuclear-power plants from being built within its borders. By the way, average U.S. nuclear capacity factor was about 92% in 2007. That’s excellent. Lovins pitiful effort to undermine the reliability of nuclear power egregiously fails the smell test.

#### Nuclear power is needed before renewables, it’s the jumpstart for new clean energy leadership – scientific consensus.

Steve Kirsch, 11-25-2009, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “Why We Should Build an Integral Fast Reactor Now,” <http://skirsch.wordpress.com/2009/11/25/ifr/>

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Nuclear can be installed very rapidly; much more rapidly than renewables. For example, about two thirds of the currently operating 440 reactors around the world came online during a 10 year period between 1980 and 1990. So our best chance of meeting the required installation of new power goal and saving the planet is with an aggressive nuclear program. Unlike renewables, nuclear generates base load power, reliably, regardless of weather. Nuclear also uses very little land area. It does not require the installation of new power lines since it can be installed where the power is needed. However, even with a very aggressive plan involving nuclear, it will still be extremely difficult to install clean power fast enough. Unfortunately, even in the US, we have no plan to install the clean power we need fast enough to save the planet. Even if every country were to agree tomorrow to completely eliminate their coal plant emissions by 2030, how do we think they are actually going to achieve that? There is no White House plan that explains this. There is no DOE plan. There is no plan or strategy. The deadlines will come and go and most countries will profusely apologize for not meeting their goals, just like we have with most of the signers of the Kyoto Protocol today. Apologies are nice, but they will not restore the environment. We need a strategy that is believable, practical, and affordable for countries to adopt. The IFR offers our best hope of being a centerpiece in such a strategy because it is the only technology we know of that can provide an economically compelling reason to change. At a speech at MIT on October 23, 2009, President Obama said “And that’s why the world is now engaged in a peaceful competition to determine the technologies that will power the 21st century. … The nation that wins this competition will be the nation that leads the global economy. I am convinced of that. And I want America to be that nation, it’s that simple.” Nuclear is our best clean power technology and the IFR is our best nuclear technology. The Gen IV International Forum (GIF) did a study in 2001-2002 of 19 different reactor designs on 15 different criteria and 24 metrics. The IFR ranked #1 overall. Over 242 experts from around the world participated in the study. It was the most comprehensive evaluation of competitive nuclear designs ever done. Top DOE nuclear management ignored the study because it didn’t endorse the design the Bush administration wanted. The IFR has been sitting on the shelf for 15 years and the DOE currently has no plans to change that. How does the US expect to be a leader in clean energy by ignoring our best nuclear technology? Nobody I’ve talked to has been able to answer that question. We have the technology (it was running for 30 years before we were ordered to tear it down). And we have the money: The Recovery Act has $80 billion dollars.

#### Anthropogenic warming causes extinction – mitigating coal in the electric power industry is key to solve.

Mudathir F. Akorede et. al, June 2012, M.Eng degree at Bayero University Kano in Electrical Engineering, tutelage engineer in the Chad Basin Development Authority’s, lectureship appointment in the Department of Electrical Engineering, University of Ilorin, professional engineer with the Council for Regulation of Engineering in Nigeria (COREN), reviewer for a number of reputable international journals, Hashim Hizam, Department of Meterology and Atmospheric Sciences, faculty, University of Putra Malaysia, M.Sc in Electrical Engineering, Polytechnic University of Brooklyn, New York, M. Z. A. Ab Kadir and I. Aris, Department of Electrical and Electronics Engineering, Faculty of Engineering University Putra Malaysia, S.D. Buba professor of Climatology University of Putra Malaysia, Ph.D. paleoclimatology, University of Oxford, M.Eng at the University of Putra Malaysia, Renewable & Sustainable Energy Reviews, Vol. 16 Issue 5, “Mitigating the anthropogenic global warming in the electric power industry,” p. 1, Ebsco Host

One of the most current and widely discussed factors that could lead to the ultimate end of man’s existence and the world at large is global warming. Global warming, described as the greatest environmental challenge in the 21st century, is the increase in the average global air temperature near the surface of the Earth, caused by the gases that trap heat in the atmosphere called greenhouse gases (GHGs). These gases are emitted to the atmosphere mostly as a result of human activities, and can lead to global climate change. The economic losses arising from climate change presently valued at $125 billion annually, has been projected to increase to $600 billion per year by 2030, unless critical measures are taken to reduce the spate of GHG emissions. Globally, the power generation sector is responsible for the largest share of GHG emissions today. The reason for this is that most power plants worldwide still feed on fossil fuels, mostly coal and consequently produce the largest amount of CO2 emitted into the atmosphere. Mitigating CO2 emissions in the power industry therefore, would significantly contribute to the global efforts to control GHGs. This paper gives a brief overview of GHGs, discusses the factors that aid global warming, and examines the expected devastating effects of this fundamental global threat on the entire planet. The study further identifies the key areas to mitigate global warming with a particular focus on the electric power industry.

#### Climate change is real and anthropogenic – fundamental science, atmospheric patterns, greenhouse gas fingerprints, and newest measurements all confirm.

Karl Braganza, 6-14-2011, received his PhD from the School of Mathematics at Monash University, work has centered on understanding and attributing climate variability and change, using numerical modeling, instrumental observations and past climate evidence, currently the Head of Climate Monitoring at the Bureau of Meteorology's National Climate Center, The Conversation, "The Greenhouse Effect is Real: Here’s Why," <http://theconversation.edu.au/the-greenhouse-effect-is-real-heres-why-1515>

The greenhouse effect is fundamental science It would be easy to form the opinion that everything we know about climate change is based upon the observed rise in global temperatures and observed increase in carbon dioxide emissions since the industrial revolution. In other words, one could have the mistaken impression that the entirety of climate science is based upon a single correlation study. In reality, the correlation between global mean temperature and carbon dioxide over the 20th century forms an important, but very small part of the evidence for a human role in climate change. Our assessment of the future risk from the continued buildup of greenhouse gases in the atmosphere is even less informed by 20th century changes in global mean temperature. For example, our understanding of the greenhouse effect – the link between greenhouse gas concentrations and global surface air temperature – is based primarily on our fundamental understanding of mathematics, physics, astronomy and chemistry. Much of this science is textbook material that is at least a century old and does not rely on the recent climate record. For example, it is a scientific fact that Venus, the planet most similar to Earth in our solar system, experiences surface temperatures of nearly 500 degrees Celsius due to its atmosphere being heavily laden with greenhouse gases. Back on Earth, that fundamental understanding of the physics of radiation, combined with our understanding of climate change from the geological record, clearly demonstrates that increasing greenhouse gas concentrations will inevitably drive global warming. Dusting for climate fingerprints The observations we have taken since the start of 20th century have confirmed our fundamental understanding of the climate system. While the climate system is very complex, observations have shown that our formulation of the physics of the atmosphere and oceans is largely correct, and ever improving. Most importantly, the observations have confirmed that human activities, in particular a 40% increase in atmospheric carbon dioxide concentrations since the late 19th century, have had a discernible and significant impact on the climate system already. In the field known as detection and attribution of climate change, scientists use indicators known as fingerprints of climate change. These fingerprints show the entire climate system has changed in ways that are consistent with increasing greenhouse gases and an enhanced greenhouse effect. They also show that recent, long term changes are inconsistent with a range of natural causes. Is it getting hot in here? A warming world is obviously the most profound piece of evidence. Here in Australia, the decade ending in 2010 has easily been the warmest since record keeping began, and continues a trend of each decade being warmer than the previous, that extends back 70 years. Globally, significant warming and other changes have been observed across a range of different indicators and through a number of different recording instruments, and a consistent picture has now emerged. Scientists have observed increases in continental temperatures and increases in the temperature of the lower atmosphere. In the oceans, we have seen increases in sea-surface temperatures as well as increases in deep-ocean heat content. That increased heat has expanded the volume of the oceans and has been recorded as a rise in sea-level. Scientists have also observed decreases in sea-ice, a general retreat of glaciers and decreases in snow cover. Changes in atmospheric pressure and rainfall have also occurred in patterns that we would expect due to increased greenhouse gases. There is also emerging evidence that some, though not all, types of extreme weather have become more frequent around the planet. These changes are again consistent with our expectations for increasing atmospheric carbon dioxide. Patterns of temperature change that are uniquely associated with the enhanced greenhouse effect, and which have been observed in the real world include: greater warming in polar regions than tropical regions greater warming over the continents than the oceans greater warming of night time temperatures than daytime temperatures greater warming in winter compared with summer a pattern of cooling in the high atmosphere (stratosphere) with simultaneous warming in the lower atmosphere (troposphere).

#### Even if there is only a one percent chance fast reactors can work you vote aff because the planet is at stake.

Steve Kirsch, 11-25-2009, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “Why We Should Build an Integral Fast Reactor Now,” <http://skirsch.wordpress.com/2009/11/25/ifr/>

\*\*\*cites Charles Till, former Associate Director, Argonne National Laboratory, The National Academy Studies, James Hansen, Director, NASA Goddard Institute for Space Studies, Ray Hunter, former Deputy Director of the Office of Nuclear Energy, Science and Technology in the U.S. Department of Energy (DOE), Leonard Koch, winner of the Global Energy International Prize, Barry Brook Sir Hubert Wilkins Chair of Climate Change\*\*\*

Even if you believe all the arguments of the opposition and completely discount the arguments of the Argonne scientists who best know the technology, it doesn’t matter because we do not have an option: we have to make this work now. Renewables alone can’t kill coal in the time allotted. The point is:1) virtually every credible renewable expert agrees we cannot reduce our carbon emissions enough without nuclear, 2) the IFR is our best nuclear, 3) the IFR is the only technology we have with a realistic chance of replacing coal burners in a coal plant with a lower-cost carbon-free alternative. So objections noted, but our planet is at stake and we have got to make this work. We should be joining together and doing things that our most credible scientists tell us we have to do to save our planet, rather than arguing amongst ourselves and debating what the optimum solution is. The time for debate is over. We are so late on deploying clean energy technologies that any new technology that has a realistic potential to make a significant positive impact should be welcomed with open arms by every human being. Urgency “Within the next four decades, human civilization must eliminate its use of fossil fuels and replace them with 10,000 gigawatts of reliable, sustainable power. The only realistic way that this extraordinary challenge can be met is with the rapid and large-scale deployment of nuclear power, on a worldwide basis, led by countries like the US, Russia, the EU, China and India. Generation III nuclear plants will be critical to this expansion over the short term, Generation IV technology is the astoundingly attractive long-term prospect, with the IFR being the flagship Gen IV design. The urgency in getting the IFR commercialised and deployment on an industrial scale cannot be overstated”.

#### Anthropogenic warming causes rapid sea level rise and collapse in biodiversity.

Kathy J. Willis et. al, 2010, holds the Tasso Leventis Chair of Biodiversity, is Director of the Biodiversity Institute (BIO) in the Zoology Department and a Professorial Fellow at Merton College, Ph.D. from the University of Cambridge in Plant Sciences, held a Selwyn College Research Fellowship and then a NERC Postdoctoral Fellowship in the department of Plant Sciences, University of Cambridge, Royal Society University Research Fellowship in the Godwin Institute for Quaternary Research, University of Cambridge, University Lectureship in the School of Geography and the Environment, University of Oxford, Keith D. Bennett is a professor in the School of Geography, Archaeology and Palaeoecology at Queen’s University, Belfast, Professor of Late-Quaternary Environmental Change, Responsible for Quaternary Geology program, Senior Assistant in Research at the University of Cambridge, NSERC Postdoctoral Research Fellow, University of Toronto, Shonil A. Bhagwat has a D.Phil. in Tropical Forest Diversity and Conservation and MSc in Forestry and its Relation to Land Use from the University of Oxford, Senior Research Fellow, Course Director BCM, co-ordinating a project that examines Human Adaptation to Biodiversity Change, and John B. Birks professor in the Department of Biology and Bjerknes Centre for Climate Research University of Bergen, editorial boards of Review of Palaeobotany and Palynology; Palaeogeography, Palaeoclimatology, and Palaeoecology; Grana; Journal of Paleolimnology; Acta Palaeobotanica; Journal of Biogeography; Ecology and Plant Diversity, and Perspectives in Plant Ecology, and Evolution, Systematics and Biodiversity, Vol. 8 Issue 1, “4 C and beyond: what did this mean for biodiversity in the past?,” p. 3, Ebsco Host

Of the many predictions for climate change in the next cen-tury, a general consensus is emerging that global tempera-tures will increase by 2–4 ◦ C and possibly beyond (Mein-shausenet al., 2009), sea levels will rise (1m±0.5 m), and atmospheric CO2 will increase by up to 1000 ppmv (Solomonet al., 2007). It is also widely suggested that the magnitude and rate of these changes will result in many plants and animals going extinct, for example within the next century, over 35% of some biota will have gone ex-tinct (Thomaset al., 2004; Solomonet al., 2007) and there will be extensive die-back of the tropical rainforest due to climate change (e.g. Huntingford et al., 2008). These predictions, based predominantly on models constructed using the present-day static distribution of species in rela-tion to present-day climate, paint a depressing picture. And it is these predictions that pervade the scientific and non-scientific literature to highlight the potential perils of future climate change and leading to the oft-cited sentiment that future climate change poses an equal or greater extinction threat to global biodiversity than land-use change (Parme-san & Yohe, 2003; Thomaset al., 2004).

#### Biodiversity loss causes extinction.

Ruth Young, 2-9-2010, Ph.D. specialising in coastal marine ecology, “Biodiversity: what it is and why it’s important,” <http://www.talkingnature.com/2010/02/Biodiversity/Biodiversity-what-and-why/>

Different species within ecosystems fill particular roles, they all have a function, they all have a niche. They interact with each other and the physical environment to provide ecosystem services that are vital for our survival. For example plant species convert carbon dioxide (CO2) from the atmosphere and energy from the sun into useful things such as food, medicines and timber. A bee pollinating a flower (Image: ClearlyAmbiguous Flickr) Pollination carried out by insects such as bees enables the production of ⅓ of our food crops. Diverse mangrove and coral reef ecosystems provide a wide variety of habitats that are essential for many fishery species. To make it simpler for economists to comprehend the magnitude of services offered by Biodiversity, a team of researchers estimated their value – it amounted to $US33 trillion per year. “By protecting Biodiversity we maintain ecosystem services” Certain species play a “keystone” role in maintaining ecosystem services. Similar to the removal of a keystone from an arch, the removal of these species can result in the collapse of an ecosystem and the subsequent removal of ecosystem services. The most well known example of this occurred during the 19th century when sea otters were almost hunted to extinction by fur traders along the west coast of the USA. This led to a population explosion in the sea otters’ main source of prey, sea urchins. Because the urchins graze on kelp their booming population decimated the underwater kelp forests. This loss of habitat led to declines in local fish populations. Sea otters are a keystone species once hunted for their fur (Image: Mike Baird) Eventually a treaty protecting sea otters allowed the numbers of otters to increase which inturn controlled the urchin population, leading to the recovery of the kelp forests and fish stocks. In other cases, ecosystem services are maintained by entire functional groups, such as apex predators (See Jeremy Hance’s post at Mongabay). During the last 35 years, over fishing of large shark species along the US Atlantic coast has led to a population explosion of skates and rays. These skates and rays eat bay scallops and their out of control population has led to the closure of a century long scallop fishery. These are just two examples demonstrating how Biodiversity can maintain the services that ecosystems provide for us, such as fisheries. One could argue that to maintain ecosystem services we don’t need to protect Biodiversity but rather, we only need to protect the species and functional groups that fill the keystone roles. However, there are a couple of problems with this idea. First of all, for most ecosystems we don’t know which species are the keystones! Ecosystems are so complex that we are still discovering which species play vital roles in maintaining them. In some cases its groups of species not just one species that are vital for the ecosystem. Second, even if we did complete the enormous task of identifying and protecting all keystone species, what back-up plan would we have if an unforseen event (e.g. pollution or disease) led to the demise of these ‘keystone’ species? Would there be another species to save the day and take over this role? Classifying some species as ‘keystone’ implies that the others are not important. This may lead to the non-keystone species being considered ecologically worthless and subsequently over-exploited. Sometimes we may not even know which species are likely to fill the keystone roles. An example of this was discovered on Australia’s Great Barrier Reef. This research examined what would happen to a coral reef if it were over-fished. The “over-fishing” was simulated by fencing off coral bommies thereby excluding and removing fish from them for three years. By the end of the experiment, the reefs had changed from a coral to an algae dominated ecosystem – the coral became overgrown with algae. When the time came to remove the fences the researchers expected herbivorous species of fish like the parrot fish (Scarus spp.) to eat the algae and enable the reef to switch back to a coral dominated ecosystem. But, surprisingly, the shift back to coral was driven by a supposed ‘unimportant’ species – the bat fish (Platax pinnatus). The bat fish was previously thought to feed on invertebrates – small crabs and shrimp, but when offered a big patch of algae it turned into a hungry herbivore – a cow of the sea – grazing the algae in no time. So a fish previously thought to be ‘unimportant’ is actually a keystone species in the recovery of coral reefs overgrown by algae! Who knows how many other species are out there with unknown ecosystem roles! In some cases it’s easy to see who the keystone species are but in many ecosystems seemingly unimportant or redundant species are also capable of changing niches and maintaining ecosystems. The more Biodiversityiverse an ecosystem is, the more likely these species will be present and the more resilient an ecosystem is to future impacts. Presently we’re only scratching the surface of understanding the full importance of Biodiversity and how it helps maintain ecosystem function. The scope of this task is immense. In the meantime, a wise insurance policy for maintaining ecosystem services would be to conserve Biodiversity. In doing so, we increase the chance of maintaining our ecosystem services in the event of future impacts such as disease, invasive species and of course, climate change. This is the international year of Biodiversity – a time to recognize that Biodiversity makes our survival on this planet possible and that our protection of Biodiversity maintains this service.

### plan

#### Plan: The United States Federal Government should substantially increase commercial loan guarantees to develop and deploy Integral Fast Reactors for the purpose of energy production in the United States.

### 1AC solvency

#### Loan guarantees are key to establishing pyro-processing.

Stephen Berry & George S. Tolley, 11-29-2010, James Franck Distinguished Service Professor Emeritus at the University of Chicago, Fellow, American Academy of Arts and Sciences, foreign Member, Royal Danish Academy of Sciences, member and Home Secretary, National Academy of Sciences, J. Heyrovsky Honorary Medal for Merit in the Chemical Sciences, Academy of Sciences of the Czech Republic, Alexander von Humboldt-Stiftung Senior Scientist Award, Phi Beta Kappa National Lecturer, George S. Tolley is a professor emeritus in Economics at the University of Chicago, fellow, American Association for the Advancement of Science, honorary editor, Resource and Energy Economics, honorary Ph.D., North Carolina State University, “Nuclear Fuel Reprocessing Future Prospects and Viability,” p. 38, <http://humanities.uchicago.edu/orgs/institute/bigproblems/Team7-1210.pdf>

The construction of an aqueous solvent extraction plant would be out of date, especially when the more promising option of pyroprocessing is on the horizon. In comparison, to current available methods, pyroprocessing produces virtually no waste, can be done on-site, and offers the option of fabricating proliferation resistant fuel from plutonium as well as uranium. The second question in regard to domestic reprocessing is, “how much direct involvement should the government have in the reprocessing business?” Government involvement could be justified on the grounds of the externalities present in nuclear waste disposal. This could take on a variety of forms - government research efforts, subsidizing reprocessing (or offering tax credits and loan guarantees), or even operating a reprocessing center on its own. Through its actions, the government will be able to influence the development and growth of the nuclear reprocessing industry in the United States. These efforts in support of pyroprocessing and other advanced fuel cycle technologies represent a small portion of the Department of Energy budget - only $142,652,000 out of a total of $33,856,453,000 in discretionary funding in FY 2009, or less than half of one percent98. Furthermore, private companies do not have sufficient independent incentives to reduce the long-term health and environmental consequences of nuclear waste disposal. While it is beyond the scope of this paper to present a formal costbenefit analysis of R&D efforts, given the minimal costs and the large potential benefits, the chances of success do not need to be very high to justify continued government expenditures in this area.

#### U.S. commitment to pyro-processing sustains the nuclear industry – prices and management.

Stephen Berry & George S. Tolley, 11-29-2010, James Franck Distinguished Service Professor Emeritus at the University of Chicago, Fellow, American Academy of Arts and Sciences, foreign Member, Royal Danish Academy of Sciences, member and Home Secretary, National Academy of Sciences, J. Heyrovsky Honorary Medal for Merit in the Chemical Sciences, Academy of Sciences of the Czech Republic, Alexander von Humboldt-Stiftung Senior Scientist Award, Phi Beta Kappa National Lecturer, George S. Tolley is a professor emeritus in Economics at the University of Chicago, fellow, American Association for the Advancement of Science, honorary editor, Resource and Energy Economics, honorary Ph.D., North Carolina State University, “Nuclear Fuel Reprocessing Future Prospects and Viability,” p. 39, <http://humanities.uchicago.edu/orgs/institute/bigproblems/Team7-1210.pdf>

Increasing government support of advancements in reprocessing in the U.S. would encourage growth and investment in this technology. Therefore, continued government commitment to researching pyroprocessing and other advanced fuel cycle technologies is vital to the nuclear industry, especially if we envision this technology maturing internationally. As unsustainable as our current nuclear waste disposal strategies are, we believe in the current political climate, commercial reprocessing in the United States are not a viable option due to high environmental and technological costs, as well as having significant nuclear proliferation threats. However, in order for the U.S. to employ pyroprocessing in the future, the government must begin now to incentivize the technology for firms and investors. As uranium prices are expected to increase in the future, as well as an increasing concern regarding the management of nuclear waste worldwide, reprocessing may become a promising solution provided investments are made to address current challenges in the field.

#### Pyro-processing is developed now and is comparatively better than existing reactors.

Tom Blees, 5-31-2011, is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Idaho Samizdat: Nuke Notes, “Critique of MIT Nuclear Fuel Cycle Report,” <http://djysrv.blogspot.com/2011/05/critique-of-mit-nuclear-fuel-cycle.html>

The public views adequate nuclear waste management as a critical linchpin in further development of nuclear energy. The technical community, therefore, needs to provide a practical approach to deal with the waste issue. The Fukushima accidents call attention to the importance of managing spent fuel safely. It appears the best technical approach is extracting the actinides from spent fuel, which reduces the effective lifetime of nuclear wastes from ~300,000 years to ~300 years. Extracting actinides (and using them to generate power) is by far the best technical approach to dealing with nuclear wastes. The MIT Study fails to mention this important possibility. If actinide extraction is chosen as a pathway for waste “disposal,” the recovered actinides still must be transmuted to fissile material or fissioned directly. This can be done only in fast reactors. Actinides can be burned in fast reactors, generating energy and at the same time creating more fissile material for the future. A key advantage of fast reactors is that they can be utilized as “burners” when excess plutonium inventories exist, and then converted to “breeders” whenever needed. Only fast reactors can satisfy the waste-disposal mission simply and effectively while extending utilization of the uranium resources by more than two orders of magnitude. Thermal reactors—such as LWRs and high-temperature gas-cooled reactors—utilize less than 1% of uranium resources, even with recycling of plutonium and some of the uranium. Thermal-spectrum reactors, even optimized, can extend the resource utilization only marginally, and they cannot burn actinides effectively. Actinide recycling also requires an efficient processing technology, with improved economics and nonproliferation characteristics. The pyroprocessing technique based on electrorefining, developed in the IFR program, has the potential to recover the actinides from LWR spent fuel as well as to fully recycle fuel in fast reactors. The fundamentals of pyroprocessing have already been demonstrated – this is not new science. The technology is now ready for pilot-scale demonstration, and it should be given the highest priority. We do not need decades of R&D to pursue all esoteric ideas. We already have in our hands on the most advanced technology, technology that no other countries possess. The MIT Study also talks about the inter-generational equity considerations. We believe that our generation should demonstrate the technologies that will solve the energy supply and waste management problems, rather than proposing a century-long interim storage of the spent nuclear fuel.

#### Fast reactors are 100% safe – multiple redundancies eliminating human error and impregnable\*\*

Barry Brook et. al, 2-21-2009, a leading environmental scientist, holding the Sir Hubert Wilkins Chair of Climate Change at the School of Earth and Environmental Sciences, and is also Director of Climate Science at the University of Adelaide’s Environment Institute, published three books, over 200 refereed scientific papers, is a highly cited researcher, received a number of distinguished awards for his research excellence including the Australian Academy of Science Fenner Medal, is an International Award Committee member for the Global Energy Prize, Australian Research Council Future Fellow, ISI Researcher, Ph.D., Macquarie University in Environmental Engineering, Science Council for Global Initiatives, Edgeworth David Medal Royal Society of NSW, Cosmos Bright Sparks Award, Tom Blees is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, George S. Stanford is a nuclear reactor physicist, part of the team that developed the Integral Fast Reactor, PhD from Stanford University in Physics, Masters from University of Virginia in Engineering, worked at Argonne National Laboratory, Graham R.L. Cowan, "Boron: A Better Energy Carrier than Hydrogen?" in 2001, published "How Fire Can Be Tamed," BraveNewClimate, “Response to an Integral Fast Reactor (IFR) critique,” <http://bravenewclimate.com/2009/02/21/response-to-an-integral-fast-reactor-ifr-critique/>

[BWB] The laws of physics say that this is not nonsense. For instance, the metal fuel pins’ composition is such that if they begin to overheat, the resulting expansion decreases their density to the point where the fission reaction simply shuts down. This is not speculation — it’s been tested and verified. I quote: “The IFR gains safety advantages through a combination of metal fuel (an alloy of uranium, plutonium, and zirconium), and sodium cooling. By providing a fuel which readily conducts heat from the fuel to the coolant, and which operates at relatively low temperatures, the IFR takes maximum advantage of expansion of the coolant, fuel, and structure during off-normal events which increase temperatures. The expansion of the fuel and structure in an off-normal situation causes the system to shut down even without human operator intervention. In April of 1986, two special tests were performed on the Experimental Breeder Reactor II (EBR-II), in which the main primary cooling pumps were shut off with the reactor at full power (62.5 Megawatts, thermal) – By not allowing the normal shutdown systems to interfere, the reactor power dropped to near zero within about 300 seconds. No damage to the fuel or the reactor resulted. This test demonstrated that even with a loss of all electrical power and the capability to shut down the reactor using the normal systems, the reactor will simply shut down without danger or damage. The same day, this demonstration was followed by another important test. With the reactor again at full power, flow in the secondary cooling system was stopped. This test caused the temperature to increase, since there was nowhere for the reactor heat to go. As the primary (reactor) cooling system became hotter, the fuel, sodium coolant, and structure expanded, and the reactor shut down. This test showed that an IFR type reactor will shut down using inherent features such as thermal expansion, even if the ability to remove heat from the primary cooling system is lost. Events such as the loss of water to the steam system would cause a condition such as the test demonstrated. Another major feature of the IFR concept is that the reactor uses a coolant, sodium, which does not boil during normal operation nor even in overpower transients such as described above. This means that the coolant is not under significant pressure. When coolant is not under pressure, the reactor can be placed in a “pool” of coolant, contained in a double tank, so that there is no real possibility for a loss of coolant. Even if the normal pumps are lost, some coolant flow through the reactor occurs due to natural convection. The features described above allow for greater simplification of a nuclear plant, resulting in cost savings, greater ease in operation, and a safety system that relies on natural phenomenon that cannot be defeated by human error. “ [TB] Arguing that these reactors cannot be safe from meltdowns flies in the face of the laws of physics, which assure that very feature. Regarding terrorist attack, we can secure our airports chemical plants, etc, with not a lot of work, you can design these plants to be virtually impregnable by terrorists (e.g., burying the reactor building). The new Gen III LWRs, though, are so far advanced as to merit their designation as a different generation. The probabilistic risk assessment of the ESBWR is astronomical, one core melt accident every 29 million reactor-years. Since we don’t have enough nuclear waste to load new IFRs quickly enough to meet the 2050 goal of zero emissions, the newest LWRs could be built to fill any gap that renewables and IFRs couldn’t fill and can be expected to perform safely. Their safety features are far beyond our current reactors by orders of magnitude.

#### No new U.S. booms in expansion for nuclear power – high costs and no storage.

Michael Bastasch, 3-8-2012, The Daily Caller, “Fukushima disaster halts progress of nuclear power in the US,” <http://dailycaller.com/2012/03/08/fukushima-disaster-halts-progress-of-nuclear-power-in-the-us/>

After the Fukushima disaster, all of these initiatives were halted in their tracks. Other obstacles to expanding nuclear power include concerns over the high costs of nuclear plants, the shale revolution that is exploiting America’s rich natural gas deposits and the inability of Congress to find an adequate place to store nuclear waste. The Energy Policy Act of 2005 “provides loan guarantees of up to 80% of a project’s cost and a production tax credit of 1.8 cents per kilowatt hour for new nuclear capacity beginning operation by 2020,” according to the Institute for Energy Research (IER). The act incentivized many new applications for plant approvals to be filed with the Nuclear Regulatory Commission, but high capital costs are still keeping these plants from being built, according to IER. As for nuclear waste disposal, the future seems uncertain. Currently, waste is stored on site at 104 nuclear plants in the U.S., but those facilities were supposed to be temporary. California, Illinois, Maine, Massachusetts, Virginia and West Virginia say they won’t lift their nuclear moratoriums until a permanent and safe solution is discovered, according to the National Conference of State Legislatures. Nevada’s Yucca Mountain was thought to be the solution to this problem, but in 2009 the Obama administration withdrew its support for Yucca Mountain due to fierce political opposition in Nevada. Nuclear power proponents hoped that the administration would again consider the site, but a recent report by the president’s Blue Ribbon Commission did not consider Yucca Mountain’s feasibility. There are even doubts surrounding the newly-approved Georgia reactors, as the plants may begin generating electricity eight months later than expected, according the Augusta Chronicle. Supporters of nuclear power, however, still retain some optimism because of the approval of the Georgia reactors and a dual reactor plant in South Carolina. A poll by the Nuclear Energy Institute says that 81 percent of Americans view nuclear energy as “important to meeting the nation’s future electricity needs,” and 64 percent of respondents favoring the use of nuclear power in the U.S.

## 2AC

### 2AC social location

#### Methodologically, we can still test claims without expecting to create a capital “T” truth - an orientation towards discussing effects based on implementation of a plan encourages a thorough epistemology without restricting creativity and freedom.

Kenneth Cauthen, 1997, the John Price Crozer Griffith emeritus Professor of Theology at Colgate Rochester Crozer Divinity School, “Relativism and Ethics: What is Truth - does it matter?” http://www.bigissueground.com/philosophy/cauthen-relativism2.shtml

I have written on subjects in theology, ethics, and philosophy and developed an outlook at least in minimalist terms that is to me convincing.[5] My intention is to describe reality as it is, to lay out propositions that correspond with the objectively existing state of affairs. Yet such is the depth of my acknowledgment of relativism and my skepticism that I do not find it useful to ask whether statements about God, the meaning of life, and the moral obligations of human beings are literally true or even approximately represent things as they really are. Non-relativists who hold certain positions with great confidence have no alternative but to say that those who disagree with them are wrong. I am not prepared to say that those who disagree with me on moral, metaphysical, and religious matters are wrong. I just say I see it differently and will act on my own convictions in appropriate ways, and that includes opposing those who differ with means proportionate to the seriousness of the issue. I also assume that every other religious, moral, and metaphysical claim is no less relative in principle than mine. Relativism, however, does not preclude passion, commitment, and action in line with one's own relative viewpoint. It ideally produces humility accompanied by acts of love in the quest for justice and an openness to deeper insight. Moreover, all claims about morality and religion can be tested by myself and others but without certain or absolutely conclusive results. The first criterion is theoretical. I can employ the rational test of coherence (internal consistency with all other propositions I affirm) and the empirical test of evidence (adequacy in accounting for the full range of experience). Yet I know that however successful I may be in applying these tests of truth, the outcome is such that only one who stands where I stand will see what I see. All I can say is that this is the best I have been able to come up with so far. Methods of justifying claims are internal to the point of view being tested and part of it, so that no method provides a way of escaping the relativity that marks all belief systems. The second and most important test is practical. Is the outlook useful in interpreting the whole range of my experience in an adequate (rationally plausible) way and in providing guidance in coping with life? When I live by what I find convincing as a rational being, are the results satisfactory and satisfying judged by the best standards available to me up to now as I continue to learn and revise both my theory and my practices? One hopes that learning, maturity, and experience will lead to increasingly adequate and fulfilling ways of believing and living, loving and hoping, thinking and acting. In the end I am a pragmatist who in the presence of the ultimate questions abandons the hope of knowing with certainty what the ultimate answers are. Nevertheless, I find in my own outlook a way of thinking and living more useful and productive than any alternatives available to me at this time. Are my religious and moral convictions literally true? Do they correspond with reality? These questions are interesting but futile. It would be the greatest miracle of all time if out of all the religions and philosophies every produced on this earth, it turned out that my own was the closest of any to getting it right, telling it like it is, picturing objective reality so that the picture and pictured are remarkably alike! I have a better chance of winning the grand lottery at chances of a 100, 000, 000 to 1. Yet I must live some way, believe something, hope for what seems most likely, and die trusting it was not all in vain. I proceed, then, as a relativist, a pragmatist, and a skeptic who employs correspondence theory as far as it will take me, but beyond the ordinary facts of mundane life, that is not very far, especially when one enters the realms of morality and religion.

#### Without this epistemology you should reject all ‘truth claims’ - questions cannot be answered without crafting them in a way where they can be answered, challenged or analyzed - in this sense, their epistemology is deeply flawed.

Stanley Fish, 6-21-2002, dean of the College of Liberal Arts and Sciences at the University of Illinois at Chicago, writes a monthly column for the Career Network on campus politics and academic careers, The Chronicle of Higher Education, “Say It Ain't So,” google

First the belief, devoutly held and endlessly rehearsed, that the purpose of writing is self-expression. The convenience of this belief, for those who profess it, is that they need never accept correction; for if it is their precious little selves they are expressing, the language of expression is answerable only to the internal judgment of those same selves, and any challenge from the outside can be met simply by saying, (as students often do) "I know what I mean," or, more precisely, "I know what I mean." Students who say and believe this will never confront an important truth: Language has its own structure (not unchanging, to be sure, but fixed enough at any one moment to serve as both a constraint and a resource). If you do not submit yourself to the conventional meanings of words and to the grammatical forms that specify the relationships between the objects words refer to, the prose you produce will say something -- language, not you or I, means -- but it will not say what you wanted to say. That's only because your readers will not be inside your head where they might ask the self-seeking expression what it had in mind, but will instead be on the outside processing the formal patterns of your written language and reaching the conclusions dictated and generated by those patterns. In fact, however, what I've just said is a bit misleading because it suggests that fully formed thoughts exist in some inner mental space and manage to make it into the outside world when they are clothed in the proper syntactical and lexical forms. But as everyone used to know before the cult of self-expression triumphed, the ability even to have certain kinds of thoughts depends on the prior ability to produce (and comprehend) certain kinds of sentences. People don't think naturally in the future perfect or in parallel constructions or in the subjunctive mood; rather these grammatical alternatives are learned, and learned with them are the ways of thinking they make possible -- relating to one another on a time-line events or states of being that have not yet happened; lining up persons, objects, and actions in relationships of similarity and opposition; reasoning from contrary-to-fact assertions to assertions about what was or could be done in the past, present, or future. These are complex mental actions, and students will be able to perform them only if their minds are stocked with the right grammatical furniture, with forms that have no specific content but make possible the organization of any content into temporal/spatial arrangements that suggest and make available modes of action in the world. The organization of the world in ways that expand the possibilities of thought and action -- that, not self-expression, is the purpose of writing, and it is preeminently a social purpose. That is, it is a purpose not pursued alone but in conjunction with others to whom one writes (in speeches, essays, letters, memos, directives, proclamations, editorials, books) with the intention of imparting information, or clarifying issues, or establishing truths or bringing about changes or rousing armies or quieting conflicts, or any of the other ends one might work for in the public arena. Writing then is, by and large, an act either of communication or persuasion, and to engage in it successfully, you have to do more than have something to say; you must be prepared to back it up, supply evidence, respond to objections, expose contradictions, parse the arguments of the opposition and so on. You must conceive yourself not as a lone voice singing in the shower, but as a participant in the multiple dialogues that are the vehicles of discursive and political life. But you will not be able to participate effectively if you are content merely to have expressed your opinion. And this brings me to the second reason so many of our students are incapable of writing intelligible sentences or of linking one bad sentence to another in something that approximates an argument. They have been allowed to believe that their opinions -- formed by nothing, supported by even less -- are interesting. The belief that what you're supposed to do is express yourself goes hand in hand with the belief that whatever you happen to express is valuable and if you believe both these things you will not believe that there is any reason to worry about subject-verb agreement or pronouns without nouns or missing transitions or anything else. In response to any question you just say the first thing that comes into your head, and in response to any challenge you just say, "That's my opinion" or "That's what I think," or "My view is as good as yours." No sentiments are more subversive of the possibility of productive classroom activity, and the instructor who hears them coming from the mouths of his or her students should immediately tell them, "Check your opinions, your ideas, your views at the door; they are not fungible currency here." This announcement, which will, at the very least, deliver a salutary shock ("I can't believe she said that"), might possibly open up a space in which writing is taken seriously because it will have identified (by an act of elimination) the true nature of academic work, which is not the work of caressing the self and its effusions, but the work of applying the techniques of reflection, analysis, and critique to matters of general (not personal) concern. But of course no action taken by a single instructor is likely to change very much in the absence of structural changes in the way writing and argument are taught. And here is where the administration comes in. Every dean should forthwith insist that all composition courses teach grammar and rhetoric and nothing else. No composition course should have a theme, especially not one the instructor is interested in. Ideas should be introduced not for their own sake, but for the sake of the syntactical and rhetorical points they help illustrate, and once they serve this purpose, they should be sent away. Content should be avoided like the plague it is, except for the deep and inexhaustible content that will reveal itself once the dynamics of language are regarded not as secondary, mechanical aids to thought, but as thought itself. Of course everyone will resist you, from the students who believe that grammar is a form of tyranny presided over by the academic version of the police, to the instructors who will believe the same and wish not to be policemen, to the experts in composition who will believe that you are incredibly reactionary and desire only to turn back the clock. But persevere, for you will be in the right. And teach such a course yourself, which is what I am going to do next fall. I'll save a place for Larry S. particular topic were impacted twice as much as those in courses that touched on every major topic.

#### No waste or disposal is required.

Barry Brook & Yoon Chang, 2-15-2010, a leading environmental scientist, holding the Sir Hubert Wilkins Chair of Climate Change at the School of Earth and Environmental Sciences, and is also Director of Climate Science at the University of Adelaide’s Environment Institute, published three books, over 200 refereed scientific papers, is a highly cited researcher, received a number of distinguished awards for his research excellence including the Australian Academy of Science Fenner Medal, is an International Award Committee member for the Global Energy Prize, Australian Research Council Future Fellow, ISI Researcher, Ph.D., Macquarie University in Environmental Engineering, Science Council for Global Initiatives, Edgeworth David Medal Royal Society of NSW, Cosmos Bright Sparks Award, Yoon Chang is a Distinguished Fellow at Argonne National Laboratories, a key figure in the development of the IFR, and founding member of the Science Council for Global Initiatives (SCGI), The Energy Collective, “IFR FaD 3 – the LWR versus IFR fuel cycle,” <http://theenergycollective.com/barrybrook/27076/ifr-fad-3-%E2%80%93-lwr-versus-ifr-fuel-cycle>

This ’spent fuel’ can be either secured for eventual storage in a deep geological respository (hint: bad idea), or reprocessed to recover the Pu for further fissioning. The result of this type of reprocessing, adopted by the French, is that instead of getting six-tenths of 1 per cent of the energy out of mined uranium, we get eight-tenths, with no significant reduction in waste life. Only one or two passes are possible. Wow… excuse me if I’m not particularly impressed (it’s also an expensive process and rings proliferation alarm bells for some folks). Now, let’s consider the alternative IFR fuel cycle: First, note that no mining is required — this will be true for many centuries, until all of the existing used fuel (left over from LWRs) and depleted uranium that we have stockpiled is consumed, to make a lot of electricity. First, 700 tons of LWR spent fuel must be reprocessed to extract ~10 tonnes of fissile actinides (mostly Pu, Am and Cm of various isotopes, and laced with some trace lanthanoids which keeps it ‘hot’). More detail on this ‘fissile load’ will be given in future posts. This one-time reprocessing also results in 80 t of makeup uranium (40 t for the core, such that the resultant metal fuel rods are ~20 % fissile, and 40 t for the breeder blanket), with the remaining uranium being available for future inputs as this plant, and others, generates electricity, year in, year out. About 1.5 t per GW year will be needed if the IFR is running at a high fissile-fuel-breeding rate. Note: The blanket uranium loading will be zero for a burner configuration, and much larger amounts for maximum breeding. The amount used in the diagram is something in between. Each year, an average of 13.5 t of nuclear fuel will be removed from the reactor and run through the on-site pyroprocessing unit (details in later posts). This procedure allows separation of the fission products from the heavy metals (which are recycled back into the IFR). The F.P. are encased in a highly durable, inert glass (or perhaps a synroc), and must be isolated for 300 to 500 years to allow for 10+ half-lives of Sr-90 and Cs-137. No long-term (multi-millennial) geological disposal is required.

#### Reprocessing nuclear fuel reduces the size of geological repositories needed - it can double the capacity.

Kate J. Dennis et. al, 2009, Jason Rugolo, Lee T. Murray, and Justin Parrella, PhD candidate at Harvard in Engineering and Earth/Planetary Sciences, “The case for reprocessing,” Bulletin of the Atomic Scientists, <http://www.scribd.com/doc/52483710/A-Pro-and-Con-on-Nuclear-Fuel-Reprocessing>

Reprocessing saves valuable repository space. For long-term geologic storage, reductions in waste volume are important. But it is not just the space that the waste would physically take up that is vital, the heat output of the waste also must be taken into consider-ation, as does the space between waste packages necessary to pre-vent overheating in the repository. While it is true that high-lev-el waste from reprocessing is hotter than non-reprocessed spent fuel, this does not completely nullify the decrease in waste volume achieved by reprocessing. The heat emitted from post-reprocess-ing waste decreases by approximately 70 percent during its first 30 years. In other words, such waste initially can be stored either aboveground in well-ventilated storage buildings (as Areva does), or it can be stored in geologic repositories with space between packag-es left empty and then filled over the years as heat output decreases. In contrast, spent fuel rods that are directly disposed in reposito-ries cool more slowly and require larger geologic repositories. One estimate, which appears in the book Megawatts and Megatons by Richard Garwin and Georges Charpak, suggests that even with the increased heat output of high-level wastes from reprocessing, the amount of space required for a geologic repository can be reduced by one-half if the waste is reprocessed. Overall, Garwin and Charpak argue against reprocessing but acknowledge several benefits that we believe outweigh the economic burdens, the most important being that reprocessing can effectively double the capacity of a Yucca Mountain-sized permanent repository.

#### Methodological criticisms of our evidence base on the institutionalized nature of race does not warrant simply ignoring it.

Martyn Hammersley, 1993, Prof. Education and Social Research @ Centre for Childhood, Development and Learning, British Journal of Sociology, “Research and 'anti-racism': the case of Peter Foster and his critics,” 44.3, 11-93, JSTOR

Various sorts of criticism have been directed at the validity of Foster's work. Some is substantive in character, in other words it consists of a questioning of his claims on the basis of appeals to what is taken to be well-known from other sources. For example, critics sometimes rely on the findings of other research to throw doubt on the validity of Foster's conclusions. Thus, Connolly comments that the fact that Foster's findings challenge he growing" perceived wisdom" of a number of research and theoretical perspectives developed since the mid 1980s (. . .) raises numerous important issues concerning the study's political, ethical and theoretical orientation and, consequently, the research methods used.6 Accompanying these substantive criticisms, very often, are methodological criticisms: these question the inferences that Foster draws on the basis of his own or others' data. For instance, both Connolly and Gillborn and Drew challenge Foster's claim that there was little evidence of racism on the part of the teachers in the school he studied, on the grounds that he took insufficient account of black students' views.7 They argue that he explains away the unsolicited complaints of teacher racism voiced by three of the students he interviewed by treating these as products of a general anti-school attitude. The critics also argue that the fact that so few of the students reported the existence of teacher racism resulted from the influence on them of Foster's own status as a white middle class male whom they identified with the teachers. Another methodological criticism that has been made of Foster's study is that the school he investigated was atypical and therefore does not constitute a sound basis for generalisation to other schools.8 Interestingly, these methodological criticisms parallel in character, if not in force, those that Foster himself makes of other studies; indeed, of many of the studies on which his critics rely in their substantive criticisms. And he, and others, have responded to the attacks of the critics with further methodological arguments.9 What we have here, then, is a body of substantive and methodological arguments which are interpreted in conflicting ways by Foster and his critics. One response to this situation might be to call for further research designed to resolve the disagreement. I would not want to discourage this, but I doubt whether it would succeed. It seems to me that the roots of the disagreement lie more deeply than these substantive and methodological criticisms themselves. We get an inkling of this from the fact that Foster's critics sometimes combine such criticisms with what I will call meta-methodological arguments. These concerned effects in what they take to be the presuppositions n the basis of which Foster approached his own data and that of others. The clearest published example of such criticism is provided by Connolly. He argues that, as a result of his adoption of a Weberian orientation, Foster was unable to recognise the racism that was taking place 'under his nose' (p. 142) in the school he studied. Connolly sees Foster's work in terms of a deterministic model of research in which the findings are constrained by his starting assumptions, in such a way as to rule out the detection of many forms of racism. Gillborn and Drew hint at the same point, criticizing Foster's definition of racism as too narrow. l l In part, what seems to be implied in these arguments is that the evidence which Foster offers in his study, and his questioning of the findings of other studies, must be rejected because they are incompatible with the widely accepted theory that racism is institutionalized in British society, that it is part of the fundamental structure of that society on this basis his critics argue that while discrimination may not seem to be occurring in some particular setting, once we view this setting in the context of British (or English) society as a whole it will be seen to form part of a larger pattern of racism. So, here Foster's claims are being questioned on the grounds of his presumed commitment to an inadequate methodological framework, one which gives a misleading priority of micro-empirical evidence at the expense of macro-theoretical perspective. This can be summarised as the charged that Foster's work is empiricist1.2 And, of course this argument connects with much discussion of the methodology of qualitative research today, in which the empiricism of quantitative research, and of some qualitative work, is challenged on the basis of alternative epistemological ssumptions.l3 What is being rejected here can be more usefully (because more specifically) referred to as a foundationalist epistemology. This is the notion that research conclusions are founded, in some rigorously determinate fashion, on a body of evidence whose own validity is beyond question (for example, because it consists of reports of intersubjectively observable behaviour). Thus, Troyna criticizes Foster for 'methodological purism', which he interprets as requiring evidence that rules out all possible alternative interpretations.l4 Foundationalism has, of course, been subjected to very damaging criticism in philosophy, as well as in the social sciences, over the past 30 or 40 years, and I think it is clear that it is not defensible. There is no single, agreed alternative to foundationalism, but we can identify three radical alternatives that have become increasingly influential in social research in recent years; and whose influence is detectable in the writings of some of Foster's critics. These alternatives are: relativism, standpoint theory, and instrumentalism. These are not always clearly distinguished, and they are sometimes used in combination. However, I will try to show that none of them is very satisfactory. Applying relativism to the case under discussion, it would be argued that the validity of Foster's appeal to the canons of good research is relative to a particular methodological framework, namely positivism or post-positivism and that other frameworks would produce different conclusions. We may, for instance, decide to treat the claims of some black pupils that they and others have been subjected to racist treatment by teachers as necessarily true in their own terms, as reflecting their experience and the framework of assumptions that constitute it, that framework being incommensurable with the one adopted by Foster. Something like this may underlie Connolly's question: 'how can Foster as a White middle class male construct his own definition of racism to then use to judge the accuracy of Black working class students definitions?"5If treated as valid, this argument has the effect of apparently undercutting Foster's empirical research in the sense that it need no longer be treated by others as representing reality. Yet, at the same time, from this point of view Foster's arguments remain valid in their own terms; in fact, they remain as valid as those of his critics. This seems to lead to a sort of stalemate. And, of course, there is the problem that relativism is self-undermining: if it is true, then in its own terms it can only be true relative to a relativist framework; so that from other points of view it remains false.'6 As a non-relativist, this leaves Foster free to claim quite legitimately( even from the point of view of relativism) that his views represent reality, whereas a relativist critic could not make the same claim for her or his views but must treat them simply as representing a particular framework of beliefs to which he or she happens to be committed. The second view I want to consider is sometimes associated with versions of the first, but must be kept separate because it involves a quite distinctive and incompatible element. I will refer to this as standpoint theory. Here people's experience and knowledge is treated as valid or invalid by dint of their membership in some social category.'7 Here again Foster's arguments may be dismissed because they reflect his background and experience as a white, middle class, male teacher. However, this time the implication is that reality is obscured from those with this background because of the effects of ideology. By contrast, it is suggested, the oppressed (black, female and/or working class people) have privileged insight into the nature of society. This argument produces a victory for one side, not the stalemate that seems to result from relativism; the validity of Foster's views can therefore be dismissed. But in other respects this position is no more satisfactory than relativism. We must ask on what grounds we can decide that one group has superior insight into reality. This cannot be simply because they declare that they have this insight; otherwise everyone could make the same claim with the same legitimacy (we would be back to relativism). This means that some other form of ultimate justification is involved, but what could this be? In the Marxist version of this argument the working class (or, in practice, the Communist Party) are the group with privileged insight into the nature of social reality, but it is Marx and Marxist theorists who confer this privilege on them by means of a dubious philosophy of history.l8 Something similar occurs in the case of feminist standpoint theory, where the feminist theorist ascribes privileged insight to women, or to feminists engaged in the struggle for women’s emancipation. l9 However, while we must recognise that people in different social locations may have divergent perspectives, giving them distinctive insights, it is not clear why we should believe the implausible claim that some people have privileged access to knowledge while others are blinded by ideology.20

#### Advancement of nuclear energy in the U.S. is a step toward broader environmental justice - status quo is a continuation of toxic air pollution from oil and coal while simultaneously stifling minority advancement.

Maudine R. Cooper & Todd Whitman 2011, Cooper-President and CEO of the Greater Washington Urban League and Christine, Whitman- former EPA Administrator and Co-Chair of the Clean and Safe Energy Coalition) “Op-Ed: Nuclear Energy: An Economic Lifeline for Local Communities,” https://www.bet.com/News/Opinion\_Cooper\_Whitman\_CleanEnergy.htm

The latest unemployment numbers reveal that African Americans seeking work still are among the hardest hit by the economic downturn. The 16 percent unemployment rate among African Americans hovers around a 25-year high, and remains six percentage points above the national average. With unemployment concerns top of mind, leaders in the African-American community are joining President Obama in calling for additional federal support for new job opportunities in the clean energy sector, including nuclear energy. This fast-growing sector offers the promise of thousands of well-paying, long-term jobs in communities across the United States. There is a broad coalition ready to support nuclear expansion and leverage the benefits derived from more nuclear energy plants. We recently joined more than 50 leaders from business and academia from within the Hispanic and African-American communities along with labor and industry representatives to focus on how safe, reliable nuclear energy facilities can benefit minority communities. The open dialogue, hosted in Washington D.C. by the Clean and Safe Energy (CASEnergy) Coalition, focused on workforce development, educational partnerships and supplier opportunities for minority communities and businesses. Such a discussion is timely given continued trends in unemployment. Unlike many sectors that are contracting, there are numerous employment opportunities available in the energy sector, especially in nuclear energy. During the past few years, more than 15,000 new jobs have been created in anticipation of building new nuclear projects around the country. These jobs are well-paying, with university, community college and labor training programs that are preparing the next-generation workforce in many disciplines. Clearly, there is an increasing need for long-term partnerships between business, labor and minority groups to best leverage these job opportunities. Nuclear energy is an economic success story – a story all Americans should be part of. One of the great values of nuclear energy is its ability to transform communities with new jobs and economic development. The 104 reactors in operation around the country each contributes an average of $430 million a year in total economic output for their local communities. That money comes in salaries, materials and state and local taxes for better schools, roads, hospitals and other infrastructure. Each plant requires 400 to 700 workers to run it. Additional training for some of those jobs can take as little as two years, with the prospect of an immediate payoff. Average annual starting salaries in the industry range from $65,000 to $80,000. What’s more, unlike many positions in today’s economy, jobs at nuclear plants can’t be shipped overseas. And the nuclear energy industry is hiring now: nearly 40 percent of the nuclear energy workforce will be eligible to retire over the next five years, meaning the industry will need to hire as many as 20,000 workers to replace those that leave.[1] New jobs in the nuclear energy sector are available to minority communities through the pursuit of the workforce training and feeder programs available at historically black institutions such as Clark Atlanta University and South Carolina State University. Industry and labor strive for a diverse workforce and supplier network, and programs are in place to help achieve this goal. These are the jobs of the future, powered by a clean energy portfolio, as nuclear power combines with emerging energy alternatives such as solar and wind to produce power that our digital economy demands. And because nuclear power plants generate virtually no air pollution, the communities around them don’t have to trade air quality for jobs. According to a report released by the Congressional Black Caucus Foundation in 2004, more than 70 percent of African Americans live in counties in violation of federal air pollution standards.[2] But because nuclear plants emit no greenhouse gases or air pollution during the production of electricity, they can produce jobs and energy while protecting our air quality. The economic and environmental benefits of nuclear power are important to note when considering policies to support a clean energy future. First, as the cleanest form of 24/7 baseload power, nuclear energy is needed to responsibly meet our rising electricity demand—forecasted to grow by 28 percent by 2035. Second, as part of a sustainable energy policy, we need energy sources such as nuclear power that limit carbon emissions and other pollutants. Nuclear energy generates about 70 percent of all low-carbon electricity our nation uses every year.

#### Nuclear power offers better opportunities for minorities than status quo energies.

Mark Flanagan, 2012, Environmental Journalist, “Patrick Moore’s Economic Justice,” <http://neinuclearnotes.blogspot.com/2012/05/patrick-moores-economic-justice.html>

Patrick Moore, ex-Greenpeace, sees in nuclear energy an interesting argument for what he terms “environmental justice,” which is true enough, and economic justice, used in the headline, works as well: African-American and Hispanic advocacy groups have historically been focused on civil rights, but they're "morphing into economic development," Moore said, and looking at energy policy for the first time. Unlike many other big industrial facilities, he noted, polls show nuclear power plants have increasing popular support the closer people live to them. Nuclear plants are "wealth creating machines," Moore said, with no pollution, better roads and schools financed by the plants' property taxes, and large payrolls. Moore is right about this. Nuclear energy facilities are also often union shops, which offers a good path to the middle class and out of economic uncertainty. A city of industry can be a world of opportunity and nuclear energy plants have the added benefit of not turning communities into pollution laden sump holes. A cooling tower is not a smoke stack. Moore told AOL Energy that he is reaching out to African-American and Hispanic business and labor groups, telling them that nuclear plants, in contrast to projects like coal plants, are long-term community assets. I’m sure the coal industry might say a few words about that, but Moore has a point. [N]uclear not only needs thousands of skilled workers when plants are built new but generations of skilled workers to keep the units running for 60 or more years. Moore addresses other issues, too, including natural gas and small reactors – and his comments on these are interesting – but his comments on the economic value of nuclear plants seems particularly germane at this moment in time. Visit the Clean and Safe (CASE) Energy Coalition for more on his current activities.

#### Nuclear energy is essential to quality of life issues that disproportionately affect minority communities. Public transportation, water treatment, hospitals, .

AABE (American Association of Blacks in Energy), 2002 May, 1 pg. 1 “American Association of Blacks in Energy Supports Yucca Mountain Storage Repository” <http://www.nei.org/resourcesandstats/documentlibrary/nuclearwastedisposal/regulatoryinformation/aabenewsrelease5102 >

At its quarterly meeting last month, the Board of Directors of the American Association of Blacks in Energy announced its support for Congressional ratification of Yucca Mountain, Nevada as the logical site for nuclear waste storage. “Careful and diligent monitoring is key to ensuring public health and safety, but that can be better accomplished at one site instead of continuing the current practice of on-site storage. The Yucca Mountain project is an important component in a solid energy policy which ensures energy and environmental equity for all Americans,” said Frank Johnson, chairman of the association. In related action, the organization reaffirmed its support for re-licensing of nuclear facilities. “Nuclear is America’s largest base-load, emission-free electricity. Minority communities are commonly found in urban areas that require large amounts of electricity for public transportation, hospitals, water treatment facilities and other necessities. We believe that nuclear energy provides important benefits”, said Johnson. “Our quality of life depends upon electricity that is reliable and affordable – and nuclear is an important part of the mix,” he said. AABE is a national association of energy professionals founded and dedicated to ensure the input of African Americans and other minorities into the discussion and development of energy policies, regulations, R&D technologies and environmental issues.

#### Deliberative policymaking through debate over nuclear power is the crucial to solving the environment - reflecting as a critical intellectual is not enough.

Marian Herbick & Jon Isham, October 2010, Marian Herbick is a senior at the University of Vermont, where she is studying natural resource planning and wildlife biology, member of the Rubenstein School of Environment and Natural Resources and the Honors College, Jon Isham, department of economics and the program in environmental studies at Middlebury College. teaches in environmental economics, environmental policy, introductory microeconomics, social capital in Vermont, and global climate change, “The Promise of Deliberative Democracy,” <http://www.thesolutionsjournal.com/node/775>

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

#### Abstaining from centralized government falls prey to incomplete knowledge - creates cascading and unpredictable consequences which causes serial policy failure.

Kyle O’Donnell, May 2011, Purchase College, SUNY Economics & History, “Planning the End of Planning: Disintervention and the Knowledge Problem,” Purchase College, <http://www2.gcc.edu/dept/econ/ASSC/Papers2010-2011/O'Donnell%20-%20ASSC.pdf>

Interventionism is distortive, disruptive, and potentially socially destructive because it attempts to defy the criticisms and possibilities of centralized planning according to the market process view of the dynamic market. Yet disintervention faces the same problems. When disintervening, political actors with necessarily limited information and knowledge must somehow decide, not only what to liberalize, but how and when. It is perhaps these latter considerations which are the truly crucial elements for successful disintervention. "Crude" disinterventionism enacted without understanding the complex interactions that occur between an intervention, other interventions, and the dynamic market process may very well lead to cascading negative unintended consequences. Deregulation in the one sector, let's say housing, might lead to bottlenecks in another complementary (or even seemingly disparate) sector, say in finance, which might cascade into other areas in unpredictable ways. To better assert this point I offer the following: not all interventions are created equally. I say this to emphasize the fact that not all acts of government interference with the economy can be equally harmful, even according to the most stringent anarcho-libertarian standards. A price floor that falls below the current market rate is not as harmful as the price ceiling that (attempts) to cut the price of a product in half from its going market rate. There also exists the possibility that there may even be less obvious interventions that are unintentionally "beneficial" relative to others given the uncoordinated nature of the interventionist system. Likewise, even many free-market economists would agree that if a banking system must rest upon a "lender of last resort" with its subsequent moral hazard, then some regulatory framework preventing the to-be-expected excessive risk-taking may be justified or necessary in the meantime, even if the longer-run disinterventionist goal is a free market banking system. The mixed economy often also contains entire markets built on the backs of previously distorted market processes. The wholly superfluous market process emerges where opportunities for profit would otherwise never have existed outside of the influence of interventionism (Kirzner 1985). In the real world this can mean entire industries built on the shaky grounds of government intervention. Though due to a lack of unencumbered price signals, few if any might be able to realize this. Thus there also exists the chance that by liberalizing one sector, or removing one control, that a large collapse may be unleashed and backfire in the face of the disinterventionists harming the political capital necessary to continue with any necessary disinterventions. All this leaves the question of which ones are perhaps justified in the mean time in order to prevent further harm by "holding back" other interventions? How is a planner with their limited knowledge supposed to be able to tell the difference? Lastly how can these two answers explain in what order to disintervene? The policy problem I have presented - in the form of entrenched and overlapping, uncoordinated interventions - is one of organized complexity. Even presupposing that the number of interventions is set at point m, what still remains is a complex series of interlocking problems with no clear solution available to anyone guiding the disintervention. Of course I am describing the knowledge problem, traced along its implications for the possibility of (dis)interventionist coordination. Yet it must also be remembered that the knowledge problem is overcome everyday by the market process acting through the price system. Even if the planners understand this insight, they must still ask themselves: "So in a mixed economy, even one completely distorted by rampant intervention, why can't piecemeal disintervention of markets be relied upon to provide the intended results?" The disinterventionist planner may note that the market tends towards self-correction, and that surely if he just lets the market work, then this problem will sort itself out on its own. While a free market would have the mechanism of the discovery process, guided by profit and loss, for realizing the most socially beneficial ends from available means, interventionism lacks this mechanism in any true spontaneous form. If a disinterventionist plans to liberalize successfully they must decide at some point what to disintervene, when (in what order), and how. Markets are spontaneous orders lacking any centralized direction, made possible by the institutional settings that shape their incentive structures and guide the market process towards socially beneficial ends. So whereas the market process encourages decentralized entrepreneurs to utilize their particular knowledge of the time and place to drive the market towards self-correction and satisfaction of consumers' wants, the command economy - and any decision making in this vein such as (dis)interventionism - lacks the institutions and incentives required to drive a spontaneous process embodying society's dispersed knowledge. In a sentence then, interventionism - and its mirror - lacks a spontaneous discovery process for systematically uncovering and incentivizing the correction of its past errors to the benefit of society.

#### Expert debates on policy options are key to deal with crises- academics should constantly be on call

Frieden and Lake 2005 Jeffry A. Frieden is a professor of government at Harvard University and David A. Lake is a professor of political science at the University of California, San Diego The Annals of The American Academy of Political and Social Science July 2005 “International Relations as a Social Science: Rigor and Relevance” lexis

International relationists have long been involved in foreign policy debates. The pages of thoughtful journals of opinion like Foreign Affairs or Foreign Policy are often filled by academics writing for broad audiences. And professors, of course, have frequently engaged in government service. There will always be a need for policy-relevant expertise. Through a lifetime of study, even the most theoretically inclined academics accumulate substantial country- or policy-specific knowledge that can supplement that possessed by those in government. Universities are repositories of country and policy experts “on call” to buttress hard-pressed policy makers confronted with crises in countries or over issues for which they lack immediate knowledge.

#### Science should be trusted – philosophies dismissing scientific realism are ignorant.

Phillip A. Sullivan, 1998, professor of aerospace engineering at the University of Toronto’s Institute for Aerospace Studies, “An Engineer Dissects Two Cases Studies,” A House Built on Sand: Exposing Postmodernist Myths about Science, JSTOR

With a telephone line held open to allow us immediate access to data on spacecraft geometry, masses, and other quantities, we worked in two groups. One used Newton's laws of mechanics to estimate LEM separation speeds attainable with various tunnel pressures. The second group estimated the strength of the pressure pulse generated by the explosive charge. They adapted formulas verified, in the first instance, by comparisons with photographs of the first atomic explosion at Alamogordo, New Mexico. [1](http://www.questiaschool.com/read/62417655) We concluded that a tunnel pressure of 2 psi would provide sufficient separation speed while minimizing the risk of damage to the reentry module. We assumed that other groups were consulted, but we subsequently learned that our advice was the main basis for a decision to lower the tunnel pressure and thus to complete a successful rescue. [2](http://www.questiaschool.com/read/62417656)  Such incidents convince us that science provides an efficient and objective way of obtaining, organizing, and using the knowledge in the disciplines we practice. Typically, the history of space exploration provides numerous examples in which Newton's laws of mechanics and gravitation have been used to accurately predict both the trajectories and timing of missions. In a word, science works! Consequently, when we learn that certain philosophers, sociologists, and other humanists claim that scientific knowledge is not objective or value free or that scientific laws are inventions and not discoveries, our instinctive reaction is to dismiss such views as based on ignorance or even envy. [3](http://www.questiaschool.com/read/62417656) But some of us, increasingly concerned that these views are adversely influencing public attitudes toward science, have decided to scrutinize our critics' work. This essay is therefore one engineer's reaction to two samples of the literature. I conclude that the initial instinctive reaction of scientists is well founded, that the problems these philosophers, sociologists, and humanists have with scientific knowledge reflect problems in those disciplines and not problems in science.

#### Scientific realism provides defensible results and allows objective truth to be discovered – this is crucial for decision-making.

Paul A. Boghossian, 1996, professor of philosophy and chair of the department at the New York University, “What the Sokal Hoax ought to teach us,” A House Built on Sand: Exposing Postmodernist Myths about Science, edited by Noretta Koertge,

Is there perhaps a weaker thesis that, while being more defensible than these simpleminded relativisms, would nevertheless yield an antiobjectivist result? It's hard to see what such a thesis would be. Stanley Fish, for example, in seeking to discredit Sokal's characterization of postmodernism, offers the following (op--ed piece, in the New York Times): What sociologists of science say is that of course the world is real and independent of our observations but that accounts of the world are produced by observers and are therefore relative to their capacities, education and training, etc. It is not the world or its properties but the vocabularies in whose terms we know them that are socially constructed. [6](http://www.questiaschool.com/read/62417594)  The rest of Fish's discussion leaves it thoroughly unclear exactly what he thinks this observation shows, but claims similar to his are often presented by others as constituting yet another basis for arguing against the possibility of objective knowledge. The resultant arguments are unconvincing. It goes without saying that the vocabularies with which we seek to know the world are socially constructed and that they therefore reflect various contingent aspects of our capacities, limitations, and interests. But it doesn't follow that those vocabularies are therefore incapable of meeting the standards of adequacy relevant to the expression and discovery of objective truths. We may illustrate why by using Fish's own example. There is no doubt that the game of baseball as we have it, with its particular conceptions of what counts as "strike" and what counts as a "ball," reflects various contingent facts about us as physical and social creatures. "Strike" and "ball" are socially constructed concepts, if anything is. However, once these concepts have been defined--once the strike zone has been specified--there are then perfectly objective facts

#### Action on environmental scenario is necessary.

Eric Reitan, December 1998, Seattle University Writer for the Electronic Green Journal, Pragmatism, Environmental World Views, and Sustainability

With the urgency of the current environmental crisis, we cannot afford to get bogged down in theoretic disputes that mask a common mission and get in the way of making the practical changes that are so pressing. Pragmatic Mediation of Deep Ecology and Christian Stewardship The example I have chosen to discuss is the theoretic debate between two environmental philosophies that have emerged in the last few decades: the philosophy of stewardship that has evolved in Christian communities, and the philosophy of deep ecology. I choose these two not on the basis of any special status they have, but rather because they are the two environmental perspectives with which I have the most personal acquaintance, and because the nature of the debate between them usefully illustrates the value of using pragmatic principles to guide theoretic environmental discourse. Before applying pragmatic principles to this example, some preliminary comments may be helpful. First, it is important to keep in mind that complex worldviews or philosophical systems may impact more than one domain of human life, and that they may have radically opposing pragmatic implications in one or more of those domains while implying substantially the same behaviors in the domain of the human-nature relationship. In such a case, we can say that while the worldviews do not have the same pragmatic meaning overall, they have the same environmental meaning. As such, it is important not to let the real differences in other areas mask the genuine agreement in the environmental domain. Second, it is worth noting that there is almost certainly more than one human social arrangement that harmonizes sustainable with the natural environment. Put another way, there is more than one set of human practices that works in terms of promoting a healthy human-natural system. And it follows from this observation that more than one worldview can be pragmatically true: while two worldviews may imply environmental behaviors that are different, and hence have a different pragmatic meaning, insofar as they both promote sustainable behaviors they are both true from a pragmatic standpoint. Pragmatic truth is not monistic, but pluralistic. Given the urgent pragmatic goals of environmental philosophy, sustained theoretic debates about meaning differences of this sort appear to be unwarranted, and should be put aside in favor of the task of finding practical ways of integrating and accommodating those alternative social arrangements which serve the common goal of sustainable human-natural systems.

#### National-level coordination is key to solve environmental problems.

Neil Carter, 2007, Senior Lecturer in Politics at University of York, “The Politics of the Environment,” p. 59-60

Another difficulty with decentralization is that many environmental problems are best dealt with at the national or international level. Global commons problems do not respect the political boundaries between existing nation states, let alone small bioregions. Problems such as climate change and ozone depletion require coordinated action across communities and nations, which implies international cooperation between centralized nation states (see Chapter 9). The green slogan 'Think global, act local' may therefore provide an inadequate strategy for dealing with problems of the global commons. Relying on local communities alone to protect the environment assumes that the local community has full knowledge about the causes, impact and solutions to a particular problem; even then, it 'makes sense only when the locals possess an appropriate social and ecological consciousness' (Eckersley 1992: 173).

#### Government centralization is necessary for effective energy policies - lots of recent examples.

Jason Taylor & Richard Vedder, 2010, Professor of economics at Central Michigan University. Distinguished professor of economics at Ohio University and adjunct scholar at the American Enterprise Institute (Jason and Richard, "Stimulus by Spending Cuts: Lessons From 1946." Cato. May/June 2010 www.cato.org/pubs/policy\_report/v32n3/cpr32n3.pdf

Recent examples of this phenomenon can be seen in the newly passed health care legislation and the proposal for a cap-and trade environmental regime. The new health care legislation will enormously increase labor costs, as would cap and trade. Nervous employers, wanting to avoid the possibility of taking on sharply rising labor expenses, demur in hiring workers that they would in a more neutral policy environment. Furthermore, the multitrilliondollar deficits to finance the stimulus as well as government bailout money from TARP have to be financed, and the possibility that the Federal Reserve would engage in inflationary financing of this new federal debt has clearly unnerved many investors. Since the November 2008 election, the price of gold has risen 50 percent because of growing inflationary fears. Yet another example is the government’s continual extension of unemployment benefits beyond the customary maximum 26 weeks (most recently at the beginning of March). While most would agree that unemployment insurance provides shortterm relief to those who must seek new work, many studies confirm what common sense says we should expect—the longer the time frame people are eligible for such benefits, the longer it takes for unemployment rates to fall. In 2009 the average duration of unemployment nearly doubled, and today, well over 40 percent of those unemployed have been out of work over six months. While the poor labor market is to blame for much of this jump in duration, there can be no doubt that incentives to obtain new employment have been, and will continue to be, tempered by governmental action which has extended unemployment insurance to many through the end of 2010.

#### Nuclear power is the remedy to decades of environmental racism perpetuated by oil, coal, and other non-renewables.

Margaret Ryan and Dr. Patrick Moore 2012 May, 2 (Moore is a founding member of Greenpeace, Ph.D. in Ecology, and founder of CASEnergy) in “Nuclear Power Jobs Positioned As An Economic Justice Issue,” http://energy.aol.com/2012/05/02/nuclear-power-jobs-positioned-as-an-economic-justice-issue/

Who has the power in the power industry? Minority communities for years have seen large industrial facilities as environmental justice issues, says CASEnergy's Patrick Moore, with high-impact plants built in their midst because they're powerless to stop it, but he insists nuclear is different. Moore told AOL Energy that he is reaching out to African-American and Hispanic business and labor groups, telling them that nuclear plants, in contrast to projects like coal plants, are long-term community assets. Patrick Moore, an early Greenpeace activist and co-founder of CASEnergy who now supports nuclear as the largest non-polluting electricity source available, says nuclear not only needs thousands of skilled workers when plants are built new but generations of skilled workers to keep the units running for 60 or more years. The US Nuclear Regulatory Commission is just beginning to consider what safety standards are needed to extend US plants licenses from 60 to 80 years. African-American and Hispanic advocacy groups have historically been focused on civil rights, but they're "morphing into economic development," Moore said, and looking at energy policy for the first time. Unlike many other big industrial facilities, he noted, polls show nuclear power plants have increasing popular support the closer people live to them. Nuclear plants are "wealth creating machines," Moore said, with no pollution, better roads and schools financed by the plants' property taxes, and large payrolls. Moore said he has had positive reception from minority business leaders, and said he is urging minority business groups to "stream their members into training" for nuclear industry jobs. "Even if no new plants are built, the nuclear work force is aging," he said, echoing an issue discussed by both the NRC and the industry in recent years. "Over half the workforce is retiring in the next few years." Moore said that, despite the Fukushima disaster, he sees less controversy worldwide about nuclear power now than there was five years ago, in part as other countries see the increasing pollution and fossil fuel costs borne by Japan and Germany in the wake of politically forced nuclear shutdowns. AOL Energy covered the anniversary of the Fukushima disaster in detail with analysis of impacts for regulators, investors, the industry and suppliers. See that coverage here. Japan in April reported a $55 billion trade deficit for the fiscal year since Fukushima, due to lower exports from quake-affected industries and higher fuel imports. It was Japan's first deficit in three decades. On safety, Moore said, a key factor leading to the Fukushima events was the lack of an independent regulator in Japan, and that's not an issue for the US. "The regulatory authority was controlled by industry," he said. "In the US, the NRC is at arms' length, there is true independent oversight every day." CASEnergy is a coalition of business and advocacy groups, and Moore acknowledged that, with natural gas prices so low and supply so ample, it's hard to justify the expense of nuclear building unless a business can take a long view. Gas prices are historically volatile, he noted, but with so many utilities and merchant generators turning to cheap gas, "it will flip to a seller's market" in a few years, he argued, and "nuclear will start looking good again." Moore doesn't see why small modular reactors – the latest focus of industry and NRC attention – shouldn't be deployed to islands like Hawaii and Puerto Rico and isolated towns in Alaska to provide heat and power now supplied only by petroleum. "We already have 100 of them working in the Nuclear Navy," he said, noting Naval reactors predate the land-based ones. "For years we've had sailors living right next door to them."

#### Energy policy matters and we need policy action to address the pressing energy needs of the U.S. and the world - must evaluate consequences.

Timothy E. Wirth et. al, 2003, The Future of Energy Policy Timothy E. Wirth, C. Boyden Gray, and John D. Podesta Timothy E. Wirth is President of the United Nations Foundation and a former U.S. Senator from Colorado. C. Boyden Gray is a partner at Wilmer, Cutler & Pickering and served as Counsel to former President George H.W. Bush. John D. Podesta is Visiting Professor of Law at Georgetown University Law Center and served as Chief of Staff to former President Bill Clinton. Volume 82 • Number 4 Foreign Affairs 2003 Council on Foreign Relations

A century ago, Lord Selborne, the ﬁrst lord of the Admiralty,dismissed the idea of fueling the British navy with something other thancoal, which the island nation had in great abundance. “The substitutionof oil for coal is impossible,” he pronounced, “because oil does notexist in this world in su⁄cient quantities.” Seven years later, the youngWinston Churchill was appointed ﬁrst lord and charged with winningthe escalating Anglo-German race for naval superiority. As DanielYergin chronicled in The Prize, Churchill saw that oil would increaseship speed and reduce refueling time—key strategic advantages—andordered oil-burning battleships to be built, committing the navy tothis new fuel. Churchill’s was a strategic choice, bold, creative, andfarsighted. The energy choices the world faces today are no lessconsequential, and America’s response must be as insightful. Energy is fundamental to U.S. domestic prosperity and nationalsecurity. In fact, the complex ties between energy and U.S. nationalinterests have drawn tighter over time. The advent of globalization,the growing gap between rich and poor, the war on terrorism, andthe need to safeguard the earth’s environment are all intertwinedwith energy concerns.The profound changes of recent decades and the pressing challengesof the twenty-ﬁrst century warrant recognizing energy’s central role inAmerica’s future and the need for much more ambitious and creativeapproaches. Yet the current debate about U.S. energy policy is mainlyabout tax breaks for expanded production, access to public lands, andnuances of electricity regulation—di⁄cult issues all, but inadequate forthe larger challenges the United States faces. The staleness of the policy dialogue reﬂects a failure to recognize the importance of energy to the issues it aªects: defense and homeland security, the economy, and the environment. What is needed is a purposeful, strategic energy policy,not a grab bag drawn from interest-group wish lists.U.S. energy policies to date have failed to address three great challenges. The ﬁrst is the danger to political and economic securityposed by the world’s dependence on oil. Next is the risk to the globalenvironment from climate change, caused primarily by the combustionof fossil fuels. Finally, the lack of access by the world’s poor to modernenergy services, agricultural opportunities, and other basics neededfor economic advancement is a deep concern.None of these problems of dependence, climate change, or poverty can be solved overnight, but aggressive goals and practical short-term initiatives can jump-start the move to clean and secure energy practices.The key challenges can be overcome with a blend of carefully targeted policy interventions that build on the power of the market, publicprivate partnerships in ﬁnancing and technology development, and,perhaps most important, the development of a political coalition that abandons traditional assumptions and brings together energy interests that have so far engaged only in conﬂict. Turning this ambitious, long-term agenda into reality requires a sober assessment of the United States’ critical energy challenges and the interests that can be mobilized for the necessary political change.

#### Implementation of environmental policy must be considered

Avner De-Shalit, 2000, Professor of Political Theory at the Hebrew University of Jerusalem and Associate Fellow at the Oxford Centre for Environment, Ethics, and Society, Mansfield College, Oxford University. “The Environment: Between Theory and Practice,” p. 20, Questia

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

## 1AR

### 1AR social location

#### Debate is key to engaging in a policy of liberalism and preventing misappropriation of security policy. And, debaters often transition to greatly impact real world politics in progressive ways.

Gordon R. Mitchell, et al., pub. date: June 2007, Assoc. Prof. of Communication and Dir. of the William Pitt Debating Union @ the Univ. of Pittsburgh, Eric English, Stephen Llano, Catherine E. Morrison, John Rief & Carly Woods, “Debate as a Weapon of Mass Destruction,” Communication and Critical/Cultural Studies, Vol. 4, No. 2, pp. 221 – 225, <http://www.pitt.edu/~gordonm/JPubs/EnglishDAWG.pdf>

Today’s intercollegiate debaters find themselves in a political landscape resembling 1954 in several respects. Once again, we find prominent political figures attempting to define the contours of public debate by portraying critics as unpatriotic. Vice President Cheney says that ‘‘disagreement, argument and debate are the essentials of democracy,’’ yet stipulates that charges of pre-war intelligence manipulation are ‘‘dishonest and reprehensible.’’9 Such contortions are typical examples of how skillfully McCarthy’s ideological descendants attack the process of democracy in the name of democracy. The conservative punditry also does its part. While Ann Coulter accuses Iraq war critics of treason, David Horowitz revives fears of a liberal (and therefore ‘‘dangerous’’) academic elite poisoning the minds of America’s young adults. Despite these and countless other examples of McCarthyist tendencies, many directed specifically at academia, there has been no outcry about college students ‘‘taking the side of terrorists’’ in competitive debate tournaments. Why? One answer is that intercollegiate policy debate has become remarkably isolated and esoteric. Competitive pressures have molded the activity into a highly technical art form, where students argue in jargon at breakneck speeds that regularly top 300 words per minute. Because so few people can participate in these debates, virtually no one observes them; untrained spectators are often baffled. The coin has two sides, for the isolation of this form of debate both protects it from criticism and prevents it from having a broader social effect. The result is an odd oasis of intellectual ferment bearing resemblance to the carefully demarcated ‘‘free speech zones’’ that dot the periphery of today’s controversial public events. Second, while the pedagogical benefits of switch-side debating for participants are compelling,10 some worry that the technique may perversely and unwittingly serve the ends of an aggressively militaristic foreign policy. In the context of the 1954 controversy, Ronald Walter Greene and Darrin Hicks suggest that the articulation of the debate community as a zone of dissent against McCarthyist tendencies developed into a larger and somewhat uncritical affirmation of switch-side debate as a ‘‘technology’’ of liberal participatory democracy. This technology is part and parcel of the post-McCarthy ethical citizen, prepared to discuss issues from multiple viewpoints. The problem for Greene and Hicks is that this notion of citizenship becomes tied to a normative conception of American democracy that justifies imperialism. They write, ‘‘The production and management of this field of governance allows liberalism to trade in cultural technologies in the global cosmopolitan marketplace at the same time as it creates a field of intervention to transform and change the world one subject (regime) at a time.’’11 Here, Greene and Hicks argue that this new conception of liberal governance, which epitomizes the ethical citizen as an individual trained in the switch-side technique, serves as a normative tool for judging other polities and justifying forcible regime change. One need look only to the Bush administration’s framing of war as an instrument of democracy promotion to grasp how the switch-side technique can be appropriated as a justification for violence. It is our position, however, that rather than acting as a cultural technology expanding American exceptionalism, switch-side debating originates from a civic attitude that serves as a bulwark against fundamentalism of all stripes. Several prominent voices reshaping the national dialogue on homeland security have come from the academic debate community and draw on its animating spirit of critical inquiry. For example, Georgetown University law professor Neal Katyal served as lead plaintiff ’s counsel in Hamdan , which challenged post-9/11 enemy combat definitions.12 The foundation for Katyal’s winning argument in Hamdan was laid some four years before, when he collaborated with former intercollegiate debate champion Laurence Tribe on an influential Yale Law Journal addressing a similar topic.13 Tribe won the National Debate Tournament in 1961 while competing as an undergraduate debater for Harvard University. Thirty years later, Katyal represented Dartmouth College at the same tournament and finished third. The imprint of this debate training is evident in Tribe and Katyal’s contemporary public interventions, which are characterized by meticulous research, sound argumentation, and a staunch commitment to democratic principles. Katyal’s reflection on his early days of debating at Loyola High School in Chicago’s North Shore provides a vivid illustration. ‘‘I came in as a shy freshman with dreams of going to medical school. Then Loyola’s debate team opened my eyes to a different world: one of argumentation and policy.’’ As Katyal recounts, ‘‘the most important preparation for my career came from my experiences as a member of Loyola’s debate team.’’14 The success of former debaters like Katyal, Tribe, and others in challenging the dominant dialogue on homeland security points to the efficacy of academic debate as a training ground for future advocates of progressive change. Moreover, a robust understanding of the switch-side technique and the classical liberalism which underpins it would help prevent misappropriation of the technique to bolster suspect homeland security policies. For buried within an inner-city debater’s files is a secret threat to absolutism: the refusal to be classified as ‘‘with us or against us,’’ the embracing of intellectual experimentation in an age of orthodoxy, and reflexivity in the face of fundamentalism. But by now, the irony of our story should be apparent \*the more effectively academic debating practice can be focused toward these ends, the greater the proclivity of McCarthy’s ideological heirs to brand the activity as a ‘‘weapon of mass destruction.’’

# KENTUCKY ROUND 7 – Georgia

## 2AC

### 2AC solvency

#### Loan guarantees are necessary to offset transmission subsidies for electricity projects – otherwise no new reactor financing.

Mark Holt, 6-20-2012, has been a Congressional Research Service policy analyst specializing in nuclear energy, head of the CRS Energy and Minerals Section in the Resources, Science, and Industry Division, covered energy issues with the Environmental and Energy Study Conference, Congressional Research Service (CRS), “Nuclear Energy Policy,” <http://www.fas.org/sgp/crs/misc/RL33558.pdf>

Under such loan guarantee agreements, the federal government would repay all covered loans if the borrower defaulted. This would reduce the risk to lenders and allow them to provide financing at low interest rates. The Title XVII loan guarantees are widely considered crucial by the nuclear industry to obtain financing for new reactors. However, opponents contend that nuclear loan guarantees would provide an unjustifiable subsidy to a mature industry and shift investment away from environmentally preferable energy technologies.81 The total amount of Title XVII loan guarantees to be made available for nuclear power has been the subject of considerable congressional debate. President Obama’s FY2011 budget request would have nearly tripled the current ceiling on federal loan guarantees for nuclear power plants, from $18.5 billion to $54.5 billion. A $36 billion increase would increase the number of reactors that could receive loan guarantees from about three or four to about a dozen, depending on their size. The Department of Defense and Full-Year Continuing Appropriations Act for FY2011 (P.L.112-10) did not provide the requested increase, leaving the nuclear power loan guarantee ceiling at $18.5 billion. The Administration again requested a $36 billion nuclear loan guarantee increase for FY2012, but none of the increase was included in the FY2012 Consolidated Appropriations Act. No increase was requested for FY2013.The Administration announced the first conditional nuclear power plant loan guarantee on February 16, 2010, totaling $8.33 billion for two proposed new reactors at Georgia’s Vogtle nuclear plant site. Owners of the Vogtle project have reportedly estimated that the loan guarantee could reduce their financing costs by as much as $2 billion.82 Other finalists for the first round of nuclear reactor loan guarantees were Calvert Cliffs 3 in Maryland, South Texas Plant 3 and 4, and Summer 2 and 3.83 However, as noted earlier, the future of the proposed units at Calvert Cliffs and the South Texas Plant is currently uncertain, leaving only Summer 2 and 3 as clearly viable candidates. DOE issued final rules for the program October 4, 2007, 84 and finalized the first loan guarantee on September 4, 2009, totaling $535 million to Solyndra Inc. for a photovoltaic panel manufacturing plant, which subsequently defaulted.85 DOE’s proposed loan guarantee rules, published May 16, 2007, had been sharply criticized by the nuclear industry for limiting the guarantees to 90% of a project’s debt. The industry contended that EPACT05 allows all of a project’s debt to be covered, as long as debt does not exceed 80% of total construction costs. In its explanation of the proposed rules, DOE expressed concern that guaranteeing 100% of a project’s debt could reduce lenders’ incentive to perform adequate due diligence and therefore increase default risks. In the final rule, however, DOE agreed to guarantee up to 100% of a project’s debt, but in that case the loans had to be issued by the Federal Financing Bank. Subsidy Costs Title XVII requires the estimated future government costs resulting from defaults on guaranteed loans to be covered up-front by appropriations or by payments from project sponsors, such as the utility planning to build a plant. These “subsidy costs” are calculated as the present value of the average possible future net costs to the government for each loan guarantee. If those calculations are accurate, the subsidy cost payments for all the guaranteed projects together should cover the future costs of the program, including default-related losses. However, the Congressional Budget Office has predicted that the up-front subsidy cost payments will prove too low by at least 1%and is scoring bills accordingly.86 For example; appropriations bills that provide loan guarantee authorizations include an adjustment equal to 1% of the loan guarantee ceiling. (For more information on loan guarantee subsidy costs, see CRS Report R42152, Loan Guarantees for Clean Energy Technologies: Goals, Concerns, and Policy Options, by Phillip Brown.) DOE loan guarantees for renewable energy and electricity transmission projects under EPACT05section 1705, added by the American Recovery and Reinvestment Act of 2009 (P.L. 111-5), do not require subsidy cost payments by project sponsors, because potential losses are covered by advance appropriations in the act. No such appropriations are currently available for nuclear power projects, so it is anticipated that nuclear loan guarantee subsidy costs would be paid by the project sponsors. As a result, the level of the subsidy costs could have a powerful effect on the viability of nuclear power projects, which are currently expected to cost between $5 billion and$10 billion per reactor. For example, a 10% subsidy cost for a $7 billion loan guarantee would require an up-front payment of $700 million. No subsidy cost amount has yet been established for any nuclear loan guarantee, including the lead Vogtle project in Georgia. The Administration’s continuing internal deliberations over that question may reflect its importance and the amount of controversy being generated. Internal DOE documents released May 23, 2012, pursuant to the Freedom of Information Act show that Southern Company, the lead partner in the Vogtle project, has been offered a subsidy cost of0.5%-1.5%, subject to other conditions that are still under negotiation. Higher subsidy costs are being offered to two other partners in the project.87The nuclear industry contends that historical experience indicates defaults are likely to be minimal and that nuclear plant subsidy costs should therefore be low.88

#### Pyroprocessing has been extensively researched and developed now – all we need is commercial investment.

Michael F. Simpson & Jack D. Law, February 2010, Princeton University with a Ph.D. in chemical engineering, currently a member of the research staff at INL, previously, he served as the manager of the Advanced Safeguards department, worked extensively with researchers and leaders from Korea Atomic Energy Research Institute, is a technical advisor to both Departments of State and Energy, PhD. MIT with an emphasis in chemical engineering, professor emeritus at the Vanderbilt University School of Engineering Department of Civil and Environmental Engineering, works at the INL, Idaho National Laboratory, “Nuclear Fuel Reprocessing,” p. 19, <http://www.inl.gov/technicalpublications/Documents/4460757.pdf>

Pyroprocessing utilizes molten salt electrolytes as the media rather than acidic aqueous solutions and organic solvents42. These electrolytes are principally used to support electrochemical separations such as uranium electrorefining and electrolytic reduction of oxide fuel. The process includes vacuum furnaces that accomplish salt/metal separations and melt metal deposits into ingots for either waste disposal or fuel fabrication. Ceramic and metal waste streams are generated that immobilize fission products and, optionally, plutonium and minor actinides into high level waste forms. For eventual commercial implementation, it is expected that plutonium and minor actinides will be recycled and used for fast reactor fuel fabrication. While this technology has yet to reach the commercialization stage, it has been the subject of extensive, government funded research and development worldwide in addition to the EBR II spent fuel treatment work in the U.S. For example, the Republic of Korea is currently pursuing a strategy of developing pyroprocessing technology for treatment of spent fuel from their commercial light water reactors to minimize volume of high level waste and possibly extract fissile actinides for eventual fabrication of fast reactor fuel43 44. Russia has already demonstrated production of MOX based on pyroprocessing and plans to develop a closed fuel cycle using the technology by 2020.

#### Fast-reactors can be implemented now it needs is government investment for implementation.

Kevin Fischer, 2010, Electrical Engineering, Physics, Massachusetts Institute of Technology (MIT), Angles, “Nuclear Waste Reduction through Advanced Reactor and Fuel Cycles,” <http://web.mit.edu/angles/Kevin_Fischer.htm>

IFRs do need to release waste, but they produce significantly less waste than LWRs and that waste is friendlier to the environment. Most of the released heat comes from fission products with half-lives of 30 years or less, which is much less than that of the spent fuel from LWRs. This difference allows for repositories to be built to lesser specifications. A repository holding IFR waste would only need to house each waste package for a few hundred years versus a repository for LWR waste that would need to store each waste package for hundreds of thousands of years. Furthermore, no proliferation risk is associated with IFR fuel, so security would not need to be as tight. Such shorter holding times also decrease the risk of environmental contamination. Also, because the packages are cooler, they can also be placed closer together, increasing repository capacity.8 Clearly, IFRs can be part of a much longer-term strategy for U.S. nuclear energy, since they provide a cheap, efficient way to dispose of waste that is proliferation resistant. Ultimately, it appears that the research for IFRs is nearly completed and the only hurdle left is government funding and implementation.

#### Restarting IFR project at Argonne drives resource investment in all sectors.

Tom Blees, 2008, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Prescription for the Planet, p. 391

Restart nuclear power development research at national labs like Argonne, concentrating on small reactor designs like the nuclear battery ideas discussed earlier. Given the cost and difficulty of extending power grids over millions of square miles of developing countries, the advantages of distributed generation in transforming the energy environment of such countries can hardly be exaggerated. It is a great pity that many of the physicists and engineers who were scattered when the Argonne IFR project was peremptorily terminated chose to retire. Rebuilding that brain trust should be, well, a no-brainer. If one but looks at the incredible challenges those391talented people were able to meet, it seems perfectly reasonable to suppose that a focus on small sealed reactor development could likewise result in similar success. Some of those working on the AHTR and other seemingly unneeded projects could well transition to R&D that fits into the new paradigm. Japanese companies are already eager to build nuclear batteries, and there should be every effort to work in concert with them and other researchers as we develop these new technologies. The options this sort of collaborative research would open up for the many varied types of energy needs around the world would be incalculable.

### 2AC prolif

#### Domino theory is true - empirics prove.

Matthew Kroenig, 5-26-2012, assistant professor in the Department of Government at Georgetown University and a research affiliate with The Project on Managing the Atom at Harvard University, he served as a strategist on the policy planning staff in the Office of the Secretary of Defense where he received the Office of the Secretary of Defense’s Award for Outstanding Achievement. He is a term member of the Council on Foreign Relations and has held academic fellowships from the National Science Foundation, the Belfer Center for Science and International Affairs at Harvard University, the Center for International Security and Cooperation at Stanford University, and the Institute on Global Conflict and Cooperation at the University of California, “The History of Proliferation Optimism: Does It Have A Future?,” http://www.npolicy.org/article.php?aid=1182andrtid=2

Further proliferation. Nuclear proliferation poses an additional threat to international peace and security because it causes further proliferation. As former Secretary of State George Schultz once said, “proliferation begets proliferation.”[69] When one country acquires nuclear weapons, its regional adversaries, feeling threatened by its neighbor’s new nuclear capabilities, are more likely to attempt to acquire nuclear weapons in response. Indeed, the history of nuclear proliferation can be read as a chain reaction of proliferation. The United States acquired nuclear weapons in response to Nazi Germany’s crash nuclear program. The Soviet Union and China acquired nuclear weapons to counter the U.S. nuclear arsenal. The United Kingdom and France went nuclear to protect themselves from the Soviet Union. India’s bomb was meant to counter China and it, in turn, spurred Pakistan to join the nuclear club. Today, we worry that, if Iran acquires nuclear weapons, other Middle Eastern countries, such as Egypt, Iraq, Turkey, and Saudi Arabia, might desire nuclear capabilities, triggering an arms race in a strategically important and volatile region. Of course, reactive proliferation does not always occur. In the early 1960s, for example, U.S. officials worried that a nuclear-armed China would cause Taiwan, Japan, India, Pakistan, and other states to acquire nuclear weapons. [70] In hindsight, we now know that they were correct in some cases, but wrong in others. Using statistical analysis, Philipp Bleek has shown that reactive proliferation is not automatic, but that rather, states are more likely to proliferate in response to neighbors when three conditions are met 1) there is an intense security rivalry between the two countries, 2) the potential proliferant state does not have a security guarantee from a nuclear-armed patron 3) and the potential proliferant state has the industrial and technical capacity to launch an indigenous nuclear program.[71] In other words, reactive proliferation is real, but it is also conditional. If Iran enters the nuclear club, therefore, it is likely that some, but not all, of the countries that we currently worry about will eventually follow suit and become nuclear powers.We should worry about the spread of nuclear weapons in every case, therefore, because the problem will likely extend beyond that specific case. As Wohlstetter cautioned decades ago, proliferation is not an N problem, but an N+1 problem. Further nuclear proliferation is not necessarily a problem, of course, if the spread of nuclear weapons is irrelevant or even good for international politics as obsessionists and optimists protest. But, as the above discussion makes clear, nuclear proliferation, and the further nuclear proliferation it causes, increases the risk of nuclear war and nuclear terrorism, emboldens nuclear-armed states to be more aggressive, threatens regional stability, constrains U.S. freedom of action, and weakens America’s alliance relationships, giving us all good reason to fear the spread of nuclear weapons.

#### Accidental nuclear war is likely - even rational leaders will lose control of the escalation ladder.

Matthew Kroenig, 5-26-2012, assistant professor in the Department of Government at Georgetown University and a research affiliate with The Project on Managing the Atom at Harvard University, he served as a strategist on the policy planning staff in the Office of the Secretary of Defense where he received the Office of the Secretary of Defense’s Award for Outstanding Achievement. He is a term member of the Council on Foreign Relations and has held academic fellowships from the National Science Foundation, the Belfer Center for Science and International Affairs at Harvard University, the Center for International Security and Cooperation at Stanford University, and the Institute on Global Conflict and Cooperation at the University of California, “The History of Proliferation Optimism: Does It Have A Future?,” http://www.npolicy.org/article.php?aid=1182andrtid=2

The proliferation optimist position, while having a distinguished pedigree, has several major problems. Many of these weaknesses have been chronicled in brilliant detail by Scott Sagan and other contemporary proliferation pessimists.[34] Rather than repeat these substantial efforts, I will use this section to offer some original critiques of the recent incarnations of proliferation optimism. First and foremost, proliferation optimists do not appear to understand contemporary deterrence theory. I do not say this lightly in an effort to marginalize or discredit my intellectual opponents. Rather, I make this claim with all due caution and with complete sincerity. A careful review of the contemporary proliferation optimism literature does not reflect an understanding of, or engagement with, the developments in academic deterrence theory in top scholarly journals such as the American Political Science Review and International Organization over the past few decades.[35] While early optimists like Viner and Brodie can be excused for not knowing better, the writings of contemporary proliferation optimists ignore the past fifty years of academic research on nuclear deterrence theory. In the 1940s, Viner, Brodie, and others argued that the advent of Mutually Assured Destruction (MAD) rendered war among major powers obsolete, but nuclear deterrence theory soon advanced beyond that simple understanding.[36] After all, great power political competition does not end with nuclear weapons. And nuclear-armed states still seek to threaten nuclear-armed adversaries. States cannot credibly threaten to launch a suicidal nuclear war, but they still want to coerce their adversaries. This leads to a credibility problem: how can states credibly threaten a nuclear-armed opponent? Since the 1960s academic nuclear deterrence theory has been devoted almost exclusively to answering this question.[37] And, unfortunately for proliferation optimists, the answers do not give us reasons to be optimistic. Thomas Schelling was the first to devise a rational means by which states can threaten nuclear-armed opponents.[38] He argued that leaders cannot credibly threaten to intentionally launch a suicidal nuclear war, but they can make a “threat that leaves something to chance.”[39] They can engage in a process, the nuclear crisis, which increases the risk of nuclear war in an attempt to force a less resolved adversary to back down. As states escalate a nuclear crisis there is an increasing probability that the conflict will spiral out of control and result in an inadvertent or accidental nuclear exchange. As long as the benefit of winning the crisis is greater than the incremental increase in the risk of nuclear war, threats to escalate nuclear crises are inherently credible. In these games of nuclear brinkmanship, the state that is willing to run the greatest risk of nuclear war before back down will win the crisis as long as it does not end in catastrophe. It is for this reason that Thomas Schelling called great power politics in the nuclear era a “competition in risk taking.”[40] This does not mean that states eagerly bid up the risk of nuclear war. Rather, they face gut-wrenching decisions at each stage of the crisis. They can quit the crisis to avoid nuclear war, but only by ceding an important geopolitical issue to an opponent. Or they can the escalate the crisis in an attempt to prevail, but only at the risk of suffering a possible nuclear exchange. Since 1945 there were have been many high stakes nuclear crises (by my count, there have been twenty) in which “rational” states like the United States run a risk of nuclear war and inch very close to the brink of nuclear war.[41] By asking whether states can be deterred or not, therefore, proliferation optimists are asking the wrong question. The right question to ask is: what risk of nuclear war is a specific state willing to run against a particular opponent in a given crisis? Optimists are likely correct when they assert that Iran will not intentionally commit national suicide by launching a bolt-from-the-blue nuclear attack on the United States or Israel. This does not mean that Iran will never use nuclear weapons, however. Indeed, it is almost inconceivable to think that a nuclear-armed Iran would not, at some point, find itself in a crisis with another nuclear-armed power and that it would not be willing to run any risk of nuclear war in order to achieve its objectives. If a nuclear-armed Iran and the United States or Israel have a geopolitical conflict in the future, over say the internal politics of Syria, an Israeli conflict with Iran’s client Hezbollah, the U.S. presence in the Persian Gulf, passage through the Strait of Hormuz, or some other issue, do we believe that Iran would immediately capitulate? Or is it possible that Iran would push back, possibly even brandishing nuclear weapons in an attempt to deter its adversaries? If the latter, there is a real risk that proliferation to Iran could result in nuclear war. An optimist might counter that nuclear weapons will never be used, even in a crisis situation, because states have such a strong incentive, namely national survival, to ensure that nuclear weapons are not used. But, this objection ignores the fact that leaders operate under competing pressures. Leaders in nuclear-armed states also have very strong incentives to convince their adversaries that nuclear weapons could very well be used. Historically we have seen that in crises, leaders purposely do things like put nuclear weapons on high alert and delegate nuclear launch authority to low level commanders, purposely increasing the risk of accidental nuclear war in an attempt to force less-resolved opponents to back down.

#### Nuclear terrorism is extremely likely and is comparatively the largest threat to international stability.

Zafar Nawaz Jaspal, 2012, is Associate Professor at the Department of International Relations, Quaid-I-Azam University, Islamabad, Pakistan, is advisor on Non-Proliferation at the South Asian Strategic Stability Institute, London, Center of Excellence: Defense against Terrorism, Ankara, Turkey and Armed Forces War College, National Defense University, Islamabad, Command and Staff College Quetta, a Course Coordinator at the Foreign Services Academy, Ministry of Foreign Affairs, a Research Fellow at the Institute of Strategic Studies, Islamabad and Islamabad Policy Research Institute, Journal of Political Studies, Vol. 19 Issue 1, "Nuclear/Radiological Terrorism: Myth or Reality?,” Ebsco Host

The misperception, miscalculation and above all ignorance of the ruling elite about security puzzles are perilous for the national security of a state. Indeed, in an age of transnational terrorism and unprecedented dissemination of dual-use nuclear technology, ignoring nuclear terrorism threat is an imprudent policy choice. The incapability of terrorist organizations to engineer fissile material does not eliminate completely the possibility of nuclear terrorism. At the same time, the absence of an example or precedent of a nuclear/radiological terrorism does not qualify the assertion that the nuclear/radiological terrorism ought to be remained a myth. Farsighted rationality obligates that one should not miscalculate transnational terrorist groups — whose behavior suggests that they have a death wish — of acquiring nuclear, radiological, chemical and biological material producing capabilities. In addition, one could be sensible about the published information that huge amount of nuclear material is spread around the globe. According to estimate it is enough to build more than 120,000 Hiroshima-sized nuclear bombs (Fissile Material Working Group, 2010, April 1). The alarming fact is that a few storage sites of nuclear/radiological materials are inadequately secured and continue to be accumulated in unstable regions (Sambaiew, 2010, February). Attempts at stealing fissile material had already been discovered (Din & Zhiwei, 2003: 18).Numerous evidences confirm that terrorist groups had aspired to acquire fissile material for their terrorist acts. Late Osama bin Laden, the founder of AL Qaeda stated that acquiring nuclear weapons was a “religious duty” (Yusufzai, 1999, January 11). The IAEA also reported that “al-Qaeda was actively seeking an atomic bomb.” Jamal Ahmad al-Fadl, a dissenter of Al Qaeda, in his trial testimony had “revealed his extensive but unsuccessful efforts to acquire enriched uranium for al-Qaeda” (Allison, 2010, January: 11). On November 9, 2001, Osama bin Laden claimed that “we have chemical and nuclear weapons as a deterrent and if America used them against us we reserve the right to use them (Mir, 2001, November 10).” On May 28, 2010, Sultan Bashiruddin Mahmood, a Pakistani nuclear scientist confessed that he met Osama bin Laden. He claimed that “I met Osama bin Laden before 9/11not to give him nuclear know-how, but to seek funds for establishing a technical college in Kabul (Syed, 2010, May 29).” He was arrested in 2003 and after extensive interrogation by American and Pakistani intelligence agencies he was released (Syed, 2010, May 29). Agreed, Mr. Mahmood did not share nuclear know-how with Al Qaeda, but his meeting with Osama establishes the fact that the terrorist organization was in contact with nuclear scientists. Second, the terrorist group has sympathizers in the nuclear scientific bureaucracies. It also authenticates bin Laden’s Deputy Ayman Zawahiri’s claim which he made in December 2001: “If you have $30 million, go to the black market in the central Asia, contact any disgruntled Soviet scientist and a lot of dozens of smart briefcase bombs are available (Allison,2010, January: 2).”The covert meetings between nuclear scientists and al Qaeda members could not be interpreted as idle threats and thereby the threat of nuclear/radiological terrorism is real. The 33Defense Secretary Robert Gates admitted in 2008 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(Mueller, 2011, August 2).” Indeed, the nuclear deterrence strategy cannot deter the transnational terrorist syndicate from nuclear/radiological terrorist attacks.

### 2AC warming

#### Only the aff can pull us back from the edge – displaces coal to bring down ppm amounts.

Steve Kirsch, 11-25-2009, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “Why We Should Build an Integral Fast Reactor Now,” <http://skirsch.wordpress.com/2009/11/25/ifr/>

\*\*\*cites Charles Till, former Associate Director, Argonne National Laboratory, The National Academy Studies, James Hansen, Director, NASA Goddard Institute for Space Studies, Ray Hunter, former Deputy Director of the Office of Nuclear Energy, Science and Technology in the U.S. Department of Energy (DOE), Leonard Koch, winner of the Global Energy International Prize, Barry Brook Sir Hubert Wilkins Chair of Climate Change\*\*\*

The bottom line is that without the IFR (or a yet-to-be-invented technology with similar ability to replace the coal burner with a cheaper alternative), it is unlikely that we’ll be able to keep CO2 under 450 ppm. Today, the IFR is the only technology with the potential to displace the coal burner. That is why restarting the IFR is so critical and why Jim Hansen has listed it as one of the top five things we must do to avert a climate disaster.[4] Without eliminating virtually all coal emissions by 2030, the sum total of all of our other climate mitigation efforts will be inconsequential. Hansen often refers to the near complete phase-out of carbon emissions from coal plants worldwide by 2030 as the sine qua non for climate stabilization (see for example, the top of page 6 in his August 4, 2008 trip report). To stay under 450ppm, we would have to install about 13,000 GWe of new carbon-free power over the next 25 years. That number was calculated by Nathan Lewis of Caltech for the Atlantic, but others such as Saul Griffith have independently derived a very similar number and White House Science Advisor John Holdren used 5,600 GWe to 7,200 GWe in his presentation to the Energy Bar Association Annual Meeting on April 23, 2009. That means that if we want to save the planet, we must install more than 1 GWe per day of clean power every single day for the next 25 years. That is a very, very tough goal. It is equivalent to building one large nuclear reactor per day, or 1,500 huge wind turbines per day, or 80,000 37 foot diameter solar dishes covering 100 square miles every day, or some linear combination of these or other carbon free power generation technologies. Note that the required rate is actually higher than this because Hansen and Rajendra Pachauri, the chair of the IPCC, now both agree that 350ppm is a more realistic “not to exceed” number (and we’ve already exceeded it). Today, we are nowhere close to that installation rate with renewables alone. For example, in 2008, the average power delivered by solar worldwide was only 2 GWe (which is to be distinguished from the peak solar capacity of 13.4GWe). That is why every renewable expert at the 2009 Aspen Institute Environment Forum agreed that nuclear must be part of the solution. Al Gore also acknowledges that nuclear must play an important role.

### 2AC RHIC

#### Spending inevitable -

#### Entitlements

Mackenzie Eaglen, 5-10-2012, resident fellow at the Marilyn Ware Center for Security Studies at the American Enterprise Institute, “Entitlement Programs, Not Defense, the Source of Deficit Crisis,” US News and World Report, http://www.usnews.com/debate-club/should-cuts-be-made-to-domestic-social-programs-to-protect-the-defense-budget/entitlement-programs-not-defense-the-source-of-deficit-crisis

America's debt is now equal to the size of our economy at 100 percent of gross domestic product. This burden must be reduced, and quickly. However, it is a false choice to debate spending cuts from within just one slice of the federal budget. The primary drivers of our growing debt burden are the "Big 3" entitlements of Social Security, Medicare, and Medicaid. Yet as part of the debt ceiling deal that created sequestration when the "super committee" failed, politicians effectively fenced off nearly two thirds of the federal budget and the main source of our overspending.

#### Defense

Romesh Ratnesar, 4-11-2011, “Military Spending Must Be Part of the Deficit Debate,” TIME,

http://www.time.com/time/nation/article/0,8599,2064468,00.html

And yet there is one, massive piece of the federal budget that these brave hawks dared not touch: defense. Not a solitary penny of the $38 billion in spending cuts will come out of the Pentagon's coffers. In fact, defense spending will increase by $5 billion over 2010 levels, to $513 billion. And that doesn't even include the cost of ongoing "overseas contingency operations," otherwise known as the wars in Iraq and Afghanistan.All told, U.S. military spending in 2011 will exceed $700 billion — the most since World War II. That amounts to more than half of all government discretionary spending. It represents 35% of total military spending on the planet. And yet it's doubtful that the idea of substantially reducing the defense budget was raised by either side during last week's negotiations. Instead, the White House celebrated the meager accomplishment of not increasing the Pentagon budget quite as much as the Republicans had proposed — though, rest assured, it will still increase. "We won the argument," one Democratic spinner crowed in an e-mail to the Washington Post.

#### Loan guarantees don’t cost the government money.

Matt Bennett et. al, 4-23-2007, Vice President for Public Affairs, Rob Keast, senior policy advisor, and John Dyson, Third Way Trustee, “Another Inconvenient Truth: Solving Global Warming and Energy Security Requires Nuclear Power,” <http://www.thirdway.org/data/product/file/84/Third_Way_Nuclear_Memo.pdf>

Loan guarantees are important in nuclear power, because the cost of building a nuclear plant can cost as high as $2–$6 billion,20 an astronomical sum for many of the companies that will make initial investments. Moreover, these loan guarantees are self-financing, meaning that the private sector underwrites what it costs the federal government to provide the credit of the loan guarantee.21 This office was finally appropriated money as part of the 2007 Continuing Resolution that was passed in February of this year. We encourage the Department of Energy to set this office up without delay, and we urge policymakers to continue to provide the necessary funds to run the office in the years to come.

#### Loan guarantees and other tax incentives are high now.

Tom Curry, 3-17-2011, National affairs writer, MSNBC, “No move yet in Congress to curb nuclear incentives,” <http://www.msnbc.msn.com/id/42128843/ns/politics/t/no-move-yet-congress-curb-nuclear-incentives/#.T-I3RabHKNA>

For good measure she added, “This is a very large country, I just don’t get why we have so many plants on earthquake faults.” Yet despite the concerns voiced by Boxer and others, it’s premature to forecast that that Congress will take steps to curtail the incentives and tax breaks the nuclear power industry in the United States has enjoyed for several decades — and especially since the enactment of the Energy Policy Act of 2005, for which President Barack Obama voted when he served in the Senate. The principal federal support for nuclear power comes from: A nuclear production tax credit. Regulatory risk insurance to help the cost of delays in licensing which lead to construction cost overruns. $853 million in requested funding in fiscal year 2012 for research and development on waste storage, safety and reactor technology. Loan guarantees for most of the construction costs of new plants. Energy Secretary Steven Chu said Wednesday that the Obama administration still wants to “jump-start the domestic nuclear industry” with up to $36 billion in loan guarantee authority in FY 2012. A limit on legal liability, first enacted in 1954 and in effect through 2025, for owners of commercial reactors in case of accidents. Lisa Epifani, a lawyer and lobbyist who served as Assistant Secretary of Energy for congressional affairs in the Bush administration and counsel to the Senate Energy and Natural Resources Committee, said, “There are no indications right now that Congress is going to change course on any of these. It is very premature to speculate on how events in Japan are going to impact policy in the United States. The priority right now is helping the Japanese." In last month's House-passed spending bill, which would have cut spending by $60 billion, the House made no changes in the authorization for $18.5 billion in nuclear loan guarantees.

### 2AC environmental managerialism

#### Weighing consequences is inevitable – look to case impacts.

Joshua Green, November 2002, Assistant Professor Department of Psychology Harvard University, The Terrible, Horrible, No Good, Very Bad Truth About Morality And What To Do About It, p. 314

Some people who talk of balancing rights may think there is an algorithm for deciding which rights take priority over which. If that’s what we mean by 302 “balancing rights,” then we are wise to shun this sort of talk. Attempting to solve moral problems using a complex deontological algorithm is dogmatism at its most esoteric, but dogmatism all the same. However, it’s likely that when some people talk about “balancing competing rights and obligations” they are already thinking like consequentialists in spite of their use of deontological language. Once again, what deontological language does best is express the thoughts of people struck by strong, emotional moral intuitions: “It doesn’t matter that you can save five people by pushing him to his death. To do this would be a violation of his rights!”19 That is why angry protesters say things like, “Animals Have Rights, Too!” rather than, “Animal Testing: The Harms Outweigh the Benefits!” Once again, rights talk captures the apparent clarity of the issue and absoluteness of the answer. But sometimes rights talk persists long after the sense of clarity and absoluteness has faded. One thinks, for example, of the thousands of children whose lives are saved by drugs that were tested on animals and the “rights” of those children. One finds oneself balancing the “rights” on both sides by asking how many rabbit lives one is willing to sacrifice in order to save one human life, and so on, and at the end of the day one’s underlying thought is as thoroughly consequentialist as can be, despite the deontological gloss. And what’s wrong with that? Nothing, except for the fact that the deontological gloss adds nothing and furthers the myth that there really are “rights,” etc. Best to drop it. When deontological talk gets sophisticated, the thought it represents is either dogmatic in an esoteric sort of way or covertly consequentialist.

#### The perm solves.

Thomas Rohkrämer, 2005, History and Philosophy professor at Lancaster University, How Green Were the Nazis: Martin Heidegger, National Socialism, and Environmentalism, p. 184-5

Heidegger's topic was, then, rather common, but the grounding within the framework of Heidegger's philosophy made it highly original. Whereas previous cultural critics saw technology either as a tool that humans have to learn to use properly for the right purposes or as a demonic force that threatens to enslave humankind, Heidegger broke with them over the idea of regarding either humans or technology as autonomous agents. Humans are not transcendent subjects who use technology freely as a tool, hut have been born into and shaped by the technical world. On the other hand, technology cannot be an autonomous agent either: this view, a misplaced personification, ignores the fact that humans created the technical world, that they are part of it and have developed a "technological mentality" within the process of technological modernization. If all this is the case, then we cannot study technology from the outside or step out of the technological world, because its logic is part of our fundamental thought structure. Heidegger thus maintained his argument from "The Age of the World Picture" that our whole horizon of truth is scientific and technological; consequently, we cannot "unchoose" technology, as this would involve stepping out of the life-world that is historically given to us. Our horizon of truth makes us think and act technologically; we may work on realizing the limitations of this perspective, which Heidegger came to regard as imposing a partial blindness, and on altering this way of seeing the world, but we cannot simply step out of it.

#### Managerialism is key to prevent extinction.

Neil Levy, 1999, fellow of the Centre for Applied Philosophy and Public Ethics at Charles Sturt University, “Discourses of the Environment,” p. 215

If the ‘technological fix’ is unlikely to be more successful than strategies of limitation of our uses of resources, we are nevertheless unable to simply leave the environment as it is. There is a real and pressing need for more, and more accurate, technical and scientific information about the non-human world. For we are faced with a situation in which the processes we have already set in train will continue to impact upon that world, and therefore us, for centuries. It is therefore necessary, not only to stop cutting down the rain forests, but to develop real, concrete proposals for action, to reverse, or at least limit, the effects of our previous interventions. Moreover, there is another reason why our behaviour towards the non-human cannot simply be a matter of leaving it as it is, at least in so far as our goals are not only environmental but also involve social justice. For if we simply preserve what remains to us of wilderness, of the countryside and of park land, we also preserve patterns of very unequal access to their resources and their consolations (Soper 1995: 207). In fact, we risk exacerbating these inequalities. It is no us, but the poor of Brazil, who will bear the brunt of the misery which would result form a strictly enforced policy of leaving the Amazonian rain forest untouched, in the absence of alternative means of providing for their livelihood. It is the development of policies to provide such ecologically sustainable alternative which we require, as well as the development of technical means for replacing our current greenhouse gas-emitting sources of energy. Such policies and proposals for concrete action must be formiulated by ecologists, environmentalist, people with expertise concerning the functioning of ecosystems and the impacts which our actions have upon them. Such proposals are, therefore, very much the province for Foucault’s specific intellectual, the one who works ‘within specific sectors, at the precise points where their won conditions of life or work situate them’ (Foucault 1980g: 126). For who could be more fittingly described as ‘the strategists of life and death’ than these environmentalists? After the end of the Cold War, it is in this sphere, more than any other, that man’s ‘politics places his existence as a living being in question’ (Foucault 1976: 143). For it is in facing the consequences of our intervention in the non-human world that the fate of our species, and of those with whone we share this planet, will be decided.

#### The alternative can’t solve – it gets rolled back.

George Kateb, 1997, William Nelson Cromwell Professor of Politics, Emeritus, at Princeton University, “Technology and Society,” Social research Vol. 64 Issue 3

But the question arises as to where a genuine principle of limitation on technological endeavor would come from. It is scarcely conceivable that Western humanity – and by now most of humanity , because of their pleasures and interests and theor won passions and desires and motives – would halt the technological project. Even if, by some change of heart, Western humanity could adopt an alterned relation to reality and human beings, how could it be enforced and allowed to yield its effects? The technological project can only be stopped by some global catastrophe that it had helped or cause or was powerless to avoid. Heidegger’s teasing invocation of the idea that a saving remedy grows with the worst danger is useless. In any case, no one would want the technological project halted, if the only way was a global catastrophe. Perhaps even the survivors would not want to block it reemergence.

#### Human intrusion into the environment is key to prevent massive suffering and extinction –alternative collapses civilization.

Michael Berliner, 2006, the senior advisor to the Ayn Rand Archives, “On earth Day, Remember: If Environmentalism Succeeds, It Will Make Human Life Impossible,” http://www.capmag.com/article.asp?ID=4643

Earth Day approaches, and with it a grave danger faces mankind. The danger is not from acid rain, global warming, smog, or the logging of rain forests, as environmentalists would have us believe. The danger to mankind is from environmentalism. The fundamental goal of environmentalism is not clean air and clean water; rather, it is the demolition of technological/industrial civilization. Environmentalism's goal is not the advancement of human health, human happiness, and human life; rather, it is a subhuman world where "nature" is worshipped like the totem of some primitive religion. In a nation founded on the pioneer spirit, environmentalists have made "development" an evil word. They inhibit or prohibit the development of Alaskan oil, offshore drilling, nuclear power--and every other practical form of energy. Housing, commerce, and jobs are sacrificed to spotted owls and snail darters. Medical research is sacrificed to the "rights" of mice. Logging is sacrificed to the "rights" of trees. No instance of the progress that brought man out of the cave is safe from the onslaught of those "protecting" the environment from man, whom they consider a rapist and despoiler by his very essence. Nature, they insist, has "intrinsic value," to be revered for its own sake, irrespective of any benefit to man. As a consequence, man is to be prohibited from using nature for his own ends. Since nature supposedly has value and goodness in itself, any human action that changes the environment is necessarily immoral. Of course, environmentalists invoke the doctrine of intrinsic value not against wolves that eat sheep or beavers that gnaw trees; they invoke it only against man, only when man wants something. The ideal world of environmentalism is not twenty-first-century Western civilization; it is the Garden of Eden, a world with no human intervention in nature, a world without innovation or change, a world without effort, a world where survival is somehow guaranteed, a world where man has mystically merged with the "environment." Had the environmentalist mentality prevailed in the eighteenth and nineteenth centuries, we would have had no Industrial Revolution, a situation that consistent environmentalists would cheer--at least those few who might have managed to survive without the life-saving benefits of modern science and technology. The expressed goal of environmentalism is to prevent man from changing his environment, from intruding on nature. That is why environmentalism is fundamentally anti-man. Intrusion is necessary for human survival. Only by intrusion can man avoid pestilence and famine. Only by intrusion can man control his life and project long-range goals. Intrusion improves the environment, if by "environment" one means the surroundings of man--the external material conditions of human life. Intrusion is a requirement of human nature. But in the environmentalists' paean to "Nature," human nature is omitted. For environmentalism, the "natural" world is a world without man. Man has no legitimate needs, but trees, ponds, and bacteria somehow do. They don't mean it? Heed the words of the consistent environmentalists. "The ending of the human epoch on Earth," writes philosopher Paul Taylor in Respect for Nature: A Theory of Environmental Ethics, "would most likely be greeted with a hearty 'Good riddance!'" In a glowing review of Bill McKibben's The End of Nature, biologist David M. Graber writes (Los Angeles Times, October 29, 1989): "Human happiness [is] not as important as a wild and healthy planet . . . . Until such time as Homo sapiens should decide to rejoin nature, some of us can only hope for the right virus to come along." Such is the naked essence of environmentalism: it mourns the death of one whale or tree but actually welcomes the death of billions of people. A more malevolent, man-hating philosophy is unimaginable. The guiding principle of environmentalism is self-sacrifice, the sacrifice of longer lives, healthier lives, more prosperous lives, more enjoyable lives, i.e., the sacrifice of human lives. But an individual is not born in servitude. He has a moral right to live his own life for his own sake. He has no duty to sacrifice it to the needs of others and certainly not to the "needs" of the nonhuman. To save mankind from environmentalism, what's needed is not the appeasing, compromising approach of those who urge a "balance" between the needs of man and the "needs" of the environment. To save mankind requires the wholesale rejection of environmentalism as hatred of science, technology, progress, and human life. To save mankind requires the return to a philosophy of reason and individualism, a philosophy that makes life on earth possible.

### 2AC states CP

#### States acting now to provide incentives - won’t work without a sustained federal commitment.

Frank Bowman, 6-19-2008, a retired four-star Admiral, is the former Chief of Naval Personnel and former Director of Naval Nuclear Propulsion, an Honorary Knight Commander of the Most Excellent Order of the British Empire (KBE), Master's Degree in nuclear engineering and naval architecture/marine engineering at the Massachusetts Institute of Technology, Honorary Doctorate of Humane Letters from Duke University, CQ Congressional Testimony, “Greenhouse Gas Emission Reduction,” Lexis Nexis

In terms of new nuclear plant construction, one of the most significant financing challenges is the cost of these projects relative to the size, market value and financing capability of the companies that will build them. New nuclear power plants are expected to cost at least $6 to 7 billion. U.S. electric power companies do not have the size, financing capability or financial strength to finance new nuclear power projects on balance sheet, on their own-particularly at a time when they are investing heavily in other generating capacity, transmission and distribution infrastructure, and environmental controls. These first projects must have financing support-either loan guarantees from the federal government or assurance of investment recovery from state governments, or both. The states are doing their part. Throughout the South and Southeast, state governments have enacted legislation or implemented new regulations to encourage new nuclear plant construction. Comparable federal government commitment is essential. The modest loan guarantee program authorized by the 2005 Energy Policy Act was a small step in the right direction, but it does not represent a sufficient response to the urgent need to rebuild our critical electric power infrastructure. We believe the United States will need something similar to the Clean Energy Bank concept now under consideration by a number of members of Congress-a government corporation, modeled on the Export-Import Bank and the Overseas Private Investment Corporation, to provide loan guarantees and other forms of financing support to ensure that capital flows to clean technology deployment in the electric sector. Creation of such a financing entity should be an integral component of any climate change legislation. Such a concept serves at least two national imperatives. First, it addresses the challenge mentioned earlier-the disparity between the size of these projects relative to the size of the companies that will build them. In the absence of a concept like a Clean Energy Bank, new nuclear plants and other clean energy projects will certainly be built, but in smaller numbers over a longer period of time. Second, federal loan guarantees provide a substantial consumer benefit. A loan guarantee allows more leverage in a project's capital structure, which reduces the cost of capital, in turn reducing the cost of electricity from the project. Electricity consumers-residential, commercial and industrial-are already struggling with increases in oil, natural gas and electricity prices. The high cost of energy and fuel price volatility has already compromised the competitive position of American industry. We know that the next generation of clean energy technologies will be more costly than the capital stock in place today. In this environment, we see a compelling case for federal financing support that would reduce consumer costs. If it is structured like the loan guarantee program authorized by Title XVII of the 2005 Energy Policy Act, in which project sponsors are expected to pay the cost of the loan guarantee, such a program would be revenue-neutral and would not represent a subsidy. The public benefits associated with a robust energy loan guarantee program-lower cost electricity, deployment of clean energy technologies at the scale necessary to reduce carbon emissions-are significant. That is why the U.S. government routinely uses loan guarantee programs to support activities that serve the public good and the national interest-including shipbuilding, steelmaking, student loans, rural electrification, affordable housing, construction of critical transportation infrastructure, and for many other purposes. Achieving significant expansion of nuclear power in the United States will require stable and sustained federal and state government policies relating to nuclear energy. The new nuclear power projects now in the early stages of development will not enter service until the 2016-2020. Like all other advanced energy technologies, continued progress requires sustained policy and political support. In closing let me assure you that the U.S. nuclear industry is moving forward as quickly as we are able to license, finance and build new nuclear plants in the United States. Seventeen companies or groups of companies are preparing license applications for as many as 31 new reactors. Nine applications for construction and operating licenses are currently under review by the Nuclear Regulatory Commission for a total of 15 new plants. We expect four to eight new U.S. nuclear plants in operation by 2016 or so. Assuming those first plants are meeting their construction schedules and cost estimates, the rate of construction would accelerate thereafter. With the necessary investment stimulus and financing support, we could see approximately 20,000 MW of new nuclear capacity (that would be about 15 plants) on line in the 2020 to 2022 time frame, and 65,000 to 70,000 megawatts (or 45 to 50 plants) by 2030. These plants will produce clean, safe, reliable electricity, around the clock, at a stable price, immune to price volatility in the oil and natural gas markets.

#### Federal loan guarantees is the vital to investment in nuclear power.

Joe C. Turnage et. al, 7-2-2007, Senior Vice President, Constellation Energy Group Inc., Theodore Bunting Jr., Senior Vice President of Finance, Entergy Corp, John F Young, Executive Vice President and CFO, Exelon Corp, and Steve Winn, Executive Vice President, NRG Energy, Inc., “Join Comments of Constellation Group, Inc, Entergy Corporation, Exelon Corporation, and NRG Energy, Inc. regarding Proposed Rule, Loan Guarantees for Projects that Employ Innovative Technologies,” <http://www.lgprogram.energy.gov/nopr-comments/comment41.pdf>

Following the enactment of the Energy Policy Act of 2005, numerous companies announced plans to develop applications to be submitted to the U.S. Nuclear Regulatory Commission to obtain licenses for the development of new nuclear power generation facilities. NRC has developed a new "one step" licensing process for nuclear projects, where applicants would receive a combined construction and operating license or "COL," and it is hoped that this will provide a transparent and predictable licensing process which will be demonstrated with the first "wave" of COL applications. These projects involve new nuclear plants using advanced technologies of five advanced reactor designs that promise to be even safer and more reliable than the existing "fleet" of nuclear reactors. In this first stage of development, the companies at the leading edge of development are committing many tens of millions of dollars to the NRC licensing process for COL applications that will be submitted later this year and in 2008. NRC's review process is then expected to take 2-4 years, which would lead to full scale construction activities commencing in the 2009-2012 time-frame for the first units of each new technology type. Given the nature of the multi-year licensing and construction schedule, as well as the world-wide competition for resources required to build these nuclear plants, companies planning to build the first plants are already beginning the process of committing to these projects what will likely be the first several hundred million dollars for each multi-billion dollar project, and in some cases, companies with their project partners have already spent such amounts. This means that in the near-term, these companies will need to either secure financing or commit equity in order to maintain schedules to prepare for plant construction. Significantly, however, newly all of these efforts are premised upon the assumption that the promise of Title XVII of EP Act 2005 will be realized for the first wave of new nuclear plants. These companies strongly believe that loan guarantees are necessary to access the credit markets. In addition, for new nuclear facilities that will be subject to cost-of-service regulation, companies will need to demonstrate to state public service commissions that the financing costs for these facilities were prudently incurred. Simply put, further commitment of capital requires that companies secure confidence that DOE will develop and implement a workable loan guarantee program to provide the badly needed access to large amounts of capital necessary to finance the development of the first 3-5 plants of each of the new reactor designs. For some companies, this may require securing loan guarantee commitments as soon as 2008, shortly after NRC has accepted a COL application as "administratively complete" and "docketed" the application. At a minimum, however, this requires the clear and unambiguous availability of loan guarantees in the 2009-2012 timeframe for a significant number of capital intensive central power generation facilities (new nuclear and clean coal plants). A workable loan guarantee program necessary to support new nuclear power development in the U.S. must have the following three elements: The guarantee itself must be a commercially viable financing instrument, in line with other Federal loan guarantee instruments; There should be a transparent methodology for calculating the subsidy cost to be paid by sponsors, and such costs should be reasonable and commercially viable; and There should be certainty as to the future availability of guarantees, and this self-pay program should be insulated from the uncertainty of the annual appropriations process. The size and scale of nuclear projects, and the multi-year commitments that need to be made by private industry, make it imperative that DOE create certainty in the near-term around the future availability of the Title XVII Loan Guarantee Program for nuclear power projects. As part of the public-private partnership that has been essential to "jump-starting" the development of new, base-load nuclear generation, the multi-year commitment being made by private parties needs to be matched with a multi-year commitment from the federal government. The federal government cannot expect private parties to make hundreds of millions of dollars in commitments premised upon the expectation of they will obtain loan guarantees in 2009-2012 without reasonable progress being made by the federal government toward establishing a program that can be expected to be available to facilitate the financing of the first wave of new nuclear plants throughout the next five years.

#### Federal funds drive private investment and recruitment of skilled workers for IFRs.

Daniel Kammen, 6-12-2003, professor of nuclear engineering at Berkeley, Federal News Service, Prepared Testimony before the House Committee on Science, Lexis Nexis

The federal government plays the pivotal role in the encouragement of innovation in the energy sector. Not only are federal funds critical, but as my work and that of others has demonstrated6, private funds generally follow areas of public sector support. One particularly useful metric although certainly not the only measure --. of the relationship between funding and innovation is based on patents. Total public sector funding and the number of patents - across all disciplines in the United States have both increased steadily over at least the past three decades (Figure 5). The situation depicted here, with steadily increasing trends for funding and results (measured imperfectly, but consistently, by patents) is not as rosy when energy R&D alone is considered. In that case the same close correlation exists, but the funding pattern has been one of decreasing resources (Figure 6A). Figure 6A shows energy funding levels (symbol: o) and patents held by the national laboratories (symbol: ). The situation need not be as bleak as it seems. During the 1980s a number of changes in U.S. patent law permitted the national laboratories to engage in patent partnerships with the private sector. This increased both the interest in developing patents, and increased the interest by the private sector in pursuing patents on energy technologies. The squares (l) in figure 6 show that overall patents in the energy sector derived. Figure 6B reveals that patent levels in the nuclear field have declined, but not only that, public private partnerships have taken placed (shaded bars), but have not increased as dramatically as in energy field overall (Figure 6A). There are a number of issues here, so a simple comparison of nuclear R&D to that on for example, fuel cells, is not appropriate. But it is a valid to explore ways to increase both the diversity of the R&D. This is a particularly important message for federal policy. Novel approaches are needed to encourage new and innovative modes of research, teaching, and industrial innovation in the nuclear energy field. To spur innovation in nuclear science a concerted effort would be needed to increase the types and levels of cooperation by universities and industries in areas that depart significantly from the current 'Generation III+' and equally, away from the 'Generation IV' designs. Similar conclusions were reached by M. Granger Morgan, head of the Engineering and Public Policy Program at Carnegie Mellon University, in his evaluation of the need for innovative in the organization and sociology of the U. S. nuclear power industry’s. A second important issue that this Committee might consider is the degree of federal support for nuclear fission relative to other nations. Funding levels in the U.S. are significantly lower than in both Japan and France. Far from recommending higher public sector funding, what is arguably a more successful strategy would be to increase the private sector support for nuclear R&D and student training fellowships. Importantly, this is precisely the sort of expanded public private partnership that has been relatively successful in the energy sector generally. It is incorrect, however, to think that this is a process that can be left to the private sector. There are key issues that inhibit private sector innovation. As one example, many nuclear operating companies have large coal assets, and thus are unlikely to push overly hard, in areas that threaten another core business. This emphasis on industry resources used to support and expanded nuclear program - under careful public sector management - has-been echoed by a variety of nuclear engineering faculty members: I believe that if you. were to survey nuclear engineering department heads, most would select a national policy to support new nuclear construction, over a policy to increase direct financial support to nuclear engineering departments. A firm commitment by the federal government, to create incentives sufficient to ensure the construction of a modest number of new nuclear plants, with the incentives reduced for subsequent plants, would be the best thing that could possibly be done for nuclear engineering education and revitalization of the national workforce for nuclear science and technology. - Professor Per Peterson, Chair, Department of Nuclear Engineering, University of California, Berkeley

#### Eliminating federal pre-emption destroys nuclear energy – small claims juries.

Donald E. Jose & Michael A. Garza, Spring 2007, Managing partner of Jose & Associates and J.D. at Georgetown, “The Complete Federal Preemption of Nuclear Safety Should Prevent Scientifically Irrational Jury Verdicts in Radiation Litigation,” Lexis Nexis

Federal law preempts radiation safety. n53 Unfortunately, the Cook judge and jury disregarded federal regulations of radiation safety. There are currently 104 NRC licensed operating nuclear reactors in the United States. n54 They provide 20% of the [\*10]nation's electricity. n55 In addition, there are 18 nuclear facilities associated with nuclear weapons production, one of which was Rocky Flats. n56 Finally, there are many nuclear fuel cycle sites where some work is done with radioactive material. n57 At some point each of these sites will be decommissioned, as Rocky Flats was, and the land transferred to other uses. The NRC allows the land upon which a nuclear power plant once stood to be decommissioned and transferred to private ownership for unrestricted uses as long as the residual radioactivity on the land (i.e. the "contamination" remaining after clean-up) would not cause a dose to a resident of the land exceeding 25 millirem per year. n58 The EPA agrees with the 25 millirem standard. n59 Yet, the Cook jury assessed half a billion dollars damages for a dose 10 times less. Obviously, a severe conflict exists between the federal regulation of nuclear safety and the Cook jury verdict. Either the federal agency with expertise backed by complete federal preemption controls the extent of decontamination required, or a lay jury can assert control through the damages they assess. Both the judgment of the federal agency and the judgment of the jury cannot be right and they cannot co-exist. One must be subjugated to the other. Either the federal agency with expertise in nuclear safety regulates clean-up to acceptable levels or the latest lay jury award effectively regulates through monetary damages, and perhaps destroys n60 the nuclear industry.

### 2AC electricity prices DA

#### Prices high now -

#### Shutting down coal plants.

Phil Kerpen, 9-28-2012, is president of American Commitment -2012 Washington Times “KERPEN: War on coal comes to Virginia” http://www.washingtontimes.com/news/2012/sep/28/war-on-coal-comes-to-virginia/]

That’s the key issue for the coal industry and the future of affordable electricity in Virginia. Under Mr. Obama and Mr. Kaine, there would be no new coal plants. Most likely existing coal plants would be shut down — sending electricity prices through the roof. That’s why this is a major statewide issue, not just an issue for the coal fields.

#### Expectation of cold winter.

CNBC, 10-2-2012, “U.S. spot natgas prices up slightly, Henry Hub at 2012 high,” http://www.cnbc.com/id/49261378

The U.S. Climate Prediction Center weather map issued on Monday continued to show a high probability of below-normal temperatures across most of the nation in the 6-10 day outlook. Temperatures are expected slip into the 40's Fahrenheit (4 degrees Celsius) in Chicago by week's end and in New York by early next week, according to AccuWeather.com. In other markets, gas on the Transco pipeline at the New York citygate rose 2 cents, on average, to $3.38, while Chicago gas was also 2 cents higher on the day at $3.26. Electricity prices in PJM West, the most actively traded market in the East, rose more than 40 percent to the upper $50s per megawatt hour on Tuesday on expectations for heating demand.

#### IFRs are elastic with energy demand - they fit in seamlessly.

Tom Blees, 2008, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Prescription for the Planet, p. 291-2

One of the problems with generating electricity is that you can’t store it all that easily. Converting it from one form to another and back again entails quite unacceptable losses. Another big problem is that demand is necessarily sporadic. Since power plants cost a lot of money to build, nobody wants to build too much capacity into the system knowing that much of the generating potential will be idled a lot of the time. The problem is only compounded when we begin to add in solar and wind power, for both suffer from the fickleness of nature’s whims. Wind is as flighty as, well, the wind. Solar is more predictable (but those cloudy days don’t help), though it obviously peaks in the early afternoon whether you like it or not, while residential demand tends to peak in the evening when people come home from work. This is especially critical during hot weather, when millions of air conditioners kick in at full blast around five o’clock, just about the time the sun is getting low in the sky. The cost of IFRs will be nothing to sneeze at, even taking mass production into account. We don’t want those plants sitting idle or running at half power. This is where the synergy of boron recycling to electrical generation can pay tremendous dividends and maximize efficiency of the total energy picture. For boron recycling plants need not run at full capacity all the time. They can run at whatever rate they can draw power. All they have to be able to do is to keep enough recycled boron available to meet local demand. Almost everyone’s had the experience of using rechargeable batteries, which can be very handy except when they start to get old and refuse to hold their charge. Any electricity storage system would292have to be able to avoid that problem, and boron fills the bill perfectly because it’s inert. Its potential energy today will be the same next week, next month, or next year. Thus it can act like a giant rechargeable battery to soak up excess electricity whenever it’s available. When electricity demand rises, the boron recycling plants would just throttle back and produce less boron. In extraordinary circumstances they could even shut down for a while altogether, though in an integrated energy system a balance would inescapably be found to maximize both the electrical generation and boron recycling systems. Thus the grids would be provided with ample power in any contingency without the costly necessity of building needless overcapacity into the system. Wind and solar contributions would fit in seamlessly, fully integrated into the energy symbiosis, while the power plants would be able to run at full power virtually around the clock. Hydroelectric plants, of course, are fully adjustable, and reducing their flow in times of low electricity demand would only leave more water in the reservoirs for later use.

#### Nuclear energy causes a decrease in prices – loan guarantees are key.

Marvin S. Fertel, 9-13-2010, is President and Chief Executive Officer of the Nuclear Energy Institute. He has 35 years of experience consulting for electric utilities on issues related to designing, siting, licensing and managing both fossil and nuclear plants, Clean Energy Insight, “Fertel: Nuclear Energy is the Clean Energy Job Engine,” <http://www.cleanenergyinsight.org/energy-insights/fertel-nuclear-energy-is-the-clean-energy-job-engine/>

Advanced reactor designs are higher capital cost projects, but the actual cost of electricity from these facilities will be competitive in the marketplace. Today’s reactors have among the lowest electricity production costs in the sector. Based on estimates for new reactor development, the U.S. Energy Information Administration (EIA) projects that electricity production costs will be competitive, and in fact, cheaper than most alternatives in 2016. Affordable electricity for 60 years or more With low uranium fuel costs and capacity factors (a measure of reliability) that average 90 percent across our industry, nuclear plants compensate for the up-front construction costs by affordably producing electricity for 60 years or more. Financing new nuclear plants is one of the industry’s biggest challenges, but it is being met with support from state and federal energy policy. Federal loan guarantees can help project sponsors access lower-cost financing for nuclear and other clean-energy power projects, which ultimately lowers the cost of a new nuclear power plant and delivers lower-cost electricity to the consumer.

#### Nuclear power is key to lower electricity prices

Pistilli 9-27 [Melissa Pistilli 9-27-2012 Uranium Investing News “Nuclear Power’s Critical Role in World Energy Mix Will Boost Uranium Demand” http://uraniuminvestingnews.com/12660/nuclear-power-uranium-demand-price-merger-acquisition.html]

Handwerger sees the post-Fukushima government rhetoric against nuclear power in Japan and Germany as purely political and shortsighted. “For modern industrial nations facing skyrocketing electricity prices it’s impossible to meet energy demands without incorporating nuclear power into their energy mix.” He noted that the crisis in Fukushima was the result of a natural disaster — a magnitude-9 earthquake that resulted in a cataclysmic tsunami — not a nuclear accident. That same earthquake caused a hydroelectric dam in the Fukushima district to collapse, destroying thousands of homes and killing hundreds of people; yet there was no huge public outcry against the use of hydroelectric power. Today, governments around the world are looking to increase energy production from reliable sources while reducing their carbon footprint. Most understand that nuclear power is a crucial part of the solution to rising energy demand. “It’s not feasible to turn away from nuclear power without grave economical costs to a modern industrial nation,” explained Handwerger. “It’s ridiculous to bet your energy future on one solution, like solar or coal or natural gas.”

### 2AC elections DA – Obama good

#### Obama and Romney have nearly identical policies on Afghanistan

Cora Currier and Blair Hickman, “Where Obama and Romney Stand on The War in Afghanistan,” ProPublica, 9-24-2012, <http://www.propublica.org/article/where-obama-and-romney-stand-on-the-war-in-afghanistan>, accessed 10-7-2012.

Despite [trading barbs](http://www.latimes.com/news/politics/la-pn-obama-romney-afghanistan-20120902,0,6500848.story) on the campaign trail, President Obama and his challenger Mitt Romney don’t differ that much on U.S. strategy in Afghanistan.Both candidates basically endorse a 2014 withdrawal, though Romney allows that conditions on the ground could change that. Both emphasize strengthening the Afghan military and governing institutions. Of course, during Obama’s time in office violence in Afghanistan has continued, and turning over more control to the Afghan government has proven difficult. We break down what the candidates have said on some of the war’s pressing issues.

#### Peace talks don’t solve

CNN, “Taliban: Peace talks don't signal end to hostilities,” January 12, 2012, <http://articles.cnn.com/2012-01-12/asia/world_asia_afghanistan-taliban-talks_1_zabiullah-mujaheed-peace-talks-islamic-emirate?_s=PM:ASIA>, accessed 10-7-2012.

Afghanistan's Taliban on Thursday cautioned that its recent support of peace talks doesn't mean that its militants will stop fighting or accept "the constitution of a stooge Kabul administration."The group said that it's "utilizing its political wing alongside its military presence," while blaming media outlets that "distort realities.""It is well known to the Mujahid nation of Afghanistan that the Islamic Emirate has been engaged in a struggle and Jihad for the past one and a half decade to establish an Islamic government in accordance with the request of its people. It is for this purpose and for bringing about peace and stability in Afghanistan that we have increased our political efforts to come to mutual understanding with the world in order to solve the current ongoing situation," the statement said. "But this understanding does not mean a surrender from Jihad and neither is it connected to an acceptance of the constitution of the stooge Kabul administration."The statement comes just over a week after the Taliban tentatively agreed to open an office in Qatar's capital city of Doha; a decision widely seen as an overture aimed at establishing an outside forum for political talks with NATO-led forces and the current Afghan administration, among others.

#### Romney will win -

#### PAC spending, Obama myths, independent grab.

Darren Martin, 10-3-2012, Associate Editor, The Maroon Tiger, “Four Reasons Why Mitt Romney Will Win the Election,” <http://themaroontiger.com/four-reasons-why-mitt-romney-will-win-the-election/>

1. Mitt Romney Supporters and the Anti-Obama Stronghold Between now and Nov. 6, Mitt Romney supporters and anti-Obama PACs will spend a significant amount of money in advertising aimed at dissuading Americans from voting for President Barack Obama. According to a CBS news poll, more conservatives now than in 2008 believe that Obama is a Muslim and are not comfortable with his presumed beliefs. CBS says, “30 percent of Republicans and 34 percent of conservative Republicans think he is Muslim. Among those who think he is Muslim, just 26 percent are comfortable with his beliefs.” Whether misconstrued or true, these growing beliefs can substantially affect Obamas’ chances of being re-elected.2. Mitt Romney’s Billion-Dollar Donors the Romney PACs, billion-dollar donors, Karl Rove’s robust funding operation American Crossroads and non-profit organizations are ensuring that Romney’s pockets will never run dry. According to the New York Times, Romney has a presumed budget of $633 million with $530 million spent, in comparison to Obama’s budget of approximately $690 million with $615 million spent. Most of the money raised by Obama, however, was raised by grassroots donors who donated money in increments of $5-$20. Romney has supporters who can increase his budget at any time to outspend Obama. This presents a challenge for Obama as he would have to work three times as hard to ensure he stays up to par in campaign donations. One check could slide Romney into the White House. 3. Mitt Romney will lose the electoral vote but win the popular vote Remember Al Gore and the Electoral College vs. Popular vote scandal of 2000? History could easily repeat itself in 2012. Obama is leading the major polls but these leads are at or barely above the margin of error. Thus, in actuality, Obama and Romney can be 50/50 in the race on Nov. 6. While polls predict a Democratic win in the electoral vote, what will happen if Romney wins the popular vote? Of course the case would go to the Supreme Court and they will form a verdict, but the issue is that Obama is not as far ahead as voters may think.4. Gary Johnson, the third-party candidate, may swing the election towards Mitt Romney due to Americans who have a disdain for the president. There is a new twist in the election; three candidates are running for the presidency, not two. Former Governor of New Mexico Gary Johnson is a libertarian candidate who has generated buzz in the media as the presidential race continues. Johnson and his Live Free campaign have gained support throughout the country with approximately $650,000 raised by over 7,000 supporters. Although his campaign is not as substantial as Romney’s or Obama’s, this growing base of supporters may deter the independent votes that Obama needs to secure the election. Thus, Romney may develop a lead and snatch the presidency from Obama before our eyes.

#### Polls are inaccurate to predict the election.

Roger Kimball, 10-1-2012, PJ Media and The New Criterion, Kimball is the publisher of Encounter Books, PJ Media, “The Narrative in London,” <http://pjmedia.com/rogerkimball/2012/10/01/the-narrative-in-london/>

There was some surprise (not to say incredulity), then, when I repeated my frequent refrain (like a broken record) that I thought Mitt Romney would not only win but win big. I was not surprised by the wonder with which my prediction was greeted. The Narrative, nearly seamless in the United States, is positively monolithic in the UK. And there is this difference: in the U.S., the idea that Barack Obama has the election sewn up, while assiduously disseminated by the media, is at least treated to some of the skepticism it deserves by a large and vibrant dissenting commentariat, to whose mast your humble correspondent proudly nails his colors. That is one reason that, although you’ll rarely hear a peep of dissent on the “major” networks or politically correct organs like The New York Times, there is nevertheless a strong and indeed growing current of contrary sentiment, broadcast by venues like PJ Media but underwritten by a vast electorate that is seething with discontent over the top-down, socialist, spread-the-wealth-around policies of our handsome but shockingly incompetent president. It’s the latter that matters: what people like me (whatever their political persuasion) say is of interest only as a more or less accurate thermometer. The heat, the actual evidence of life, is produced by a pulsing body politic that goes about its business utterly unconcerned by what pundits say. This is as it should be but it is not, I think, as vividly appreciated as it should be. Hence the surprised skepticism that greeted my announced confidence that Romney would win. “But all the polls say Obama will win,” came a chorus of objection. Ah, the polls. I pointed out, as I have often pointed out here, that polls are often fragile, unreliable constructs: more the product of hope than the evidence of fact. I mentioned that Democrats are typically oversampled, that most polls (Rasmussen is an exception) canvass registered rather than likely voters, and that in general the whole scenario or context in which poll data is being assembled is predicated on 2008 patterns of turnout and voter enthusiasm. Need I observe that the situation in 2012 is very different from what it was in 2008? In 2008, Barack Obama outraised his rival by at least 3 to 1. (He officially raised $771 million to John McCain’s $239 million; the actual discrepancy was even bigger.) The autumn of 2008, remember, marked the beginning of the most shattering economic crisis the world has seen since the Great Depression: Obama came to town promising to change all that. Meanwhile, his opponent temporarily suspended his campaign “to deal with the economic crisis,” selected an astoundingly inappropriate running mate (much though I admire her personally), and generally ran the most anemic, unfocused campaign in recent memory. Obama also had the tremendous advantage of novelty: America’s first black (well, half-black, but good enough for government work) president! How that warmed the cockles of every liberal heart. And remember, too, how unpopular George Bush and the war in Iraq were. Obama was going to change all that too. He was going to make the seas stop rising and “heal the planet” (how emetic it seems now!). The moment he was inaugurated, he said, “Muslim hostility” would ease. (I wonder what Chris Stevens’s family thinks of that?) Take a look at the footage of Obama’s 2008 acceptance speech: has anything closer to the intoxication of Nuremberg been seen in American politics?

#### Fast reactors developed and popular with the public – waste management.

Tom Blees, 5-31-2011, is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Idaho Samizdat: Nuke Notes, “Critique of MIT Nuclear Fuel Cycle Report,” <http://djysrv.blogspot.com/2011/05/critique-of-mit-nuclear-fuel-cycle.html>

The public views adequate nuclear waste management as a critical linchpin in further development of nuclear energy. The technical community, therefore, needs to provide a practical approach to deal with the waste issue. The Fukushima accidents call attention to the importance of managing spent fuel safely. It appears the best technical approach is extracting the actinides from spent fuel, which reduces the effective lifetime of nuclear wastes from ~300,000 years to ~300 years. Extracting actinides (and using them to generate power) is by far the best technical approach to dealing with nuclear wastes. The MIT Study fails to mention this important possibility. If actinide extraction is chosen as a pathway for waste “disposal,” the recovered actinides still must be transmuted to fissile material or fissioned directly. This can be done only in fast reactors. Actinides can be burned in fast reactors, generating energy and at the same time creating more fissile material for the future. A key advantage of fast reactors is that they can be utilized as “burners” when excess plutonium inventories exist, and then converted to “breeders” whenever needed. Only fast reactors can satisfy the waste-disposal mission simply and effectively while extending utilization of the uranium resources by more than two orders of magnitude. Thermal reactors—such as LWRs and high-temperature gas-cooled reactors—utilize less than 1% of uranium resources, even with recycling of plutonium and some of the uranium. Thermal-spectrum reactors, even optimized, can extend the resource utilization only marginally, and they cannot burn actinides effectively. Actinide recycling also requires an efficient processing technology, with improved economics and nonproliferation characteristics. The pyroprocessing technique based on electrorefining, developed in the IFR program, has the potential to recover the actinides from LWR spent fuel as well as to fully recycle fuel in fast reactors. The fundamentals of pyroprocessing have already been demonstrated – this is not new science. The technology is now ready for pilot-scale demonstration, and it should be given the highest priority. We do not need decades of R&D to pursue all esoteric ideas. We already have in our hands on the most advanced technology, technology that no other countries possess. The MIT Study also talks about the inter-generational equity considerations. We believe that our generation should demonstrate the technologies that will solve the energy supply and waste management problems, rather than proposing a century-long interim storage of the spent nuclear fuel.

#### Advocates of nuclear energy swamp unpopularity – strong media campaign.

Sharon Squassoni, November 2009, is a senior associate at the Carnegie Endowment for International Peace in the nonprolifera-tion program. Prior to joining Carnegie, she held various positions in the US government, including at the Congressional research Service, the Arms Control and Disarmament Agency, and the US State Department, is a frequent contributor to journals, magazines and books on nuclear proliferation and defense, The Centre for International Governance Innovation, No. 7, “The US Nuclear Industry: Current Status and Prospects under the Obama Administration,” p. 7-8, <http://www.carnegieendowment.org/files/Nuclear_Energy_7_0.pdf>

Advocates of nuclear energy have embarked on strong marketing campaigns. For example, the Nuclear Energy Institute (NEI) has run advertisements describing nuclear energy as “clean air” energy. The Clean and Safe Energy Todd Whitman and former Greenpeace activist Patrick Moore, has been funded by the nuclear industry. One industry slogan is “Know new nukes.” The slogan appears over a field of yellow soybean flowers. “Clean” energy appears to be a euphemism for renewables plus nuclear power, which is why anti-nuclear advocates were heart-ened by President Obama’s February address to Congress in which he spoke only of renewable energy, rather than clean energy (Wasserman, 2009). Opponents of nuclear energy generally have less money to spend on media campaigns, and their message is less pithy. They stress that nuclear power is not the solution to climate change and that it is dangerous, polluting, unsafe, and expensive. Only a few planned nuclear plants are in states that do not already have power plants, such as Utah, Missouri and Idaho. Most of the expected plants will be constructed on existing reactor sites, which make them more acceptable to the local public.

#### Recent polls say benefits trump Fukushima with voters.

Tim Gitzel, September 2012, senior vice-president and chief operating officer and was appointed president, President and CEO of Cameco, extensive experience in Canadian and international uranium mining activities, executive vice-president, mining business unit for AREVA, College of Law at the University of Saskatchewan, serves as vice-chair on both the Mining Association of Canada and the Canadian Nuclear Association boards of directors, past president of the Saskatchewan Mining Association, and has served on the boards of Sask Energy, co-chair of the Royal Care campaign, a recipient of the Centennial Medal, World Nuclear Association (WNA), “US Nuclear Power Policy,” <http://www.world-nuclear.org/info/inf41_US_nuclear_power_policy.html>

Public opinion regarding nuclear power has generally been fairly positive, and has grown more so as people have had to think about security of energy supplies. Different polls show continuing increase in public opinion favorable to nuclear power in the USA. More than three times as many strongly support nuclear energy than strongly oppose it. Two-thirds of self-described environmentalists favor it. A May 2008 survey (N=2925) by Zogby International showed 67% of Americans favored building new nuclear power plants, with 46% registering strong support; 23% were opposed10. Asked which kind of power plant they would prefer if it were sited in their community, 43% said nuclear, 26% gas, 8% coal. Men (60%) were more than twice as likely as women (28%) to be supportive of a nuclear power plant. A March 2010 Bisconti-GfK Roper survey showed that strong public support for nuclear energy was being sustained, with 74% in favor of it 11. In particular, 87% think nuclear will be important in meeting electricity needs in the years ahead, 87% support license renewal for nuclear plants, 84% believe utilities should prepare to build more nuclear plants, 72% supported an active federal role in encouraging investment in "energy technology that reduces greenhouse gases", 82% agree that US nuclear plants are safe and secure, 77% would support adding a new reactor at the nearest nuclear plant, and 70% say that USA should definitely build more plants in the future. Only 10% of people said they strongly opposed the use of nuclear energy. In relation to recycling used nuclear fuel, 79% supported this (contra past US policy), and the figure rose to 85% if "a panel of independent experts" recommended it. Although 59% were confident that used reactor fuel could be stored safely at nuclear power plant sites, 81% expressed a strong desire for the federal government to move used nuclear fuel to centralized, secure storage facilities away from the plant sites until a permanent disposal facility is ready. Half of those surveyed considered themselves to be environmentalists. A February 2011 Bisconti-GfK Roper survey showed similar figures, and that 89% of Americans agree that all low-carbon energy sources – including nuclear, hydro and renewable energy – should be taken advantage of to generate electricity while limiting greenhouse gas emissions. Just 10% disagreed. Also some 84% of respondents said that they associate nuclear energy "a lot" or "a little" with reliable electricity; 79% associate nuclear energy with affordable electricity; 79% associate nuclear energy with economic growth and job creation; and 77% associate nuclear energy and clean air. A more general March 2010 Gallup poll (N=1014) on energy showed 62% in favor of using nuclear power, including 28% strongly so, and 33% against, the most favorable figures since Gallup began polling the question in 1994. However, only 51% of Democrat voters were in favour12. An early March 2011 Gallup poll just before the Fukushima accident showed 57% in favor and 38% against, and in March 2012 (N=1024) still 57% in favor with 40% against (men: 72%-27%, women 42%-51%). Regarding plant safety, the polls showed consistent 56-58% positive views over 2009-12, but men-women split similar. A survey conducted in September 2011 by Bisconti Research Inc. with GfK Roper showed that although support for nuclear power decreased following the Fukushima accident and compared with a year earlier (a survey carried out in March 2010 by Bisconti Research found 74% of Americans favored nuclear power), 62% of the 1000 adults surveyed in the latest poll were supportive of utilizing nuclear power while 35% expressed opposition. The survey found that 82% of Americans believed that lessons had been learned from Fukushima and 67% of respondents considered US nuclear power plants safe (the same level as reported one month before the nuclear accident in Japan occurred). Also 85% of said that an extension of commercial operation should be granted to those plants that comply with federal safety standards, and 59% believed more nuclear power plants should definitely be built in the future, while 75% contend that “Electric utilities should prepare now so that new nuclear power plants could be built if needed in the next decade.” Finally, further expansion of the site of the nearest already operating nuclear power plant is supported by 67% and opposed by 28%. By February 2012 support had increased slightly to 64% supported using nuclear power, while 33% opposed it. Some 81% of respondents believed that nuclear energy will be important in meeting the USA's future electricity needs (compared with 80% in September), and 82% thought the USA should "take advantage of all low-carbon energy sources, including nuclear, hydro and renewable energy." Significantly, 74% believed that nuclear power plants operating in the USA are safe, up from 67% in both 2011 surveys. However, a Harris survey in February 2012 (N=2056) showed that only 40% of US adults believed that the benefits of nuclear outweigh its risks, while 41% thought the reverse. A similar poll conducted in 2011 before the Fukushima accident occurred, indicated that 42% thought that the benefits outweighed the risks, while 37% believed the opposite. In a 2009 poll, 44% thought the benefits outweighed the benefits, while 34% thought they did not. The southern states had the highest percentage of people believing the benefits outweigh the risks (at 43%), compared with 33% in the East and 41% in the Midwest and West. Some 42% of Americans thought that the benefits of using coal outweighed the risks (up from 38% positive in 2011), while 40% said the risks outweighed the benefits.

#### Energy is not key to the election.

Cleantech Finance, 8-14-2012, “VP announcement reinforces stark differences on energy issues for November,” <http://www.cleantechfinance.net/tag/election/>

But this also raises another question. Just how important is energy policy to the voting public? Energy and environmental issues repeatedly rank low when it comes to issues that matter to the general electorate. In fact, a recent study by research organization Public Agenda found that more than half of Americans cannot name one type of renewable energy and nearly 40 percent can’t identify a fossil fuel. Many incorrectly believe that the US gets most of its oil from the Middle East. An Associated Press-NORC Center for Public Affairs Research poll found that less than 20 percent of Americans know important details about policies that could save them a lot of money, including energy efficiency rebates, tax credits, and other incentives.

## 1AR

### 1AR elections DA – Romney on Russia

#### Just rhetoric.

Alexander Gasyuk, 6-13-2012, “Romney keeps the gloves off,” http://rbth.ru/articles/2012/06/13/romney\_keeps\_the\_gloves\_off\_15854.html

Given the sharp disagreements between the United States and Russia on Syria, which is now careening toward civil war, Republicans will harshly criticize every attempt by Obama to further emphasize any progress in bilateral relations. “Some realism regarding U.S.-Russia relations would be constructive for the White House if it wants to avoid Republican attacks,” Simes told Russia Now. But this doesn’t mean that presumptive GOP nominee Mitt Romney, if elected, will transform his public anti-Russian statements into political practice. “I believe that most likely Governor Romney believes in the statements he made, but that does not mean that in practice this rhetoric will be his guide for action,” Simes said. “Many statements from the GOP candidates including those on foreign affairs surely have to be taken in the context of the political and electoral reality in the U.S.,” Aron said. “It is not only possible, but highly probable,” that Mitt Romney’s views on Russia will evolve if he is elected, Simes said. American political history is rife with examples of strategic U-turns that begin the morning after the inauguration balls. When Dwight Eisenhower ran for president, his advisers—such as the famous John Foster Dulles—spoke of Harry Truman’s “cowardly” policy of containment of the Soviet Union and called for the speedy liberation of Eastern Europe. However President Eisenhower instead started the process of normalizing relations through personal meetings with Nikita Khrushchev in 1955 and 1959. President Richard Nixon was viewed as a leading anti-Communist, but it was Nixon who found the way toward detente. Nixon made the first-ever trip by an American president to then-Communist Russia in 1972, but also opened the door to dialogue with Communist China. No one should be too surprised that Mitt Romney, if elected, might rethink his position. When needed for supply routes, Russia is no longer America’s “number one geopolitical foe.” As a president, many observers believe he would take a more realistic approach to handling bilateral ties.