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### Advantage 1- Islanding

#### Small nuclear reactors key to prevent bases from being vulnerable to inevitable grid outages- the impact is nuclear war

Andres and Breetz 11

(Richard B. Andres is Professor of ¶ national Security Strategy at the ¶ national War College and a Senior fellow and energy and environmental ¶ Security and Policy Chair in the Center ¶ for Strategic research, institute for national Strategic Studies, at the national Defense University. Hanna L. Breetz is a doctoral candidate in the Department of Political Science at the Massachusetts institute of technology, “Small Nuclear Reactors ¶ for Military Installations:¶ Capabilities, Costs, and ¶ Technological Implications” Institute for National Strategic Studies, <http://www.ndu.edu/press/lib/pdf/strforum/sf-262.pdf>, SEH)

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

#### Grids goes down- laundry list of reasons

Slavo 7/12

(Mac is editor of shftplan, “UPDATE: Cascading Grid Crash: Now 600 Million Without Power in India (Are We Vulnerable?)” <http://www.shtfplan.com/headline-news/paralysis-grid-down-in-india-370-million-left-without-power_07302012>, SEH)

The power grid in the United States, while more advanced and apparently better maintained, is also under excessive strain as has been witnessed in recent years with rolling brownouts, blackouts, and unforeseen crashes resulting from key component failure.¶ One industry insider who has worked in the utility industry for nearly two decades advised this author recently that it wouldn’t take much to bring down the system even in the United States, potentially affecting tens of millions of customers. Though it’s the 21st century, many grid components in operation are, in some cases, as much as 40 years old, thus replacement parts are almost impossible to find. Other components, like massive transformers may take weeks or months to replace. In the event of a scenario where multiple components are targeted simultaneously, by either a man-made EMP or natural event, it is not too far of a stretch to suggest that the afflicted regions would be engulfed in pandemonium.¶ This potential for widespread failure is so plausible that former Congressman Roscoe Bartlett, who has spoken on the vulnerabilities of the US power grid, has advised that Those Who Can, Should Move Their Families Out Of the City:¶ After Hurricane Ike passed through the Houston area 2008 some 90% of the metropolitan was without power. While hospitals, police and critical infrastructure was restored within a few days, residents in outlying suburban areas experienced the outage for over three weeks. We witnessed the rapid loss of patience, increased anxiety and frustration, and the subsequent breakdown of interpersonal interaction at high-demand venues such as gas stations, where long lines, screaming matches and even fist fights became a common occurrence.¶ The bottom line: As demonstrated in India today, Quebec in 1989 (caused by a geo-magnetic storm originating from the sun), Ike in 2008, Hurricane Irene on the East coast in 2012 and the plethora of incidents that have taken place over the last couple of decades, the North American power grid, just as India’s, is susceptible to far-from-equilibrium situations, and sometimes it takes extended periods of time to get power up and running.¶ With just three major grids running the United States, our dependence on massive flows of electricity to power our home air conditioners, food refrigeration, communications, water and gas pump systems, and daily business operations could come to a screeching halt should the grid ever be struck by a natural disaster like a solar coronal mass ejection or a large-scale earthquake in California or on the Madrid fault. Likewise, as we’ve noted previously, rogue organizations looking to wreak havoc have already demonstrated the staggering security holes in our power, water and oil grid infrastructure, with leading cyber security firms noting that it is just a matter of time before disaster strikes.¶ While a short-term, isolated metropolitan outage can be dealt with by sourcing labor and supplies from unaffected areas of the country, considering that the US operates on three key power grid systems, a region-wide outage affecting just one of these nodes could lead to a cascading breakdown in the electrical power system that envelops the entire country.¶ The most dangerous possibility emerges when we look at threats posed by the sun or a rogue terror cell or nation that could deploy an Electro-Magnetic Pulse weapon (EMP / Super EMP) over American skies. It’s been surmised that either one of these possibilities could cause damage so staggering that the grid would be down for months, leaving millions without just-in-time food and gas delivery systems, medical care, local emergency response, or even clean water. According to one estimate, some 90% of Americans would die in such a scenario if the power wasn’t restored within one year.¶ Thus, it is clear that our power grids are a critical lifeline to keeping life as we know it in the world today operational. And, as we have seen historically and India this morning, power grids can and do crash – even in countries with hundreds of millions of residents.

#### Cyber-attack is coming ---actors are probing grid weaknesses

**Reed 10/11** John, Reports on the frontiers of cyber war and the latest in military technology for Killer Apps at Foreign Policy, "U.S. energy companies victims of potentially destructive cyber intrusions", 2012, killerapps.foreignpolicy.com/posts/2012/10/11/us\_energy\_companies\_victims\_of\_potentially\_destructive\_cyber\_attacks

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

**Defense doesn’t apply---Stuxnet changed the game**

**Gross 11** Michael Joseph, Vanity Fair contributing editor, he covers topics including politics, technology, and national security, has also written extensively for The New York Times, The Boston Globe, and GQ, attended Williams College, and later studied at Princeton Theological Seminary. After graduating, he wrote speeches for Massachusetts Governor William Weld, “A Declaration of Cyber-War”, April, http://www.vanityfair.com/culture/features/2011/04/stuxnet-201104?currentPage=all

Regardless of how well it worked, there is no question that Stuxnet is something new under the sun. At the very least, it is a blueprint for a new way of **attacking industrial-control systems**. In the end, the most important thing now publicly known about Stuxnet is that Stuxnet is **now publicly known.** That knowledge is, on the simplest level, a warning: **America’s own critical infrastructure is a sitting target for attacks like this**. That aside, if Stuxnet really did attack Iran’s nuclear program, it could be called the first unattributable act of war. The implications of that concept are confounding. Because cyber-weapons pose an almost **unsolvable problem of sourcing**—who pulled the trigger?—war could evolve into something **more and more like terror**. Cyber-conflict makes military action more like a **never-ending game of uncle**, where the fingers of weaker nations are perpetually bent back. The wars would often be secret, waged by members of anonymous, elite brain trusts, none of whom would ever have to look an enemy in the eye. For people whose lives are connected to the targets, the results could be **as catastrophic as a bombing** **raid, but would be even more disorienting**. People would suffer, but would never be certain whom to blame.¶ **Stuxnet is the Hiroshima of cyber-war**. That is its true significance, and all the speculation about its target and its source should not blind us to that larger reality. **We have crossed a threshold, and there is no turning back**.

**Grid failure wrecks US critical mission operations**

**Stockton 11** Paul, assistant secretary of defense for Homeland Defense and Americas’ Security Affairs, “Ten Years After 9/11: Challenges for the Decade to Come”, <http://www.hsaj.org/?fullarticle=7.2.11>

The cyber threat to the DIB is only part of a much larger challenge to DoD. Potential adversaries are seeking asymmetric means to cripple our force projection, warfighting, and sustainment capabilities, by targeting the critical civilian and defense supporting assets (within the United States and abroad) on which our forces depend. This challenge is not limited to man-made threats; DoD must also execute its mission-essential functions in the face of disruptions caused by naturally occurring hazards.20 Threats and hazards to DoD mission execution include incidents such as earthquakes, naturally occurring pandemics, solar weather events, and industrial accidents, as well as kinetic or virtual attacks by state or non-state actors. Threats can also emanate from insiders with ties to foreign counterintelligence organizations, homegrown terrorists, or individuals with a malicious agenda. From a DoD perspective, this global convergence of unprecedented threats and hazards, and vulnerabilities and consequences, is a particularly problematic reality of the post-Cold War world. Successfully deploying and sustaining our military forces are increasingly a function of interdependent supply chains and privately owned infrastructure within the United States and abroad, including transportation networks, cyber systems, commercial corridors, communications pathways, and energy grids. This infrastructure largely falls outside DoD direct control. Adversary actions to destroy, disrupt, or manipulate this highly vulnerable homeland- and foreign-based infrastructure may be relatively easy to achieve and extremely tough to counter. Attacking such “soft,” diffuse infrastructure systems could significantly affect our military forces globally – potentially blinding them, neutering their command and control, degrading their mobility, and isolating them from their principal sources of logistics support. The Defense Critical Infrastructure Program (DCIP) under Mission Assurance seeks to improve execution of DoD assigned missions to make them more resilient. This is accomplished through the assessment of the supporting commercial infrastructure relied upon by key nodes during execution. By building resilience into the system and ensuring this support is well maintained, DoD aims to ensure it can "take a punch as well as deliver one."21 It also provides the department the means to prioritize investments across all DoD components and assigned missions to the most critical issues faced by the department through the use of risk decision packages (RDP).22 The commercial power supply on which DoD depends exemplifies both the novel challenges we face and the great progress we are making with other federal agencies and the private sector. Today’s commercial electric power grid has a great deal of resilience against the sort of disruptive events that have traditionally been factored into the grid’s design. Yet, the grid will increasingly confront threats beyond that traditional design basis. This complex risk environment includes: disruptive or deliberate attacks, either physical or cyber in nature; severe natural hazards such as geomagnetic storms and natural disasters with cascading regional and national impacts (as in NLE 11); long supply chain lead times for key replacement electric power equipment; transition to automated control systems and other smart grid technologies without robust security; and more frequent interruptions in fuel supplies to electricity-generating plants. These risks are magnified by globalization, urbanization, and the highly interconnected nature of people, economies, information, and infrastructure systems. The department is highly dependent on commercial power grids and energy sources. As the largest consumer of energy in the United States, DoD is dependent on commercial electricity sources outside its ownership and control for secure, uninterrupted power to support critical missions. In fact, approximately 99 percent of the electricity consumed by DoD facilities originates offsite, while approximately 85 percent of critical electricity infrastructure itself is commercially owned. This situation only underscores the importance of our partnership with DHS and its work to protect the nation’s critical infrastructure – a mission that serves not only the national defense but also the larger national purpose of sustaining our economic health and competitiveness. DoD has traditionally assumed that the commercial grid will be subject only to infrequent, weather-related, and short-term disruptions, and that available backup power is sufficient to meet critical mission needs. As noted in the February 2008 Report of the Defense Science Board Task Force on DoD Energy Strategy, “In most cases, neither the grid nor on-base backup power provides sufficient reliability to ensure continuity of critical national priority functions and oversight of strategic missions in the face of a long term (several months) outage.”23 Similarly, a 2009 GAO Report on Actions Needed to Improve the Identification and Management of Electrical Power Risks and Vulnerabilities to DoD Critical Assets stated that DoD mission-critical assets rely primarily on commercial electric power and are vulnerable to disruptions in electric power supplies.24 Moreover, these vulnerabilities may cascade into other critical infrastructure that uses the grid – communications, water, transportation, and pipelines – that, in turn, is needed for the normal operation of the grid, as well as its quick recovery in emergency situations. To remedy this situation, the Defense Science Board (DSB) Task Force recommended that DoD take a broad-based approach, including a focused analysis of critical functions and supporting assets, a more realistic assessment of electricity outage cause and duration, and an integrated approach to risk management that includes greater efficiency, renewable resources, distributed generation, and increased reliability. DoD Mission Assurance is designed to carry forward the DSB recommendations. Yet, for a variety of reasons – technical, financial, regulatory, and legal – DoD has limited ability to manage electrical power demand and supply on its installations. As noted above, DHS is the lead agency for critical infrastructure protection by law and pursuant to Homeland Security Presidential Directive 7. The Department of Energy (DOE) is the lead agency on energy matters. And within DoD, energy and energy security roles and responsibilities are distributed and shared, with different entities managing security against physical, nuclear, and cyber threats; cost and regulatory compliance; and the response to natural disasters. And of course, production and delivery of electric power to most DoD installations are controlled by commercial entities that are regulated by state and local utility commissions. The resulting paradox: DoD is dependent on a commercial power system over which it does not – and never will – exercise control.

#### Military vulnerability risks eviscerates the military and risks nuclear war

The Examiner 7/27

(Robert Tilford, Graduate US Army Airborne School, Ft. Benning, Georgia, “Cyber attackers could shut down the electric grid for the entire east coast” <http://www.examiner.com/article/cyber-attackers-could-easily-shut-down-the-electric-grid-for-the-entire-east-coa>, SEH)

To make matters worse a cyber attack that can take out a civilian power grid, for example could also cripple the U.S. military.¶ The senator notes that is that the same power grids that supply cities and towns, stores and gas stations, cell towers and heart monitors also power “every military base in our country.”¶ “Although bases would be prepared to weather a short power outage with backup diesel generators, within hours, not days, fuel supplies would run out”, he said.¶ Which means military command and control centers could go dark.¶ Radar systems that detect air threats to our country would shut¶ Down completely.¶ “Communication between commanders and their troops would also go silent. And many weapons systems would be left without either fuel or electric power”, said Senator Grassley.¶ “So in a few short hours or days, the mightiest military in the world would be left scrambling to maintain base functions”, he said.¶ We contacted the Pentagon and officials confirmed the threat of a cyber attack is something very real.¶ Top national security officials—including the Chairman of the Joint Chiefs, the Director of the National Security Agency, the Secretary of Defense, and the CIA Director— have said, “preventing a cyber attack and improving the nation’s electric grids is among the most urgent priorities of our country” (source: Congressional Record).¶ So how serious is the Pentagon taking all this?¶ Enough to start, or end a war over it, for sure (see video: Pentagon declares war on cyber attacks http://www.youtube.com/watch?v=\_kVQrp\_D0kY&feature=relmfu ).¶ A cyber attack today against the US could very well be seen as an “Act of War” and could be met with a “full scale” US military response.¶ That could include the use of “nuclear weapons”, if authorized by the President.

**Loss of mission effectiveness causes nuclear war in every hotspot**

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

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

#### We control empirics

Wohlforth 8—Daniel Webster Professor of Government, Dartmouth. BA in IR, MA in IR and MPhil and PhD in pol sci, Yale (William, Unipolarity, Status Competition, and Great Power War, October 2008, World Politics Vol. 61, Iss. 1; pg. 28, 31 pgs, Proquest)

Despite increasingly compelling findings concerning the importance of status seeking in human behavior, research on its connection to war waned some three decades ago.38 Yet empirical studies of the relationship between both systemic and dyadic capabilities distributions and war have continued to cumulate. If the relationships implied by the status theory run afoul of well-established patterns or general historical findings, then there is little reason to continue investigating them. **The clearest empirical implication** of the theory **is that** status **competition is unlikely to cause great power military conflict in unipolar systems**. If status competition is an important contributory cause of great power war, then, ceteris paribus, unipolar systems should be markedly less war-prone than bipolar or multipolar systems. And this appears to be the case. As Daniel Geller notes in a review of the empirical literature: "**The only polar structure that appears to influence conflict probability is unipolarity**."39 In addition, a larger number of studies at the dyadic level support the related expectation that narrow capabilities gaps and ambiguous or unstable capabilities hierarchies increase the probability of war.40 These studies are based entirely on post-sixteenth-century European history, and most are limited to the post-1815 period covered by the standard data sets. Though the systems coded as unipolar, near-unipolar, and hegemonic are all marked by a high concentration of capabilities in a single state, these studies operationalize unipolarity in a variety of ways, often very differently from the definition adopted here. An ongoing collaborative project looking at ancient interstate systems over the course of two thousand years suggests that historical systems that come closest to the definition of unipolarity used here exhibit precisely the behavioral properties implied by the theory. 41 As David C. Kang's research shows, the East Asian system between 1300 and 1900 was an unusually stratified unipolar structure, with an economic and militarily dominant China interacting with a small number of geographically proximate, clearly weaker East Asian states.42 Status politics existed, but actors were channeled by elaborate cultural understandings and interstate practices into clearly recognized ranks. Warfare was exceedingly rare, and the major outbreaks occurred precisely when the theory would predict: when China's capabilities waned, reducing the clarity of the underlying material hierarchy and increasing status dissonance for lesser powers. Much more research is needed, but initial exploration of other arguably unipolar systems-for example, Rome, Assyria, the Amarna system-appears consistent with the hypothesis.43 Status Competition and Causal Mechanisms Both theory and evidence demonstrate convincingly that competition for status is a driver of human behavior, and social identity theory and related literatures suggest the conditions under which it might come to the fore in great power relations. Both the systemic and dyadic findings presented in large-N studies are broadly consistent with the theory, but they are also consistent with power transition and other rationalist theories of hegemonic war.

###  Advantage 2- Desalination

#### Global water scarcity’s inevitable–causes war and kills billions

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

The battles of yesterday were fought over land. Those of today are over energy. But the battles of tomorrow may be over water. Along with population growth and increasing per capita water consumption, massive pollution of the world's surface water systems has placed a great strain on remaining supplies of clean fresh water. Global deforestation, destruction of wetlands, dumping of pesticides and fertilizer into waterways, and global warming are all taking a terrible toll on the Earth's fragile water system. The combination of increasing demand and shrinking supply has attracted the interest of global corporations who want to sell water for a profit. The water industry is touted by the World Bank as a potential trillion-dollar industry. Water has become the “blue gold” of the 21st century. In many parts of the world, one major river supplies water to multiple countries. Climate change, pollution and population growth are putting a significant strain on supplies. In some areas renewable water reserves are in danger of dropping below the 500 cubic meters per person per year considered a minimum for a functioning society. In recent times, several studies around the globe show that climatic change is likely to impact significantly upon freshwater resources availability. In India, demand for water has already increased manifold over the years due to urbanization, agriculture expansion, increasing population, rapid industrialization and economic development. At present, changes in cropping pattern and land-use pattern, over-exploitation of water storage and changes in irrigation and drainage are modifying the hydrological cycle in many climate regions and river basins of India. Due to warming and climate change rainfall trend has been badly affected worldwide. This change has adversely affected the groundwater recharge. Water scarcity is expected to become an even more important problem than it is today. In a case study of Jharkhand state of India groundwater recharging is mainly dependent on rainfall. Though Jharkhand receives sufficient amount of rainfall (900 to 1400 mm/year) but from last several years the rainfall pattern is very erratic. From last two years Ranchi city the capital of Jharkhand state received sufficient rainfall but distribution of rainfall was not uniform. It rained heavily just for two to three days in the month of August and September which resulted in heavy runoff and less infiltration affecting groundwater level. The process of urbanization and industrialization from last 20 years has caused changes in the water table of Jharkhand State of India as a result of decreased recharge and increased withdrawal. Many of the small ponds which were main source of water in the surrounding areas are now filled for different construction purpose affecting the water table. By 2100, water scarcity could impact between 1.1 and 3.2 billion people, says a leaked draft of an Intergovernmental Panel on Climate Change (IPCC) report due to be published in April 2007. The report focuses on the consequences of global warming and options for adapting to them. In February 2007 the panel released a report on the scientific basis of climate change. The IPCC predicts critical water shortages in China and Australia, as well as parts of Europe and the United States. Africa and poor countries such as Bangladesh would be most affected because they were least able to cope with drought. Major cities worldwide may face a water shortage crisis by 2050 if relevant governments don't react quickly. The water shortage will mostly affect basic daily needs such as drinking, cooking, bathing and washing clothes, and the poor residents of the world's major cities in developing countries are the ones who will suffer most. "By 2050, big cities that will not have enough water available nearby include Beijing, New Delhi, Mexico City, Lagos and Tehran. China and India will be particularly hard hit unless significant new efforts are taken by their cities,". There are several principal manifestations of the water crisis. 1. Inadequate access to safe drinking water for about 884 million people. 2. Inadequate access to water for sanitation and waste disposal for 2.5 billion people. 3. Groundwater over drafting (excessive use) leading to diminished agricultural yields. 4. Overuse and pollution of water resources harming biodiversity. 5. Regional conflicts over scarce water resources sometimes resulting in warfare. Potential Hot Spots: Egypt: A coalition led by Ethiopia is challenging old agreements that allow Egypt to use more than 50 percent of the Nile’s flow. Without the river, all of Egypt would be desert. Eastern Europe: Decades of pollution have fouled the Danube, leaving down-stream countries, such as Hungary and the Republic of Moldova, scrambling to find new sources of water. Middle East: The Jordan River, racked by drought and diverted by Israeli, Syrian and the Jordanian dams, has lost 95 percent of its former flow. Former Soviet Union: The Aral sea, at one time the world’s fourth largest inland sea, has lost 75 percent of its water because of diversion programs begun in the 1960s. There are many other countries of the world that are severely impacted with regard to human health and inadequate drinking water. The following is a partial list of some of the countries with significant populations (numerical population of affected population listed) whose only consumption is of contaminated water:  Sudan: 12.3 million  Venezuela: 5.0 million  Ethiopia: 2.7 million  Tunisia: 2.1 million  Cuba :1.3 million

#### Those wars go global

Reilly ‘2

(Kristie, Editor for In These Times, a nonprofit, independent, national magazine published in Chicago. We’ve been around since 1976, fighting for corporate accountability and progressive government. In other words, a better world, “NOT A DROP TO DRINK,” <http://www.inthesetimes.com/issue/26/25/culture1.shtml>)

\*Cites environmental thinker and activist Vandana Shiva Maude Barlow and Tony Clarke—probably North America’s foremost water experts

The two books provide a chilling, in-depth examination of a rapidly emerging global crisis. “Quite simply,” Barlow and Clarke write, “unless we dramatically change our ways, between one-half and two-thirds of humanity will be living with severe fresh water shortages within the next quarter-century. … The hard news is this: Humanity is depleting, diverting and polluting the planet’s fresh water resources so quickly and relentlessly that every species on earth—including our own—is in mortal danger.” The crisis is so great, the three authors agree, that the world’s next great wars will be over water. The Middle East, parts of Africa, China, Russia, parts of the United States and several other areas are already struggling to equitably share water resources. Many conflicts over water are not even recognized as such: Shiva blames the Israeli-Palestinian conflict in part on the severe scarcity of water in settlement areas. As available fresh water on the planet decreases, today’s low-level conflicts can only increase in intensity.

#### And nuclear

Weiner ‘90

(Jonathan, Visiting Professor of Molecular Biology at Princeton University. The Next One Hundred Years: Shaping the Fate of Our Living Earth, p. 214)

If we do not destroy ourselves with the A-bomb and the H-bomb, then we may destroy ourselves with the C-bomb, the Change Bomb. And in a world as interlinked as ours, one explosion may lead to the other. Already in the Middle East, from North Africa to the Persian Gulf and from the Nile to the Euphrates, tensions over dwindling water supplies and rising populations are reaching what many experts describe as a flashpoint. A climate shift in the single battle-scarred nexus might trigger international tensions that will unleash some of the 60,000 nuclear warheads the world has stockpiled since Trinity.

#### No diplomacy or institutions

Adam Radin 10, masters in security studies from the naval postgraduate school, “the security implications of water: prospects for instability or cooperation in south and central asia”, March, <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA518674>

Water, an issue so important to numerous facets of each state’s economy and overall stability, must not be left to loosely observed and nonbinding agreements. Tajikistan has even gone as far as to appeal to the United Nations General Assembly to focus on the “Central Asia water dilemma.”142 In a region that is still developing, and where the government’s survival rely more on its relations with it people versus its regional neighbors, domestic needs will continue to trump international cooperation. As Linn notes in his plan, the need for global actors to take an active role is likely needed in order for sustained cooperation. Additionally, this also provides an opportunity for Russia to actively insert itself through diplomacy and infrastructural investments, seeing that they still consider the CARs under their sphere of influence.143

The chapter presents a contrasting case study to South Asia, as in Central Asia water is not viewed as a regional security issue, but in terms of fulfilling short-term domestic needs. Without the looming threat of conflict or significant retribution from regional neighbors, cooperation is consistently undervalued and abandoned once domestic pressures increase. The problem with this pattern is that resources will likely continue to deteriorate and the CARs will continue to be dependent on each other to provide water and energy. Without sustained and flexible cooperation, the region at the very least will see greater stresses on government to provide for their populations, leading to domestic and potential regional instability.

#### Water scarcity causes wars in asia

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

Water stress is set to become Asia’s defining crisis of the twenty-first century, creating obstacles to continued rapid economic growth, stoking interstate tensions over shared resources, exacerbating long time territorial disputes, and imposing further hardships on the poor. Asia is home to many of the world’s great rivers and lakes, but its huge population , pollution and exploding economic and agricultural demand for water make it the most water-scare continent on a per capita basis. Many of Asia’s water sources cross national boundaries, and as less and less water is available, international tensions will rise. The poor management of river basins, environmentally unsustainable irrigation practices, an overuse of groundwater, and the contamination of water sources have all helped aggravate Asian water woes. The over exploitation of subterranean water in the large parts of the Asia has resulted in a rapidly falling groundwater saturation level- known as the water table. In the Gangetic delta, wells have tapped into naturally occurring arsenic deposits, causing millions of people in Bangladesh, and Eastern India including Jharkhand and Bihar to be exposed to high levels of poisonous arsenic in drinking water and staple agricultural products like rice. In some Asian coastal areas, the depletion of groundwater has permitted saline seawater to flow in to replace the freshwater that has been extracted. The Ganga, which is virtually synonymous with Indian civilisation, is dying. Pollution, over-extraction of water, emaciated tributaries and climatic changes are killing the mighty river, on whose fecund plains live one in 12 people of this planet. The Ganga basin makes up almost a third of India's land area and its rich soil is home to millions of people. However, indiscriminate extraction of water with modern tube wells from the river as well as its basin, coupled with the damming of its tributaries for irrigation, have seriously reduced its flow. Climate change has added to the threat. Rivers are the lifeblood of the Bangladesh economy and social life. Its cultural life is also deeply related to rivers. It is extremely unfortunately that its three main rivers, Ganges-Padma, Brahmaputra-Jamuna and Surma-Meghna are dying. As per a survey of the Bangladesh Water Development Board (BWDB), there are three hundred and ten rivers in Bangladesh. Out of these fifty-seven are border rivers, the condition of one hundred and seventy five is miserable, and sixty five are almost dead. Eighty percent of the rivers lack proper depth. The latest study reveals that one hundred and seventeen rivers are either dead or have lost navigability . Such rivers/canals include Brahamaputra, Padma, Mahananda, Gorai, Meghna, Titas, Gomati, Kushiara, Dhaleswari, Bhairab, Sitalksha, Turag etc. As per a report of BWDB, India is controlling the water of 57 rivers along with the Farakka barrage. Because of inadequate facilities for dredging, these rivers have become canals. Additionally, India has withdrawn water of several rivers including Surma, Kushiara and Mahananda. Sluice gates have been constructed on the rivers Senoa, Jamuna, Panga, Pan, Hatoori and Sui (situated near Panchagarh). Apart from the scourge of Farakka barrage, a new dam, named Tipaimukh dam, is under construction in India. Asia will continue to have the world’s largest number of people without basic or adequate access to water. The Asian water sector is plagued by serious problems, including inadequate infrastructure and poor system maintenance, financially strapped utilities, low-cost recovery, growing pollution, watershed degradation, and unsustainable groundwater extraction. Owing to leaks and system inefficiencies, a sizable portion of the water supply is lost before reaching the consumer. As water distress intensifies and global warming accelerates, local, national, and interstate disputes over water are likely to become endemic in Asia. Water, for its part, could trigger increased conflicts within and between states, and open new political disputes in Asia. Water shortages, likely to be aggravated by fast-rising use and climate change, pose a potential threat to political stability, economic modernization, public health, food security, and internal cohesion in a number of Asian states. A study of Asia’s biggest rivers-the Indus, the Brahmaputra, the Yangtze, the Yellow, and the Ganges-by different experts has found that the “ upstream snow and ice reserves of these basins-important in sustaining seasonal water availability- are likely to be affected substantially by climate change,” although the extent of impact will vary from basin to basin.

#### Nuclear war

**Campbell et al 8** (Kurt M, Assistant Secretary of State for East Asian and Pacific Affairs, Dr. Campbell served in several capacities in government, including as Deputy Assistant Secretary of Defense for Asia and the Pacific, Director on theNational Security Council Staff, previously the Chief Executive Officer and co-founder of the Center for a New American Security (CNAS), served as Director of the Aspen Strategy Group and the Chairman of the Editorial Board of the Washington Quarterly, and was the founder and Principal of StratAsia, a strategic advisory company focused on Asia, rior to co-founding CNAS, he served as Senior Vice President, Director of the International Security Program, and the Henry A. Kissinger Chair in National Security Policy at the Center for Strategic and International Studies, doctorate in International Relation Theory from Oxford, former associate professor of public policy and international relations at the John F. Kennedy School of Government and Assistant Director of the Center for Science and International Affairs at Harvard University, member of Council on Foreign Relations and  International Institute for Strategic Studies, “The Power of Balance: America in iAsia” June 2008, <http://www.cnas.org/files/documents/publications/CampbellPatelSingh_iAsia_June08.pdf>)

Asian *investment* is also at record levels. Asian countries lead the world with unprecedented infra­structure projects. With over $3 trillion in foreign currency reserves, Asian nations and businesses are starting to shape global economic activity. Indian firms are purchasing industrial giants such as Arcelor Steel, as well as iconic brands of its once-colonial ruler, such as Jaguar and Range Rover. China’s Lenovo bought IBM’s personal computer We call the transformations across the Asia-Pacific the emergence of “iAsia” to reflect the adoption by countries across Asia of fundamentally new stra­tegic approaches to their neighbors and the world. Asian nations are pursuing their interests with real power in a period of both tremendous potential and great uncertainty. iAsia is: *Integrating:* iAsia includes increasing economic interdependence and a flowering of multinational forums to deal with trade, cultural exchange, and, to some degree, security. *Innovating:* iAsia boasts the world’s most successful manufacturing and technology sectors and could start taking the lead in everything from finance to nanotech to green tech. *Investing:* Asian nations are developing infrastruc­ture and human capital at unprecedented rates. But the continent remains plagued by: Insecurity: Great-power rivalry is alive in Asia. Massive military investments along with historic suspicions and contemporary territorial and other conflicts make war in Asia plausible. Instability: From environmental degradation to violent extremism to trafficking in drugs, people, and weapons, Asian nations have much to worry about. *Inequality:* Within nations and between them, inequality in Asia is more stark than anywhere else in the world. Impoverished minorities in countries like India and China, and the gap in governance and capacity within countries, whether as back­ward as Burma or as advanced as Singapore, present unique challenges. A traditional approach to Asia will not suffice if the United States is to both protect American interests and help iAsia realize its potential and avoid pitfalls. business and the Chinese government, along with other Asian financial players, injected billions in capital to help steady U.S. investment banks such as Merrill Lynch as the American subprime mortgage collapse unfolded. Chinese investment funds regional industrialization, which in turn creates new markets for global products. Asia now accounts for over 40 percent of global consumption of steel 4 and China is consuming almost half of world’s available concrete. 5 Natural resources from soy to copper to oil are being used by China and India at astonishing rates, driving up commodity prices and setting off alarm bells in Washington and other Western capitals. Yet Asia is not a theater at peace. On average, between 15 and 50 people die every day from causes tied to conflict, and suspicions rooted in rivalry and nationalism run deep. The continent harbors every traditional and non-traditional challenge of our age: it is a cauldron of religious and ethnic tension; a source of terror and extrem­ism; an accelerating driver of the insatiable global appetite for energy; the place where the most people will suffer the adverse effects of global climate change; the primary source of nuclear proliferation; and the most likely theater on Earth for a major conventional confrontation and even a nuclear conflict. Coexisting with the optimism of iAsia are the ingredients for internal strife, non-traditional threats like terrorism, and traditional interstate conflict, which are all magnified by the risk of miscalculation or poor decision-making.

#### Water scarcity also causes Indo-Pak nuclear war.

Zahoor ‘11

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

South Asia is among one of those regions where water needs are growing disproportionately to its availability. The high increase in population besides large-scale cultivation has turned South Asia into a water scarce region. The two nuclear neighbors Pakistan and India share the waters of Indus Basin. All the major rivers stem from the Himalyan region and pass through Kashmir down to the planes of Punjab and Sindh empty into Arabic ocean. It is pertinent that the strategic importance of Kashmir, a source of all major rivers, for Pakistan and symbolic importance of Kashmir for India are maximum list positions. Both the countries have fought two major wars in 1948, 1965 and a limited war in Kargil specifically on the Kashmir dispute. Among other issues, the newly born states fell into water sharing dispute right after their partition. Initially under an agreed formula, Pakistan paid for the river waters to India, which is an upper riparian state. After a decade long negotiations, both the states signed Indus Water Treaty in 1960. Under the treaty, India was given an exclusive right of three eastern rivers Sutlej, Bias and Ravi while Pakistan was given the right of three Western Rivers, Indus, Chenab and Jhelum. The tributaries of these rivers are also considered their part under the treaty. It was assumed that the treaty had permanently resolved the water issue, which proved a nightmare in the latter course. India by exploiting the provisions of IWT started wanton construction of dams on Pakistani rivers thus scaling down the water availability to Pakistan (a lower riparian state). The treaty only allows run of the river hydropower projects and does not permit to construct such water reservoirs on Pakistani rivers, which may affect the water flow to the low lying areas. According to the statistics of Hydel power Development Corporation of Indian Occupied Kashmir, India has a plan to construct 310 small, medium and large dams in the territory. India has already started work on 62 dams in the first phase. The cumulative dead and live storage of these dams will be so great that India can easily manipulate the water of Pakistani rivers. India has set up a department called the Chenab Valley Power Projects to construct power plants on the Chenab River in occupied Kashmir. India is also constructing three major hydro-power projects on Indus River which include Nimoo Bazgo power project, Dumkhar project and Chutak project. On the other hand, it has started Kishan Ganga hydropower project by diverting the waters of Neelum River, a tributary of the Jhelum, in sheer violation of the IWT. The gratuitous construction of dams by India has created serious water shortages in Pakistan. The construction of Kishan Ganga dam will turn the Neelum valley, which is located in Azad Kashmir into a barren land. The water shortage will not only affect the cultivation but it has serious social, political and economic ramifications for Pakistan. The farmer associations have already started protests in Southern Punjab and Sindh against the non-availability of water. These protests are so far limited and under control. The reports of international organizations suggest that the water availability in Pakistan will reduce further in the coming years. If the situation remains unchanged, the violent mobs of villagers across the country will be a major law and order challenge for the government. The water shortage has also created mistrust among the federative units, which is evident from the fact that the President and the Prime Minister had to intervene for convincing Sindh and Punjab provinces on water sharing formula. The Indus River System Authority (IRSA) is responsible for distribution of water among the provinces but in the current situation it has also lost its credibility. The provinces often accuse each other of water theft. In the given circumstances, Pakistan desperately wants to talk on water issue with India. The meetings between Indus Water Commissioners of Pakistan and India have so far yielded no tangible results. The recent meeting in Lahore has also ended without concrete results. India is continuously using delaying tactics to under pressure Pakistan. The Indus Water Commissioners are supposed to resolve the issues bilaterally through talks. The success of their meetings can be measured from the fact that Pakistan has to knock at international court of arbitration for the settlement of Kishan Ganga hydropower project. The recently held foreign minister level talks between both the countries ended inconclusively in Islamabad, which only resulted in heightening the mistrust and suspicions. The water stress in Pakistan is increasing day by day. The construction of dams will not only cause damage to the agriculture sector but India can manipulate the river water to create inundations in Pakistan. The rivers in Pakistan are also vital for defense during wartime. The control over the water will provide an edge to India during war with Pakistan. The failure of diplomacy, manipulation of IWT provisions by India and growing water scarcity in Pakistan and its social, political and economic repercussions for the country can lead both the countries toward a war. The existent A-symmetry between the conventional forces of both the countries will compel the weaker side to use nuclear weapons to prevent the opponent from taking any advantage of the situation. Pakistan's nuclear programme is aimed at to create minimum credible deterrence. India has a declared nuclear doctrine which intends to retaliate massively in case of first strike by its' enemy. In 2003, India expanded the operational parameters for its nuclear doctrine. Under the new parameters, it will not only use nuclear weapons against a nuclear strike but will also use nuclear weapons against a nuclear strike on Indian forces anywhere. Pakistan has a draft nuclear doctrine, which consists on the statements of high ups. Describing the nuclear thresh-hold in January 2002, General Khalid Kidwai, the head of Pakistan's Strategic Plans Division, in an interview to Landau Network, said that Pakistan will use nuclear weapons in case India occupies large parts of its territory, economic strangling by India, political disruption and if India destroys Pakistan's forces. The analysis of the ambitious nuclear doctrines of both the countries clearly points out that any military confrontation in the region can result in a nuclear catastrophe. The rivers flowing from Kashmir are Pakistan's lifeline, which are essential for the livelihood of 170 million people of the country and the cohesion of federative units. The failure of dialogue will leave no option but to achieve the ends through military means.

#### Water scarcity causes Middle East war

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

The crisis over water in the Middle East is escalating. Despite existing agreements, dwindling resources – increasingly affected by pollution, agricultural/industrial initiatives and population growth – have elevated the strategic importance of water in the region. For Middle Eastern nations, many already treading the razor’s edge of conflict, water is becoming a catalyst for confrontation – an issue of national security and foreign policy as well as domestic stability. Given water’s growing ability to redefine interstate relations, the success of future efforts to address water sharing and distribution will hinge upon political and strategic approaches to this diminishing natural resource. In the Middle East, water resources are plummeting. While representing 5% of the total world population, the Middle East & North Africa (MENA) region contains only 0.9% of global water resources.1 The number of water-scarce countries in the Middle East and North Africa has risen from 3 in 1955 (Bahrain, Jordan and Kuwait) to 11 by 1990 (with the inclusion of Algeria, Israel and the Occupied Territories, Qatar, Saudi Arabia, Somalia, Tunisia, the United Arab Emirates and Yemen). Another 7 are anticipated to join the list by 2025 (Egypt, Ethiopia, Iran, Libya, Morocco, Oman and Syria). In addition to its scarcity, much of Middle Eastern water stems from three major waterways: the Tigris-Euphrates, Nile and Jordan River systems. Mutual reliance on these resources has made water a catalyst for conflict, spurring confrontations such as the 1967 War (fomented by Syria’s attempts to divert water from Israel) and the Iran-Iraq War (which erupted from disputes over water claims and availability). Recognition of water’s role as an obstacle in interstate relations has spurred numerous attempts at resolution, including diplomatic efforts (most notably the 1953-1955 U.S.-brokered Johnston negotiations) and bilateral and multilateral treaty efforts, ranging from the 1959 Agreement for the Full Utilization of Nile Waters to the 1994 Israeli-Jordanian Treaty. Along the Tigris and Euphrates Rivers, Turkey and Syria are currently approaching a massive confrontation over water resources. Relations between the two countries, strained at best, have been exacerbated since the 1980s by growing tensions over water, which have brought them to the brink of war several times. The Jordan River Basin has also emerged as a flashpoint for conflict over water. Resources in the area, suffering serious overuse as a result of pollution and population growth, have increasingly impacted interstate relations. Between Jordan and Israel, water resource issues are reaching a fever pitch. Despite the 1994 Israeli-Jordanian Treaty – which established comprehensive guidelines regulating the distribution, preservation and availability of water from the Jordan and Yarmouk Rivers – conflicts over water have risen to the forefront of relations between the two countries. Jordan, fed only by underground sources and the Jordan River, has experienced an escalating water deficit – one that is expected to reach 250 million cubic meters (nearly 1/3rd of current annual consumption) by 2010. At the same time, Israel – currently utilizing almost all available water from its National Water System (consisting of the West Bank Mountain Aquifer, the Coastal Aquifer and the Lake Kinneret Basin) – has been forced to resort to overexploitation of available resources for expanding agricultural and industrial ventures. As a result, water has become a critical bone of contention between the two countries. The historically troubled relations between Israel and the Palestinians have also been magnified by water. Mutual reliance on the West Bank Mountain Aquifer, which rests atop the demarcating border of the disputed West Bank territory (and currently provides 1/3rd of Israel’s water supply and 80% of Palestinian consumption), has created friction between the State of Israel and the Palestinian Authority.

#### Nuclear war

James A. **Russell,** Senior Lecturer, National Security Affairs, Naval Postgraduate School, ‘9 (Spring) “Strategic Stability Reconsidered: Prospects for Escalation and Nuclear War in the Middle East” IFRI, Proliferation Papers, #26, http://www.ifri.org/downloads/PP26\_Russell\_2009.pdf

Strategic stability in the region is thus undermined by various factors: (1) asymmetric interests in the bargaining framework that can introduce unpredictable behavior from actors; (2) the presence of non-state actors that introduce unpredictability into relationships between the antagonists; (3) incompatible assumptions about the structure of the deterrent relationship that makes the bargaining framework strategically unstable; (4) perceptions by Israel and the United States that its window of opportunity for military action is closing, which could prompt a preventive attack; (5) the prospect that Iran’s response to pre-emptive attacks could involve unconventional weapons, which could prompt escalation by Israel and/or the United States; (6) the lack of a communications framework to build trust and cooperation among framework participants. These systemic weaknesses in the coercive bargaining framework all suggest that escalation by any the parties could happen either on purpose or as a result of miscalculation or the pressures of wartime circumstance. Given these factors, it is disturbingly easy to imagine scenarios under which a conflict could quickly escalate in which the regional antagonists would consider the use of chemical, biological, or nuclear weapons. It would be a mistake to believe the nuclear taboo can somehow magically keep nuclear weapons from being used in the context of an unstable strategic framework. Systemic asymmetries between actors in fact suggest a certain increase in the probability of war – a war in which escalation could happen quickly and from a variety of participants. Once such a war starts, events would likely develop a momentum all their own and decision-making would consequently be shaped in unpredictable ways. The international community must take this possibility seriously, and muster every tool at its disposal to prevent such an outcome, which would be an unprecedented disaster for the peoples of the region, with substantial risk for the entire world.

#### Desal has to double every decade

Hines et al ’11

Wesley is associate professor of nuclear engineering at the Univeristy of Tennessee and performed a study analyzing the effects of desalination with six other scientists, “Advanced Instrumentation and Control Methods for Small and Medium Reactors with IRIS demonstration,” <http://www.osti.gov/bridge/servlets/purl/1015813-7MUuYb/1015813.pdf>

In Figure 1.1, countries which will face “economic water shortages” (i.e. inadequacy of¶ supply and demand) are shown. According to the market survey performed by the World¶ Resources Institute on the future growth of seawater desalination, the worldwide demand for¶ desalination is expected to double approximately every 10 years in the foreseeable future. Most¶ of the demand would arise in the Arabian Gulf and North African regions, but this is likely to¶ expand to other areas.

SMRs solve—

#### Scalability

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

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

#### Key to deescalate conflicts

Palley ‘11

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

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

#### It’s economically viable

Gamini Seneviratne 7, Nuclear News’s Vienna Correspondent, “Research projects show nuclear

desalination economical”, April, <http://www.ans.org/pubs/magazines/nn/docs/2007-4-3.pdf>

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

#### Plan accesses a huge export market

Rosner and Goldberg 11

Robert Rosner, Stephen Goldberg, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, November 2011, SMALL MODULAR REACTORS –KEY TO FUTURE NUCLEAR POWER GENERATION IN THE U.S., <https://epic.sites.uchicago.edu/sites/epic.uchicago.edu/files/uploads/EPICSMRWhitePaperFinalcopy.pdf>

Previous studies have documented the potential for a significant export market for U.S. SMRs, mainly in lesser developed countries that do not have the demand or infrastructure to accommodate GW-scale LWRs. Clearly, the economics of SMR deployment depends not only on the cost of SMR modules, but also on the substantial upgrades in all facets of infrastructure requirements, particularly in the safety and security areas, that would have to be made, and as exemplified by the ongoing efforts in this direction by the United Arab Emirates (and, in particular, by Abu Dhabi). This is a substantial undertaking for these less developed countries. Thus, such applications may be an attractive market opportunity for FOAK SMR plants, even if the cost of such plants may not have yet achieved all of the learning benefits.

The Department of Commerce has launched the Civil Nuclear Trade Initiative, which seeks to identify the key trade policy challenges and the most significant commercial opportunities. The Initiative encompasses all aspects of the U.S. nuclear industry, and, as part of this effort, the Department identified 27 countries as “markets of interest” for new nuclear expansion. A recent Commerce Department report identified that “SMRs can be a solution for certain markets that have smaller and less robust electricity grids and limited investment capacity.” Studies performed by Argonne National Laboratory suggest that SMRs would appear to be a feasible power option for countries that have grid capacity of 2,000-3,000 MW. Exports of SMR technology also could play an important role in furthering non-proliferation policy objectives. The design of SMR nuclear fuel management systems, such as encapsulation of the fuel, may have non-proliferation benefits that merit further assessment. Also, the development of an SMR export industry would be step toward a U.S.-centric, bundled reliable fuel services.

### Plan

#### The United States Federal Government should obtain, through alternative financing, electricity from small modular reactors for military bases in the United States.

### Solvency

#### Military procurement solves commercial and islanding- avoid regulation

Andres and Loudermilk 10

(Richard B. Andres, Professor of ¶ national Security Strategy at the ¶ national War College and a Senior fellow and energy and environmental ¶ Security and Policy Chair in the Center ¶ for Strategic research, institute for national Strategic Studies, at the national Defense University, Micah J, Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University, “Small Reactors and the Military’s Role in Securing America’s Nuclear IndustryPosted” <http://robertmayer.wordpress.com/2010/08/28/small-reactors-and-the-militarys-role-in-securing-americas-nuclear-industryposted/>, SEH)

Unlike private industry, the military does not face the same regulatory and congressional hurdles to constructing reactors and would have an easier time in adopting them for use. By integrating small nuclear reactors as power sources for domestic U.S. military bases, three potential energy dilemmas are solved at the same time. First, by incorporating small reactors at its bases, the military addresses its own energy security quandary. The military has recently sought to “island” its bases in the U.S. -protecting them from grid outages, be they accidental or intentional. The Department of Defense has promoted this endeavor through lowering energy consumption on bases and searching for renewable power alternatives, but these measures alone will prove insufficient. Small reactors provide sufficient energy output to power military installations and in some cases surrounding civilian population centers.¶ Secondly, as the reactors become integrated on military facilities, the stigma on the nuclear power industry will ease and inroads will be created for the adoption of small-scale reactors as a viable source of energy. Private industry and the public will see that nuclear reactors can indeed be utilized safely and effectively, resulting in a renewed push toward the expansion of nuclear power. Although many of the same hurdles will still be in place, a shift in public opinion and a stronger effort by utilities, coupled with the demonstrated success of small reactors on military bases, could prove the catalysts necessary for the federal government and the NRC to take more aggressive action.¶ Finally, while new reactors are not likely in the near future, the military’s actions will preserve, for a while longer, the badly ailing domestic nuclear energy industry. Nuclear power is here to stay around the globe, and the United States has an opportunity to take a leading role in supplying the world’s nuclear energy and reactor technology. With the U.S. nuclear industry dormant for three decades, much of the attention, technology, and talent have concentrated overseas in countries with a strong interest in nuclear technology. Without the United States as a player in the nuclear energy market, it has little say over safety regulations of reactors or the potential risks of proliferation from the expansion of nuclear energy. If the current trend continues, the U.S. will reach a point where it is forced to import nuclear technology and reactors from other countries. Action by the military to install reactors on domestic bases will both guarantee the survival of the American nuclear industry in the short term, and work to solidify support for it in the long run.¶ Ultimately, between small-scale nuclear reactors and the U.S. military, the capability exists to revitalize America’s sleeping nuclear industry and promoting energy security and clean energy production. The reactors offer the ability to power domestic military bases, small towns, and other remote locations detached from the energy grid. Furthermore, reactor sites can house multiple units, allowing for greater energy production – rivaling even large reactors. Small reactors offer numerous benefits to the United States and a path initiated by the military presents a realistic route by which their adoption can be achieved.

#### Alternative financing cuts costs and supercharges commercialization

Fitzpatrick 11

Ryan Fitzpatrick, Senior Policy Advisor for Clean Energy at Third Way, Josh Freed, Vice President for Clean Energy at Third Way, and Mieke Eoyan, Director for National Security at Third Way, June 2011, Fighting for Innovation: How DoD Can Advance CleanEnergy Technology... And Why It Has To, content.thirdway.org/publications/414/Third\_Way\_Idea\_Brief\_-\_Fighting\_for\_Innovation.pdf

The DoD has over $400 billion in annual purchasing power, which means **the Pentagon could provide a sizeable market for new technologies**. **This can increase a technology’s scale of production,** bringing down costs, and making the product more likely **to successfully reach commercial markets**. **Unfortunately**, many potentially significant clean energy **innovations never get to the marketplace, due to a lack of** capital during the development and **demonstration stages. As a** result, technologies that **could help the military** meet its clean energy security and cost goals **are being abandoned or co-opted by competetors like China** before they are commercially viable here in the U.S. **By focusing its purchasing power on innovative products that will** help **meet its energy goals, DoD can provide** more **secure** and **cost-effective energy to the military—producing tremendous long-term savings**, while also **bringing** potentially **revolutionary technologies to the public**. Currently, many of these **technologies are passed over during** the **procurement** process **because of** higher **upfront costs—even if these technologies can reduce life-cycle costs** to DoD. The Department has only recently begun to consider life-cycle costs and the “fullyburdened cost of fuel” (FBCF) when making acquisition decisions. However, initial reports from within DoD suggest that the methodology for determining the actual FBCF needs to be refined and made more consistent before it can be successfully used in the acquisition process.32 The Department should fast-track this process to better maximize taxpayer dollars. Congressional appropriators— and the Congressional Budget Office—should also recognize the **savings that can be achieved by procuring advanced technologies to promote DoD’s energy goals**, even if these procurements come with higher upfront costs. Even if the Pentagon makes procurement of emerging clean energy technologies a higher priority, it still faces real roadblocks in developing relationships with the companies that make them. Many clean energy innovations are developed by small businesses or companies that have no previous experience working with military procurement officers. Conversely, many procurement officers do not know the clean energy sector and are not incentivized to develop relationships with emerging clean energy companies. Given the stakes in developing domestic technologies that would help reduce costs and improve mission success, the Pentagon should develop a program to encourage a better flow of information between procurement officers and clean energy companies—especially small businesses. Leverage Savings From Efficiency and Alternative Financing to Pay for Innovation. **In an age of government-wide austerity and tight** Pentagon **budgets**, current congressional **appropriations are simply not sufficient** to fund clean energy innovation. **Until Congress decides to direct additional resources** for this purpose, the **Defense** Department **must leverage** the money and other **tools it already has** to help develop clean energy. This can take two forms: repurposing money that was saved through energy efficiency programs for innovation and using alternative methods of financing to reduce the cost to the Pentagon of deploying clean energy. For several decades **the military has made** modest **use alternative financing** mechanisms t**o fund** clean **energy** and efficiency **projects when appropriated funds were insufficient**. In a 2010 report, GAO found that while only 18% of renewable energy projects on DoD lands used alternative financing, these projects account for 86% of all renewable energy produced on the Department’s property.33 This indicates that alternative financing can be particularly helpful to DoD in terms of bringing larger and more expensive projects to fruition. One advanced financing tool available to DoD is the energy savings performance contract (ESPC). These agreements allow DoD to contract a private firm to make upgrades to a building or other facility that result in energy savings, reducing overall energy costs without appropriated funds. The firm finances the cost, maintenance and operation of these upgrades and recovers a profit over the life of the contract. While mobile applications consume 75% of the Department’s energy,34 DoD is only authorized to enter an ESPC for energy improvements done at stationary sites. As such, Congress should allow DoD to conduct pilot programs in which ESPCs are used to enhance mobile components like aircraft and vehicle engines. This could accelerate the needed replacement or updating of aging equipment and a significant reduction of energy with no upfront cost. To maximize the potential benefits of ESPCs, DoD should work with the Department of Energy to develop additional training and best practices to ensure that terms are carefully negotiated and provide benefits for the federal government throughout the term of the contract.35 This effort could possibly be achieved through the existing memorandum of understanding between these two departments.36 The Pentagon should also consider using any long-term savings realized by these contracts for other energy purposes, including the promotion of innovative technologies to further reduce demand or increase general energy security. In addition to ESPCs, **the Pentagon** also **can enter into** extended agreements with utilities to use DoD land to generate electricity, or for the **long-term purchase of energy**. **These** **innovative financing mechanisms**, known respectively as enhanced use leases (EULs) and power purchase agreements (PPAs), **provide a valuable degree of certainty to third party generators**. In exchange, the **Department can leverage its existing resources**—either its land or its purchasing power—**to negotiate lower electricity rates** and dedicated sources of locallyproduced power with its utility partners. **DoD has** unique authority **among federal agencies to enter extended 30-year PPAs**, but only for geothermal energy projects and only with direct approval from the Secretary of Defense. Again, limiting incentives for clean energy generation to just geothermal power inhibits the tremendous potential of other clean energy sources to help meet DoD’s energy goals. Congress should consider opening this incentive up to other forms of clean energy generation, including the production of advanced fuels. Also, given procurement officials’ lack of familiarity with these extended agreements and the cumbersome nature of such a high-level approval process, the unique authority to enter into extended 30-year PPAs is very rarely used.37 DoD should provide officials with additional policy guidance for using extended PPAs and Congress should simplify the process by allowing the secretary of each service to approve these contracts. Congress should also investigate options for encouraging regulated utility markets to permit PPA use by DoD. Finally, when entering these agreements, the Department should make every effort to promote the use of innovative and fledgling technologies in the terms of its EULs and PPAs. CON C L U S ION **The Defense Department is in a unique position to foster and deploy innovation in clean energy technologies**. This has two enormous benefits for our military: it will make our troops and our facilities more secure and it will reduce the amount of money the Pentagon spends on energy, freeing it up for other mission critical needs. If the right steps are taken by Congress and the Pentagon, the military will be able to put its resources to work developing technologies that will lead to a stronger fighting force, a safer nation, and a critical emerging sector of the American economy. **The Defense Department has helped give birth to technologies and new economic sectors dozens of times before**. For its own sake and the sake of the economy, **it should make clean energy innovation its newest priority**.

#### DoD key

Glen Butler, Lt. Col., 2011, Not Green Enough, [www.mca-marines.org/gazette/not-green-enough](http://www.mca-marines.org/gazette/not-green-enough)

SMRs have relatively low plant cost, can replace aging fossil plants, and do not emit greenhouse gasses. Some are as small as a “hot tub” and can be stored underground, dramatically increasing safety and security from terrorist threats.25 Encouragingly, in fiscal year 2010 (FY10) the DoE allocated $0 to the U.S. SMR Program; in FY11, they’ve requested $38.9 million. This funding is to support two main activities—public/private partnerships to advance SMR designs and research and development and demonstrations. According to the DoE’s website, one of the planned program accomplishments for FY11 is to “collaborate with the Department of Defense (DoD) . . . to assess the feasibility of SMR designs for energy resources at DoD installations.”26 The Marine Corps should vigorously seek the opportunity to be a DoD entity providing one platform for this feasibility assessment.27 Fourth, SMR technology offers the Marine Corps another unique means to lead from the front—not just of the other Services but also of the Nation, and even the world.28 This potential Pete Ellis moment should be seized. There are simple steps we could take, and others stand ready to lead if we are not.30 But the temptation to “wait and see” and “let the others do it; then we’ll adopt it” mentality is not always best. Energy security demands boldness, not timidity. To be fair, nuclear technology comes with challenges, of course, and with questions that have been kicked around for decades. An April 1990 Popular Science article asked, “Next Generation Nuclear Reactors—Dare we build them?” and included some of the same verbiage heard in similar discussions today.31 Compliance with National Environment Policy Act requirements necessitates lengthy and detailed preaction analyses, critical community support must be earned, and disposal challenges remain. Still, none of these hurdles are insurmountable. Yet despite the advances in safety, security, and efficiency in recent years, nuclear in the energy equation remains the new “n-word” for most military circles. And despite the fact that the FY10 National Defense Authorization Act called on the DoD to “conduct a study [of] the feasibility of nuclear plants on military installations,” the Office of the Secretary of Defense has yet to fund the study. Fifth, the cumbersome, bureaucratic certification process of the Nuclear Regulatory Commission (NRC), often enough to scare away potential entrepreneurs and investors, is not necessarily a roadblock to success. The NRC is “responsible for licensing and regulating the operation of commercial nuclear power plants in the United States.” Military installations offer unique platforms that could likely bypass an extended certification process. With established expertise and a long safety record in nuclear reactor certification, operations, training, and maintenance, the Naval Nuclear Propulsion Program comprises the civilian and military personnel who: . . . design, build, operate, maintain, and manage the nuclear-powered ships and the many facilities that support the U.S. nuclear-powered naval fleet.”34 Bypassing the NRC and initiating SMR experimentation under ADM Hyman Rickover’s legacy umbrella of naval reactors could shorten the process to a reasonable level for Marine and naval installations.35

#### DOD key- prevents unfavorable lock-in

Andres and Breetz 11

(Richard B. Andres is Professor of ¶ national Security Strategy at the ¶ national War College and a Senior fellow and energy and environmental ¶ Security and Policy Chair in the Center ¶ for Strategic research, institute for national Strategic Studies, at the national Defense University. Hanna L. Breetz is a doctoral candidate in the Department of Political Science at the Massachusetts institute of technology, “Small Nuclear Reactors ¶ for Military Installations:¶ Capabilities, Costs, and ¶ Technological Implications” Institute for National Strategic Studies, <http://www.ndu.edu/press/lib/pdf/strforum/sf-262.pdf>, SEH)

Technological Lock-in. A second risk is that if ¶ small reactors do reach the market without DOD assistance, the designs that succeed may not be optimal for ¶ DOD’s applications. Due to a variety of positive feedback and increasing returns to adoption (including demonstration effects, technological interdependence, network and learning effects, and economies of scale), the ¶ designs that are initially developed can become “locked ¶ in.”¶ 34¶ Competing designs—even if they are superior in ¶ some respects or better for certain market segments—¶ can face barriers to entry that lock them out of the market. If DOD wants to ensure that its preferred designs ¶ are not locked out, then it should take a first mover role ¶ on small reactors. ¶ It is far too early to gauge whether the private ¶ market and DOD have aligned interests in reactor designs. On one hand, Matthew Bunn and Martin Malin argue that what the world needs is cheaper, safer, ¶ more secure, and more proliferation-resistant nuclear ¶ reactors; presumably, many of the same broad qualities would be favored by DOD.¶ 35¶ There are many varied ¶ market niches that could be filled by small reactors, ¶ because there are many different applications and settings in which they can be used, and it is quite possible that some of those niches will be compatible with ¶ DOD’s interests.¶ 36¶ On the other hand, DOD may have specific needs ¶ (transportability, for instance) that would not be a high ¶ priority for any other market segment. Moreover, while ¶ DOD has unique technical and organizational capabilities that could enable it to pursue more radically innovative reactor lines, DOE has indicated that it will ¶ focus its initial small reactor deployment efforts on ¶ LWR designs.¶ 37¶ If DOD wants to ensure that its preferred reactors ¶ are developed and available in the future, it should take ¶ a leadership role now. Taking a first mover role does not ¶ necessarily mean that DOD would be “picking a winner” ¶ among small reactors, as the market will probably pursue multiple types of small reactors. Nevertheless, DOD ¶ leadership would likely have a profound effect on the industry’s timeline and trajectory.

#### They have the personnel

Robitaille 12

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

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

# 2AC

## Topicality

### 2AC

#### 1. We meet- increasing in part increases throughout

#### 2. We meet- military bases are throughout the US

USA TODAY no Date

<http://traveltips.usatoday.com/rv-campgrounds-military-bases-usa-106293.html>

Military bases are scattered throughout the United States, from California to Vermont. These bases may not be at the forefront of RV campers who are looking to explore the country, but they probably should be. Military bases nationwide have areas that are open for RV camping for active and former military personnel, as well as Department of Defense employees. In addition to often being more cost-effective than traditional campgrounds, they offer base outlets with discounted supplies. Military base campers do not have to sacrifice comfort, as many camping areas have the same amenities as other parks and facilities.

#### 3. Counter interpretation

Dictionary.com

(“In” http://dictionary.reference.com/browse/in?s=t)

In [in] Show IPA preposition, adverb, adjective, noun, verb, inned, in·ning.¶ preposition¶ 1.¶ (used to indicate inclusion within space, a place, or limits): walking in the park.

#### Subsets are inevitable- allowing the aff to pick the subset prevents us from losing to the PIC every debate

#### Key to aff flexibility- otherwise the topic gets stale

#### No case meets- most restrictions are location specific and energies only exist in certain parts of the country

#### Reasonability key to prevent a race to the most limiting interpretation

#### Their evidence says military is abroad

## Case

## Accidents

### Case Outweighs

#### Risks of reactors are small and outweighed by benefits

Andres and Breetz 11

(Richard B. Andres is Professor of ¶ national Security Strategy at the ¶ national War College and a Senior fellow and energy and environmental ¶ Security and Policy Chair in the Center ¶ for Strategic research, institute for national Strategic Studies, at the national Defense University. Hanna L. Breetz is a doctoral candidate in the Department of Political Science at the Massachusetts institute of technology, “Small Nuclear Reactors ¶ for Military Installations:¶ Capabilities, Costs, and ¶ Technological Implications” Institute for National Strategic Studies, <http://www.ndu.edu/press/lib/pdf/strforum/sf-262.pdf>, SEH)

Despite these potential events, a cost-benefit analysis should shape any decisions regarding the use of small ¶ reactors domestically or at forward locations. The real risks of deploying this technology should be put in perspective. The Navy has deployed more than 500 nuclear ¶ reactors since 1948 and never experienced a reactor accident. Further, in the current global context, every year the ¶ United States allows to go by without deploying small ¶ reactors represents a strategic gamble: domestic bases ¶ risk losing power should a competent opponent attack ¶ the U.S. domestic electric grid, while forward operating ¶ bases endanger American convoy support personnel who ¶ must deliver fuel.

### 2AC SMR Safe

#### 2AC AT Meltdowns- SMR’s are safe

Loudermilk 11

(Micah J. Loudermilk is a Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University, “Small Nuclear Reactors and US Energy Security: Concepts, Capabilities, and Costs” Journal of Energy Security, May 2011, <http://www.ensec.org/index.php?option=com_content&view=article&id=314:small-nuclear-reactors-and-us-energy-security-concepts-capabilities-and-costs&catid=116:content0411&Itemid=375>, SEH)

Promoting safer nuclear power¶ The debate over nuclear energy over the years has consistently revolved around the central question “Is nuclear power safe?” Certainly, the events at Fukushima illustrate that nuclear power can be unsafe, however, no energy source is without its own set of some inherent risks on the safety front—as last year’s oil spill in the Gulf of Mexico or the long-term environmental consequences of fossil fuel use demonstrate—and nuclear power’s operating record remains significantly above that of other energy sources. Instead, accepting the role that nuclear energy plays in global electricity generation, especially in a clean-energy environment, a more pointed question to ask is “How can nuclear power be made safer?”¶ Although large reactors possess a stellar safety record throughout their history of operation, SMRs are able to take safety several steps further, in large part due to their small size. Due to simpler designs as a result of advancing technology and a heavy reliance on passive safety features, many problems plaguing larger and earlier generations of reactors are completely averted. Simpler designs mean less moving parts, less potential points of failure or accident, and fewer systems for operators to monitor. Additionally, small reactor designs incorporate passive safety mechanisms which rely on the laws of nature—such as gravity and convection—as opposed to human-built systems requiring external power to safeguard the reactor in the event of an accident, making the reactor inherently safer.¶ Furthermore, numerous small reactor concepts incorporate other elements—such as liquid sodium—as coolants instead of the pressurized water used in large reactors today. While sodium is a more efficient heat-transfer material, it is also able to cool the reactor core at normal atmospheric pressure, whereas water which must be pressurized at 100-150 times normal to prevent it boiling away. As an additional passive safety feature, sodium’s boiling point is 575-750 degrees higher than the reactor’s operating temperature, providing an immense natural heat sink in the event that the reactor overheats. Even should an accident occur, without a pressurized reactor no radiation would be released into the surrounding environment.¶ Even on the most basic level, small reactors provide a greater degree of security by merit of providing lower energy output and using less nuclear fuel. To make up for the loss in individual reactor generating capacity, small reactors are generally designed as scalable units, enabling the siting of multiple units in one location to rival the output capacity of a large nuclear plant. However, with each reactor housed independently and powering its own steam turbine, an accident affecting one reactor would be limited to that individual reactor.

### No Impact

#### No impact

Rod **Adams 12**, Former submarine Engineer Officer, Founder, Adams Atomic Engines, Inc., “Has Apocalyptic Portrayal of Climate Change Risk Backfired?”, May 2, <http://atomicinsights.com/2012/05/has-apocalyptic-portrayal-of-climate-change-risk-backfired.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+AtomicInsights+%28Atomic+Insights%29>

Not only was the discussion enlightening about the reasons why different people end up with different opinions about climate change responses when presented with essentially the same body of information, but it also got me thinking about a possible way to fight back against the Gundersens, Caldicotts, Riccios, Grossmans and Wassermans of the world. That group of five tend to use apocalyptic rhetoric to describe what will happen to the world if we do not immediately start turning our collective backs on all of the benefits that abundant atomic energy can provide. They spin tall tales of deformed children, massive numbers of cancers as a result of minor radioactive material releases, swaths of land made “uninhabitable” for thousands of years, countries “cut in half”, and clouds of “hot particles” raining death and destruction ten thousand miles from the release point. Every one of those clowns have been repeating similar stories for at least two solid decades, and continue to repeat their stories even after supposedly catastrophic failures at Fukushima have not resulted in a single radiation related injury or death. According to eminent scientists – like Dr. Robert Gale – Fukushima is unlikely to EVER result in any measurable increase in radiation related illness. One important element that we have to consider to assess cancer risks associated with an accident like Fukushima is our baseline risk for developing cancer. All of us, unfortunately, have a substantial risk of developing cancer in our lifetime. For example, a 50-year-old male has a 42% risk of developing cancer during his remaining life; it’s almost the same for a 10-year-old. This risk only decreases when we get much older and only because we are dying of other causes. It’s true that excess radiation exposure can increase our cancer risk above baseline levels; it’s clear from studies of the survivors of the 1945 atomic bombings of Hiroshima and Nagasaki, of people exposed to radiation in medical and occupational settings, and of people exposed to radon decay products in mines and home basements. When it comes to exposures like that of Fukushima, the question is: What is the relative magnitude of the increased risk from Fukushima compared to our baseline cancer risk? Despite our fears, it is quite small. If the nuclear industry – as small and unfocused as it is – really wanted to take action to isolate the apocalyptic antinuclear activists, it could take a page from the effective campaign of the fossil fuel lobby. It could start an integrated campaign to help the rest of us to remember that, despite the dire predictions, the sky never fell, the predicted unnatural deaths never occurred, the deformations were figments of imagination, and the land is not really irreversibly uninhabitable for generations. The industry would effectively share the story of Ukraine’s recent decision to begin repopulating the vast majority of the “dead zone” that was forcibly evacuated after the Chernobyl accident. It would put some context into the discussion about radiation health effects; even if leaders shy away from directly challenging the Linear No Threshold (LNT) dose assumption, they can still show that even that pessimistic model says that a tiny dose leads to a tiny risk. Aside: My personal opinion is that the LNT is scientifically unsupportable and should be replaced with a much better model. We deserve far less onerous regulations; there is evidence that existing regulations actually cause harm. I hear a rumor that there is a group of mostly retired, but solidly credentialed professionals who are organizing a special session at the annual ANS meeting to talk about effective ways to influence policy changes. End Aside. Most of us recognize that there is no such thing as a zero risk; repeated assertions of “there is no safe level” should be addressed by accepting “close enough” to zero so that even the most fearful person can stop worrying. The sky has not fallen, even though we have experienced complete core meltdowns and secondary explosions that did some visible damage. Nuclear plants are not perfect, there will be accidents and there will be radioactive material releases. History is telling me that the risks are acceptable, especially in the context of the real world where there is always some potential for harm. The benefits of accepting a little nuclear risk are immense and must not be marginalized by the people who market fear and trembling.

## Waste

### SMRs Solve Waste

#### SMRs solve waste – uses waste

Szondy ‘12

(David Szondy is a freelance writer based in Monroe, Washington. An award-winning playwright, he has contributed to Charged and iQ magazine and is the author of the website Tales of Future Past. “Feature: Small modular nuclear reactors - the future of energy?” February 16, 2012 accessed online August 22, 2012 at http://www.gizmag.com/small-modular-nuclear-reactors/20860/)

SMRs can help with proliferation, nuclear waste and fuel supply issues because, while some modular reactors are based on conventional pressurized water reactors and burn enhanced uranium, others use less conventional fuels. Some, for example, can generate power from what is now regarded as "waste", burning depleted uranium and plutonium left over from conventional reactors. Depleted uranium is basically U-238 from which the fissible U-235 has been consumed. It's also much more abundant in nature than U-235, which has the potential of providing the world with energy for thousands of years. Other reactor designs don't even use uranium. Instead, they use thorium. This fuel is also incredibly abundant, is easy to process for use as fuel and has the added bonus of being utterly useless for making weapons, so it can provide power even to areas where security concerns have been raised.

#### Barely any waste

Tularak and Totev ‘11

(Thitidej, Office of Atoms for Peace, and Dr. Totju, Argonne National Laboratory, “IAEA Fellowship Work Report,” AM)

Reduced spent fuels and waste management obligation: Nuclear waste and spent fuels are another critical part in nuclear industry. They are sensitive in posting threats to people and environment. With most designs offering longer fuel lifetime and smaller amount of nuclear waste and spent fuels, SMRs are able to limit obligation in waste management and spent fuels or even have no spent fuel pool.

#### SMRs solves waste disposal issue – PRISM reactor design proves

Szondy ‘12

(David Szondy is a freelance writer based in Monroe, Washington. An award-winning playwright, he has contributed to Charged and iQ magazine and is the author of the website Tales of Future Past. “Feature: Small modular nuclear reactors - the future of energy?” February 16, 2012 accessed online August 22, 2012 at http://www.gizmag.com/small-modular-nuclear-reactors/20860/)

PRISM¶ Power Reactor Innovative Small Module (PRISM) is a GE-Hitachi design. It's sodium cooled, installed underground and generates 311 megawatts with refueling every six years. Its ability to burn plutonium and depleted uranium makes it of great interest to the UK, which is negotiating to have two installed at the Sellafield nuclear facility where they would be used to burn nuclear waste stockpiles. This is more than just a waste disposal solution. It's estimated that if this works, the waste could provide power to Britain for 500 years.

#### SMRs solves waste disposal issue – Molten salt reactors prove

Szondy ‘12

(David Szondy is a freelance writer based in Monroe, Washington. An award-winning playwright, he has contributed to Charged and iQ magazine and is the author of the website Tales of Future Past. “Feature: Small modular nuclear reactors - the future of energy?” February 16, 2012 accessed online August 22, 2012 at http://www.gizmag.com/small-modular-nuclear-reactors/20860/)

Molten salt reactors¶ In this type of SMR, the coolant and the fuel are one in the same. The coolant is a mixture of lithium and beryllium fluoride salts. In this is dissolved a fuel, which can be enriched uranium, thorium or U-233. This molten salt solution passes at relatively low pressure and a temperature of 1,300 degrees F (700 degrees C) through a graphite moderator core. As the fuel burns, the waste products are removed from the solution and fresh fuel is added.

## Rare Earth

### Plenty

**No shortage – plenty of REEs exist to last a century and use inevitable**

Castor 11

Castor, Stephen B. Castor, Nevada Bureau of Mines and Geology, University of Nevada, 2008, "Rare Earth Deposits of North America",<http://onlinelibrary.wiley.com/doi/10.1111/j.1751-3928.2008.00068.x/pdf>, Date accessed July 8, 2011

In the past, REE commodities were not only mined dominantly in the USA, but also refined there. During the 1980s this began to change, particularly with the emergence of China as the dominant raw material supplier, and most REE commodities are now produced overseas. In 2003, at least 20 companies in Japan produced REE commodities that are mainly used in its domestic industries, and 16 European countries exported REE commodities to the USA in 2003.¶ The classification of China as a Most Favored Nation in 1978 by the USA had a strong impact on REE markets, and the US Government has shown little interest in protecting domestic producers. The Chinese government has had an aggressive policy toward the promotion of its REE industry, and during the 1990s development of Chinese REE deposits was apparently not impeded by normal market considerations, leading to significant overproduction of REE in the early 2000s. In 2003 the Chinese Government announced that it would assert control over its REE industry and restrict REE exports. Recent price increases for some REE commodities indicate that this has taken place.¶ Although the bastnasite produced at Mountain Pass has relatively low thorium (approximately 100 ppm), chemical processing was suspended by the California Environmental Protection Agency in 1998, mostly due to radioactive element content of waste involved in a spill incident. Between 2001 and the present, REE commodities were sold from stockpile, and imported REE commodities were tested.¶ The future use of REE is expected to increase, especially in automotive pollution catalysts, fluid cracking catalysts, and permanent magnets. Future growth is also forecast for REE used in lasers, fiber optics, and medical applications. Demand is expected to decline over the next decade for REE phosphors used in CRTs as flat panel display use increases. REE use in rechargeable nickel-hydride batteries may decline as lithium ion batteries gain wider use. Long-term growth is forecast for REE utilized in magnetic refrigeration alloys and other high technology uses, but such trends are difficult to predict with surety.¶ World REE reserves are probably sufficient to meet forecast international demand well into the 21st century. Several world-class REE deposits in Australia and China have yet to be fully developed, and contain substantial reserves. World REE markets are expected to continue to be very competitive in response to China’s large resources, competitive prices, low-cost labor, inexpensive utilities, and minimal environmental and permitting requirements. China is expected to remain the world’s principal REE supplier. Economic growth in several developing countries will provide new and potentially large markets in Southeast Asia and Eastern Europe.

#### Rare earth mineral low prices inevitable- Chinese manufacturing industry pressure and their impacts are non-unique

Onstad 12

(Eric, Deputy Editor in Charge, Commodities, EMEA at [Thomson Reuters](http://uk.linkedin.com/company/thomson-reuters_1400?trk=ppro_cprof)EMEA Mining Correspondent at [Thomson Reuters](http://uk.linkedin.com/company/thomson-reuters_1400?trk=ppro_cprof), “Analysis: Rare earth prices to erode on fresh supply, China,” 9/19/2012, <http://www.reuters.com/article/2012/09/19/us-rareearths-outlook-idUSBRE88I0O020120919>)

Prices of the 17 elements used in technologies such as smartphones and hybrid cars soared last year by hundreds of percent after China clamped down on exports. Hot money flowed into an illiquid sector but later departed, causing a crash.¶ Lanthanum, used in rechargeable batteries for hybrid autos and in night-vision goggles, rocketed 26-fold from $5.15 a kg in January 2010 to a peak of $140 in June 2011. Although it has slid to $20.50, the price is still well above earlier lows.¶ The market has steadied in recent months, but new output from U.S. Molycorp ([MCP.N](http://www.reuters.com/finance/stocks/overview?symbol=MCP.N)) and Australia's Lynas Corp ([LYC.AX](http://www.reuters.com/finance/stocks/overview?symbol=LYC.AX)) is likely to pressure prices, especially those of "light" rare earths which are not as scarce as their "heavy" cousins.¶ Weaker economic growth in China is also weighing on the market since the world's second largest economy not only produces over 90 percent of global rare earths, but is the biggest consumer of the materials.¶ "Prices will continue to drop so long as Chinese GDP continues to face downward pressures on the manufacturing side," said Michael Silver, chief executive of American Elements, which buys rare earths from China.¶ China's slowdown - rather than a trade complaint filed by Western nations - is expected to prompt some relaxation of Beijing's tough export controls, Silver added.¶ In August, China announced new export quotas on rare earth elements (REE), which increased the yearly figure by 2.7 percent.¶ "This is the first time in five years that the REE quota has increased and is the highest in three years, which is seen as a slight negative as excess supply would put pressure on prices," analyst Carolyn Dennis of Toronto-based Dundee Capital Markets said in a note to clients.

#### The guarantees U.S. access to Chinese REE- no shortages

Bosco 12

David Bosco 1-30, assistant professor at American University's School of International Service, January 30, 2012, “WTO rules against China on 'rare earth' minerals,” online: <http://bosco.foreignpolicy.com/posts/2012/01/30/wto_rules_against_china_on_rare_earth_minerals>

The World Trade Organization's appellate body [ruled today](http://www.google.com/hostednews/afp/article/ALeqM5iQWDjbSMV_bSItDoHNC6x4tq31qA?docId=CNG.fab869aea95c0cb3ce801070fba43334.271) that China's restrictions on the export of certain key minerals was illegal:¶ The World Trade Organization on Monday upheld its ruling that Chinese restrictions on key raw material exports broke trade rules following an appeal by Beijing.¶ China must bring its duty and export quota measures on elements including magnesium and zinc into line with its WTO obligations, an appeal body said.¶ The WTO found in favour of the United States, European Union and Mexico in July following a complaint that China had failed to meet the promises it made when joining the body.¶ U.S. trade officials--who have made targeting Chinese trade practices a focus of their work-- immediately [celebrated the ruling](http://www.ustr.gov/about-us/press-office/press-releases/2012/january/ambassador-kirk-announces-us-victory-challenge-chi):¶ The Obama Administration will continue to ensure that China and every other country play by the rules so that U.S. workers and companies can compete and succeed on a level playing field. During his State of the Union Address last week, the President laid out a blueprint for an economy that’s built to last – an economy built with the renewed strength of American manufacturing. Today’s decision ensures that core manufacturing industries in this country can get the materials they need to produce and compete on a level playing field.

### California and Other Mines Solve

#### REE mining and supply increasing- California mountain pass and other new mines outside US prevents bottle neck

Burnett 12

(H.Sterling, PhD Applied Philosophy, Senior Fellow and lead analyst of the National Center for Policy Analysis' E-Team -- one of the largest collections of energy and environmental policy experts and scientists, “Finding Sources of Rare Earths beyond China,”

Mountain Pass: An American Rare Earth Mine. California’s Mountain Pass, the only mine in America dedicated to rare earths, closed in 2002 due to environmental problems and low prices. After spending an estimated $500 million on state-of-the-art equipment and significant environmental upgrades, it has reopened under new management.9 Molycorp, the owner, will mine only a handful of rare earth minerals, but it hopes to produce 20,000 tons per year by 2012. By contrast, China produced 124,000 tons of rare earths in 2009.¶ Mountain Pass formerly produced rare earths from the tailings of historical rare earth operations. Molycorp previously estimated Mountain Pass contained more than 2.24 billion pounds of rare oxides. However, based on mining fresh ore and new exploratory drilling, Molycorp now estimates there are 36 percent more reserves — a total of 2.94 billion pounds. The company says it hopes to increase production to 40,000 tons of rare earths per year in the near future.10¶ Globally, the number of new projects to explore for and develop rare earths has exploded in recent years. As of April 2012, Hatch found that 429 rare earth projects outside of China and India were being developed by 261 different companies in 37 different countries.11¶ Clearly, not all projects are equal. Some are being developed based on a handful of samples, while others have proven mineral reserves. There will never be mineral-resource estimates for most of these projects, and even fewer will become profitable ventures. The number and diversity, however, indicates that the so-called “rare earths crisis” is theoretically solvable.¶ Absent government ownership or funding, potential mineral resources must be estimated before these projects can be funded. Of the 429 projects mentioned above, as of April 2012, 36 projects have been either been formally defined as a mineral resource or reserve under standard industry guidelines, or were previously mined.12 These rare earth projects are most likely to become productive. The 36 projects include12 operations in Canada, seven in Sub-Saharan Africa, six in Australia, four in the United States, three in Greenland, and one each in Sweden, Kyrgyzstan, Turkey and Brazil.¶ These operations, plus new mines in China and India, will provide the new supplies of rare earths needed for critical industries.

#### Domestic production and E-waste recycling make China irrelevant by next year- and demand increase inevitable

Kaye 11

Leon Kaye 12-6, editor of GreenGoPost and contributor to The Guardian’s Sustainable Business section, December 6, 2011, “Conflicted Rare Earth Minerals Prices to Decline,” online: <http://www.triplepundit.com/2011/12/rare-earth-minerals-prices/>

Now [various reports](http://www.nytimes.com/2011/11/17/business/global/prices-of-rare-earth-metals-declining-sharply.html) suggest that prices for these materials will start trending downward.¶ Global demand for rare earth minerals will increase over seven percent a year, and their market value will triple from its current value to US$9.2 billion by 2015. Prices should peak in 2013, but by then improved processes and increased research and development in rare earth mineral refining technologies will have a role in pushing those prices down.¶ [Molycorp](http://www.molycorp.com/) is one reason why rare earths’ prices should stabilize and even decrease. The Colorado-based company owns California’s Mountain Pass Mine, which once supplied most of the world’s rare earth minerals when they were used in color televisions. The mine was shuttered in 2002 because of cheaper minerals from China and growing environmental concerns. But the Mountain Pass facility is due to [reopen](http://www.theatlantic.com/technology/archive/2012/02/a-visit-to-the-only-american-mine-for-rare-earth-metals/253372/) soon, and companies in Japan including Sumitomo and Mitsubishi have already [signed agreements](http://www.theatlantic.com/magazine/archive/2009/05/clean-energy-apos-s-dirty-little-secret/7377/) to purchase these minerals from Molycorp. Another company, [Simbol Materials](http://www.simbolmaterials.com/), extracts rare earths from California’s Salton Sea and promises a more sustainable [process](http://www.simbolmaterials.com/breakthrough_technology.htm) to produce lithium in addition to other minerals.¶ Another factor in decreasing rare earth mineral costs will be the increased and improved [recycling](http://greengopost.com/ups-sustainability-report-2010-e-waste/) of electronics. These conflict minerals are technically not rare. They are, however, widely dispersed in minuscule amounts, and therefore a massive volume of ore is required to extract just a few ounces of that valuable neodymium that keeps wind turbines swirling and the latest Prius models humming. One start-up, [BioMine](http://www.greenbiz.com/blog/2011/10/12/if11-why-innovation-requires-death-good-ideas), envisions electronic waste smelters throughout North America that will gather unwanted computers and electronic gadgets and salvage rare earths in addition to expensive metals like gold and copper. E-waste actually has a much [higher concentration](http://www.guardian.co.uk/sustainable-business/electronic-waste-refining) of rare earths than virgin ore; more efficient recycling will help keep prices down while lessening their environmental impact. Recycling regulations like those in [Japan](http://www.triplepundit.com/2011/11/21st-century-treasure-hunt-thrives-japanese-recycling-plant/) that puts the responsibility for recycling on everyone, from consumers to retailers to manufacturers, will also help the collection of electronic waste, the treasure of the 21st century.¶ As battery, electromagnets and other technologies improve, watch for increased efficiency from batteries, wind turbines and yes, even smartphones. Dystopian fear that we are unsustainably sourcing materials for “sustainable” technologies will be replaced by optimism from more innovative products that will benefit all of us in the long run.

#### China won’t restrict supply for geopolitical reasons and it won’t hurt the military if they do

LeVine 10

Steve LeVine 10, contributing editor at Foreign Policy, October 21, 2010, “Is China's rare earth power play really such a big deal?,” online: <http://oilandglory.foreignpolicy.com/posts/2010/10/21/is_chinas_rare_earth_power_play_really_such_a_big_deal>

The supply of so-called strategic rare earth metals -- needed for wind turbines, advanced batteries, disc drives, flat-screen TVs, and smart bombs, among other things -- has definitely either slowed or stopped from China. The question is why: Has China cut off [Japan](http://abcnews.go.com/Technology/wireStory?id=11935017) in a pique of ill-will triggered by festering resentment over World War II or over the maltreatment of a [fisherman](http://oilandglory.foreignpolicy.com/posts/2010/09/23/is_china_overplaying_its_hand)? Is the [U.S.](http://worldblog.msnbc.msn.com/_news/2010/10/20/5323924-chinese-ban-on-export-of-crucial-minerals-expands-to-us) now suffering because it has dared to challenge China's clean-energy industry subsidies? Or are there more benign reasons, such as the possibility that widely announced [quotas](http://online.wsj.com/article/SB10001424052702303550904575561922857320014.html?KEYWORDS=james+areddy) for the minerals have run out in the late part of the year?¶ Chinese Premier Wen Jinbao says that China isn't using its near rare-earths monopoly as a["bargaining chip,"](http://www.evwind.es/noticias.php?id_not=7755) China Daily reports. Beijing also says it is not violating its pledges under the World Trade Organization, as the Financial Times' [Leslie Hook and Mure Dickie](http://www.ft.com/cms/s/0/4cc15faa-dc3e-11df-a9a4-00144feabdc0.html) write.¶ The rare-earth hullabaloo is reminiscent of the alarm bells raised over Middle East control of oil -- it is inherently concerning, after all, when one country or a set of countries wield leverage over a desperately and widely needed product. The more so when those holding that near-monopoly shrink the product's availability, as China has done. China retorts that it's a bunch of Sturm und Drang: It is not embargoing anyone, and if shipments are down, it is because China must husband a limited resource, protect its environment, and supply its own industries.¶ Unsurprisingly, some are benefitting from the chaos, namely traders -- prices for the 17 rare earths are going through the roof, report Bloomberg's [Mark Drajem and Gopal Ratnam](http://www.bloomberg.com/news/2010-10-20/china-pledges-to-maintain-rare-earth-sales-official-says-exports-may-rise.html). According to their report, prices for cerium oxide (used for polishing semiconductors) have risen nine-times, to $36 a kilogram on Tuesday from about $4.70 a kilogram on April 20. Neodymium, used in magnets, doubled in price to $92 a kilogram from about $41 in April.¶ I emailed a couple of rare earth experts to try to make sense of what is really going on. [Jeff Green](http://www.jagreenandco.com/php/), a rare earth specialist who runs a consultant firm called J.A Green and Company, says that if China is reducing rare-earth exports next year by 30 percent, as reported, on top of the 40 percent decrease this year, industries could see problematic supply disruptions. So what is behind the reduction? Green told me:¶ As best we can tell, there is no official "embargo" against the United States or Europe regarding the export of rare earth materials. Nevertheless, companies worldwide have seen an ongoing delay in delivery of materials. It is reported that these materials are delayed by Chinese customs officials and are not leaving the country. Some companies speculate that this may be a result of a lack of material available for export under China's reduced export quota system, meaning most or all of the 8,000 tons of material for export have already been sold or will be sold in the near future. Another possibility is an unofficially sanctioned response to U.S. government action on the rare earth issue such as the recent 301 case filed by the United States Trade Representative or other measures directed at China such as recent House passed currency manipulation and rare earth legislation. It is likely that the answer lies on many levels with no single motivation driving the current situation in China.¶ I also emailed [Jack Lifton](http://www.glgroup.com/Council-Member/Jack-Lifton-34688.html), a rare-earths maven at Technology Metals Research. He had a lot to say, namely that China is conducting a quite conventional industry restructuring. One takeaway: The U.S. military is in no crisis, but the green-energy industry is. Lifton's note to me:¶ I am amazed at the parochialism of the press on this issue. It would seem as if the NYTthinks the tail is wagging the dog. China is restructuring its rare earth mining industry to reduce 129 legal, and no one knows how many illegal, producers of rare earth mine concentrates to just 3 or 4 entities controlled by regionally based, state-owned base metals giants. Currently 3 have been officially named: BaoSteel, Ziangxi Copper, and China MinMetal (This last is a trading company, not a miner per se). Chinalco seems to have added itself to the list also.¶ The purpose of this "consolidation" is to discover the industry's pricing and actual production both for the purpose of central planning. China, in my view, is acting quite rationally in order to organize an industry it has long recognized as too important to be left to the fierce and often destructive competition arising from China's wild west approach to capitalist development of new industries. The next two five-year plans feature a massive green development drive that cannot happen without the regular and smooth production and delivery of technology metals to the manufacturers whose green economy products critically depend upon them.¶ If you consider that man is trying to conquer the environment before it destroys his way of life and his hope for a better way of life then you must, I think, applaud the Chinese for going forward with a plan to strengthen their hand while Western nations leave such "planning" to the operations of a market economy that is subject to lowest common denominator political pressures by unschooled and unskilled legislators being advised by those with narrow self-serving special interests.¶ America's military will be just fine regardless of its direct access to rare earth raw materials.

### Japan Fills in/AT: Cant Mine in Ocean

#### New Japanese discoveries in Pacific Ocean destroy China’s monopoly

HSN 11

Homeland Security News Wire, July 7, 2011, “Japanese discovery could undermine China's rare earth dominance,” online: <http://www.homelandsecuritynewswire.com/japanese-discovery-could-undermine-chinas-rare-earth-dominance>

 A new discovery by Japanese researchers could break China’s stranglehold over rare Earth metals.¶ Japanese geologists say they have [found](http://www.bbc.co.uk/news/world-asia-pacific-14009910) large deposits of rare Earth minerals on the floor of the Pacific Ocean. It is estimated that the mud of the Pacific Ocean contains 100 billion tons of rare Earth elements.¶ If geologists are able to mine for the minerals in a cost effective way, analysts believe this discovery could undermine China’s dominance. Currently, 97 percent of rare Earth metals are produced in China, but in recent years the country has imposed strict quotas and limited exports disrupting the global supply chain.¶ Yasuhiro Kato, an associate professor of earth science at the University of Tokyo and the leader of the team that discovered the rare earth stores, said, “The deposits have a heavy concentration of rare earths. Just one square kilometer (0.4 square mile) of deposits will be able to provide one-fifth of the current global annual consumption.”¶ The minerals were found in sea mud in seventy-eight locations at depths of 11,500 to 20,000 feet below the ocean’s surface. The deposits are primarily located in international waters east and west of Hawaii and east of Tahiti.¶ The discovery has already touched off a race as companies scramble to obtain licenses to mine for these minerals deep below the Pacific Ocean. So far Nautilus, a mining company, has been the first to obtain a license to mine the ocean floor around Papua New Guinea.¶

#### New deposits near the coast of Japan are sufficient to meet all need and extraction feasible

Reuters 11

(Reuter New York Times News, “Huge rare earth deposits found in Pacific: Japan experts,” 7/4/2011, <http://www.reuters.com/article/2011/07/04/us-rareearth-japan-idUSTRE76300320110704>)

Vast deposits of rare earth minerals, crucial in making high-tech electronics products, have been found on the floor of the Pacific Ocean and can be readily extracted, Japanese scientists said on Monday.¶ "The deposits have a heavy concentration of rare earths. Just one square kilometer (0.4 square mile) of deposits will be able to provide one-fifth of the current global annual consumption," said Yasuhiro Kato, an associate professor of earth science at the University of Tokyo.¶ The discovery was made by a team led by Kato and including researchers from the [Japan](http://www.reuters.com/places/japan) Agency for Marine-Earth Science and Technology.¶ They found the minerals in sea mud extracted from depths of 3,500 to 6,000 meters (11,500-20,000 ft) below the ocean surface at 78 locations. One-third of the sites yielded rich contents of rare earths and the metal yttrium, Kato said in a telephone interview.¶ The deposits are in international waters in an area stretching east and west of Hawaii, as well as east of Tahiti in French Polynesia, he said.¶ He estimated rare earths contained in the deposits amounted to 80 to 100 billion metric tons, compared to global reserves currently confirmed by the U.S. Geological Survey of just 110 million tonnes that have been found mainly in [China](http://www.reuters.com/places/china), Russia and other former Soviet countries, and the United States.¶ Details of the discovery were published on Monday in the online version of British journal Nature Geoscience.¶ The level of uranium and thorium -- radioactive ingredients that are usually contained in such deposits that can pose environmental hazards -- was found to be one-fifth of those in deposits on land, Kato said.¶ A chronic shortage of rare earths, vital for making a range of high-technology electronics, magnets and batteries, has encouraged mining projects for them in recent years.¶ China, which accounts for 97 percent of global rare earth supplies, has been tightening trade in the strategic metals, sparking an explosion in prices.¶ Japan, which accounts for a third of global demand, has been stung badly, and has been looking to diversify its supply sources, particularly of heavy rare earths such as dysprosium used in magnets.¶ Kato said the sea mud was especially rich in heavier rare earths such as gadolinium, lutetium, terbium and dysprosium.¶ "These are used to manufacture flat-screen TVs, LED (light-emitting diode) valves, and hybrid cars," he said.¶ Extracting the deposits requires pumping up material from the ocean floor. "Sea mud can be brought up to ships and we can extract rare earths right there using simple acid leaching," he said.¶ "Using diluted acid, the process is fast, and within a few hours we can extract 80-90 percent of rare earths from the mud."¶ The team found that sites close to Hawaii and Tahiti were especially rich in rare earths, he said.¶

## DeDev

**Sustainable Transition**

**( ) Turn – We are on the brink of a consciousness shift now that allows for sustainable growth, but allowing capitalism to collapse destroys the transition.**

**Rifkin 10**

 – Jeremy Rifkin, President of the Foundation on Economic Trends, January 11, 2010, “'The Empathic Civilization': Rethinking Human Nature in the Biosphere Era,” online: http://www.huffingtonpost.com/jeremy-rifkin/the-empathic-civilization\_b\_416589.html

The pivotal turning points in human consciousness occur when new energy regimes converge with new communications revolutions, creating new economic eras. The new communications revolutions become the command and control mechanisms for structuring, organizing and managing more complex civilizations that the new energy regimes make possible. For example, in the early modern age, print communication became the means to organize and manage the technologies, organizations, and infrastructure of the coal, steam, and rail revolution. It would have been impossible to administer the first industrial revolution using script and codex. Communication revolutions not only manage new, more complex energy regimes, but also change human consciousness in the process. Forager/hunter societies relied on oral communications and their consciousness was mythologically constructed. The great hydraulic agricultural civilizations were, for the most part, organized around script communication and steeped in theological consciousness. The first industrial revolution of the 19th century was managed by print communication and ushered in ideological consciousness. Electronic communication became the command and control mechanism for arranging the second industrial revolution in the 20th century and spawned psychological consciousness. Each more sophisticated communication revolution brings together more diverse people in increasingly more expansive and varied social networks. Oral communication has only limited temporal and spatial reach while script, print and electronic communications each extend the range and depth of human social interaction. By extending the central nervous system of each individual and the society as a whole, communication revolutions provide an evermore inclusive playing field for empathy to mature and consciousness to expand. For example, during the period of the great hydraulic agricultural civilizations characterized by script and theological consciousness, empathic sensitivity broadened from tribal blood ties to associational ties based on common religious affiliation. Jews came to empathize with Jews, Christians with Christians, Muslims with Muslims, etc. In the first industrial revolution characterized by print and ideological consciousness, empathic sensibility extended to national borders, with Americans empathizing with Americans, Germans with Germans, Japanese with Japanese and so on. In the second industrial revolution, characterized by electronic communication and psychological consciousness, individuals began to identify with like-minded others. Today, **we are on the cusp of another historic convergence of energy and communication**--a third industrial revolution--**that could extend empathic sensibility to the biosphere itself and all of life on Earth**. The distributed Internet revolution is coming together with distributed renewable energies, making possible a sustainable, post-carbon economy that is both globally connected and locally managed. In the 21st century, hundreds of millions--and eventually billions--of human beings will transform their buildings into power plants to harvest renewable energies on site, store those energies in the form of hydrogen and share electricity, peer-to-peer, across local, regional, national and continental inter-grids that act much like the Internet. The open source sharing of energy, like open source sharing of information, will give rise to collaborative energy spaces--not unlike the collaborative social spaces that currently exist on the Internet. When every family and business comes to take responsibility for its own small swath of the biosphere by harnessing renewable energy and sharing it with millions of others on smart power grids that stretch across continents, we become intimately interconnected at the most basic level of earthly existence by jointly stewarding the energy that bathes the planet and sustains all of life. The new distributed communication revolution not only organizes distributed renewable energies, but also **changes human consciousness**. The information communication technologies (ICT) revolution is quickly extending the central nervous system of billions of human beings and connecting the human race across time and space, allowing empathy to flourish on a global scale, for the first time in history. Whether in fact we will begin to empathize as a species will depend on how we use the new distributed communication medium. While distributed communications technologies-and, soon, distributed renewable energies - are connecting the human race, what is so shocking is that no one has offered much of a reason as to why we ought to be connected. We talk breathlessly about access and inclusion in a global communications network but speak little of exactly why we want to communicate with one another on such a planetary scale. What's sorely missing is an overarching reason that billions of human beings should be increasingly connected. Toward what end? The only feeble explanations thus far offered are to share information, be entertained, advance commercial exchange and speed the globalization of the economy. All the above, while relevant, nonetheless seem insufficient to justify why nearly seven billion human beings should be connected and mutually embedded in a globalized society. The idea of even billion individual connections, absent any overall unifying purpose, seems a colossal waste of human energy. More important, making global connections without any real transcendent purpose risks a narrowing rather than an expanding of human consciousness. But what if our distributed global communication networks were put to the task of helping us re-participate in deep communion with the common biosphere that sustains all of our lives? The biosphere is the narrow band that extends some forty miles from the ocean floor to outer space where living creatures and the Earth's geochemical processes interact to sustain each other. We are learning that the biosphere functions like an indivisible organism. It is the continuous symbiotic relationships between every living creature and between living creatures and the geochemical processes that ensure the survival of the planetary organism and the individual species that live within its biospheric envelope. If every human life, the species as a whole, and all other life-forms are entwined with one another and with the geochemistry of the planet in a rich and complex choreography that sustains life itself, then we are all dependent on and responsible for the health of the whole organism. Carrying out that responsibility means living out our individual lives in our neighborhoods and communities in ways that promote the general well-being of the larger biosphere within which we dwell. **The Third Industrial Revolution offers just such an opportunity**. If we can harness our empathic sensibility to establish a new global ethic that recognizes and acts to harmonize the many relationships that make up the life-sustaining forces of the planet, we will have moved beyond the detached, self-interested and utilitarian philosophical assumptions that accompanied national markets and nation state governance and into a new era of biosphere consciousness. We leave the old world of geopolitics behind and enter into a new world of biosphere politics, with new forms of governance emerging to accompany our new biosphere awareness. The Third Industrial Revolution and the new era of distributed capitalism allow us to sculpt a new approach to globalization, this time emphasizing continentalization from the bottom up. Because renewable energies are more or less equally distributed around the world, every region is potentially amply endowed with the power it needs to be relatively self-sufficient and sustainable in its lifestyle, while at the same time interconnected via smart grids to other regions across countries and continents.

**( ) We have crossed the threshold of societal sustainability—technological innovation is the only way to ensure human survival—apathy dooms civilization—try or die for the aff**

**Atkisson 2k**

[Alan AtKisson is President and CEO of The AtKisson Group, an international sustainability consultancy to business and government, “Sustainability is Dead— Long Live Sustainability, ” http://www.rrcap.unep.org/uneptg06/course/Robert/SustainabilityManifesto2001.pdf]

At the dawn of the third milennium human civilization finds itself in a seeming paradox of gargantuan proportions. On the one hand, industrial and technological growth is destroying much of nature, endangering ourselves, and threatening our descendants. On the other hand, we must accelerate our industrial and technological development, **or the forces we have already unleashed** will wreak even greater havoc on the world for generations to come. We cannot go on, and we cannot stop. We must transform. Facing a Great Paradox At precisely the moment when humanity’s science, technology, and economy has grown to the point that we can monitor and evaluate all the major systems that support life, all over the Earth, we have discovered that most of these systems are being systematically degraded and destroyed . . . by our science, technology, and economy. The evidence that we are beyond the limits to growth is by now overwhelming: the alarms include climatic change, disappearing biodiversity, falling human sperm counts, troubling slow-downs in food production after decades of rapid expansion, the beginning of serious international tensions over basic needs like water. Wild storms and floods and eerie changes in weather patterns are but a first visible harbinger of more serious trouble to come, trouble for which we are not adequately prepared. Indeed, change of all kinds—in the Biosphere (nature as a whole), the Technosphere (the entirety of human manipulation of nature), and the Noösphere (the collective field of human consciousness)—is happening so rapidly that it exceeds our capacity to understand it, control it, or respond to it adequately in corrective ways. Humanity is simultaneously entranced by its own power, overwhelmed by the problems created by progress, and continuing to steer itself over a cliff. Our economies and technologies are changing certain basic structures of planetary life, such as the balance of carbon in the atmosphere, genetic codes, the amount of forest cover, species variety and distribution, and the foundations of cultural identity. Unless we make technological advances of the highest order, **many of the destructive changes we are causing to nature are irreversible**. Extinct species cannot (yet) be brought back to life. No credible strategy for controlling or reducing carbon dioxide levels in the atmosphere has been put forward. We do not know how to fix what we’re breaking. At the same time, some of the very products of our technology— creations. In the case of certain creations, like nuclear materials and some artificially constructed or genetically modified organisms, our secure custodianship must be maintained for thousands of years. We are, in effect, committed to a high-technology future. **Any slip in our mastery over the forces now under our command could doom our descendants**—including not just human descendants, but also those wild species still remaining in the oceans and wilderness areas—to unspeakable suffering. We must continue down an intensely scientific and technological path, and we can never stop. Sustaining such high levels of complex civilization and continuous development has never before happened in the history of humanity, so far as we know. From the evidence in hand, ancient civilizations have generally done no better than a few hundred years of highly variable progress and regress, at comparatively low levels of technology, with relatively minor risks to the greater whole associated with their inevitable collapse. The only institutions that have demonstrated continuity over millennia are religions and spiritual traditions and institutions. So, while we must be intensely scientific, our future is also in need of a renewed sense of spirituality and the sacred. Given our diversity and historic circumstances, no one religion is likely to be able, now or in the future, to sustain us or unite us.We need a new sense of spirituality that is inclusive of believers, nonbelievers, and those for whom belief itself is not the core of spiritual experience.We need a sense of the sacred that is inclusive of the scientific quest and the technological imperative. We need a common sense of high purpose that connects, bridges, and uplifts all of our religious traditions to their highest levels of wisdom and compassion, while sustaining and honoring their unique historical gifts. We need, especially, all the inspiration and solace they can offer, because the task ahead of us is enormous beyond compare. Our generation is charged with an unprecedented responsibility: to lay secure foundations for a global civilization that can last for thousands of years. To accomplish this task, we must, in the coming decades, maintain and greatly enhance our technical capacities and cultural stability, while simultaneously changing almost every technological system on which we now depend so that it causes no harm to people or the natural world, now or in the future. Our situation is not only without precedent; it is virtually impossible to comprehend. Those who, in the waning decades of the Second Millennium, have been able to comprehend this Great Paradox to some degree often feel themselves emotionally overwhelmed and powerless to effect change—the situation I have elsewhere called “Cassandra’s Dilemma,” after the mythical Trojan prophet whose accurate foresight went unheeded. Those in power, on the other hand, face stiff barriers to comprehension and action, including financial, political, and psychological disincentives. Denial and avoidance have been civilization’s predominant responses to the warnings coming from science and the signals coming from nature during the 1970s, 80s, and 90s. But the feedback from nature, as well as the growing global distress signals from those left behind in either relative or absolute poverty, are both becoming so strong that they can no longer be denied, even by those with the greatest vested interest in denial. These early decades of the Third Millennium—and especially this first decade, which philosopher Michael Zimmerman has said should be declared “the Oughts” to signify the urgency for addressing what ought to be done—are the decades of reckoning, the time for decisively changing course. Modest Changes are Not Enough Change is clearly possible. Modest changes in the direction of greater sustainability are now underway, and modest, incremental changes in both technology and habitual practice can ameliorate—indeed, have ameliorated—some dangerous trends in the short run. But overall, incremental change of this sort has proven exceedingly slow and difficult to effect, and most incremental change efforts fall far short of what is needed. Carbon emissions, which are now causing visible climate change, provide a good example: current global agreements for modest reductions are hard to reach, impossible to enforce, and virtually without effect; and even if they were successful, they would have a negligible impact on the critical trend. Far more dramatic changes are required. Dramatic, rapid change, in the form of extremely accelerated innovation in the Noösphere (conscious awareness and understanding) and the Technosphere (physical practice) is necessary both to prevent continuing and ever more catastrophic damage to the Biosphere, and to adapt to those irreversible changes to which the planet is already committed, such as some amount of climatic instability. The rapid evolution of many social, economic, and political institutions, which mediate between the Noösphere and the Technosphere, is obviously necessary as well. Without extraordinary and dramatic change, the most probable outcome of industrial civilization's current trajectory is convulsion and collapse. “Collapse” refers not to a sudden or apocalyptic ending, but to a process of accelerating social, economic, and ecological decay over the course of a generation or two, punctuated by ever-worsening episodes of crisis. The results would likely be devastating, in both human and ecological terms. The onset of collapse is probably not ahead of us in time, but behind us: in some places, such as storm-ravaged Orissa, Honduras, Bangladesh, Venezuela, even England and France, collapse-related entropy may already be apparent. Trend, of course, is probability, not destiny. It is still theoretically possible, albeit very unlikely, that civilization could continue straight ahead, without any conscious effort to direct technological development and the actions of markets in more environmentally benign and culturally constructive ways, and escape collapse through an unexpected (though currently unimaginable) technological breakthrough or improbable set of events. Some have called this the “Miracle Scenario.” But hoping for a miracle is by far the riskiest choice. The future may be fundamentally unknowable, but certain physical processes are predictable, given adequate knowledge about current trends, causal linkages, and systemic effects. Prediction based on extrapolation is not just the province of physics: much of our economy is focused on efforts to accurately predict the future based on past trends. The Internet economy, for example, relies upon Moore’s Law (that the speed and capacity of semiconductor chips doubles roughly every 18 months). Insurance companies base their entire portfolio of investments and fees on statistical assessments of past disasters and projected trends into the future. When it comes to the prospects for sustaining our civilization, we have to trust our species’ best judgment, which comes from the interpretations and extrapolations of our best experts. These experts—such as the respected Intergovernmental Panel on Climate Change—are reporting a disturbingly high degree of consensus about the level of threat to our future well-being. We are in trouble. We must transform our civilization. Transformation is Possible Dramatic civilizational change—transformation, in a word—is not so difficult to imagine. History is full of examples. Global history since the Renaissance, with all our remarkable transformations in technology, economics, and culture, is largely a product of humanity learning to take seriously the evidence of its senses, to reflect on that evidence carefully, and to make provisional conclusions that can be tested. This is the cornerstone of science. If we are to take seriously the evidence of our senses and our science, we must provisionally conclude that we are now largely responsible for living conditions on this planet. We have the power to fundamentally shape climate, manage ecosystems, design life-forms, and much more. The fact that we are currently doing these things very badly obscures the fact that we are doing them, and can therefore learn to do them better. Designing and managing the world is now our responsibility. That is the hypothesis that must now be tested by humanity as a whole, if we are to prevent collapse and succeed in restoration. To succeed, we must take our responsibility as world-shapers far more seriously than we currently do. History demonstrates that we, as a species, have the power to create the future we envision. If, therefore, we give in to despair, collapse will follow. If we cultivate a vision of ourselves as powerful and wise stewards of our planetary home, transformation becomes possible. Examples of cultural transformation occurring in a generation or less abound. The Meiji Restoration transformed Japan from a closed, agricultural society to an industrial one in just a few decades. The wholesale redirection of the North American and European economies during World War II took just a few years. The Apollo Program’s success in putting humans on the moon transpired, on schedule, within a decade. The fall of the Berlin Wall . . . the end of Apartheid . . . the change in China from a state-planned to a market economy . . . much of recent history suggests that transformation is not only possible, but a frequent occurrence in civilizational evolution. None of these events, however, remotely approaches the scale of global transformation we must now effect in technology, energy, transportation, agriculture, infrastructure, and economics, based on a new cultural understanding of our role as nature’s managers, the world's architects, the planet’s artists and engineers. But this testimony from history illustrates something profoundly important about transformation, in addition to its raw and indisputable possibility: no transformative change truly happens suddenly. Nor does transformation involve the magical or instantaneous creation of a new culture. “Transformation” is the name we give to the extremely accelerated adoption of existing innovations, together with the acceleration of innovation itself. Understanding transformation in these terms gives, to those who seek to create one, a reason for hope. An enormous amount of design work, preliminary to a transformation of the kind envisioned here, has already been done. Inventions, policies, models, scenarios, alternatives . . . innovations of all kinds have been developed by thoughtful and committed people over a generation, and the speed of innovation is increasing. Intense and focused commitment by a critical mass of talented, dedicated, and influential people—in business, government, religion, the arts, the civil sector, every walk of life—could accelerate the process by which innovation enters the mainstream of technical and social practice, and thereby turns humanity on a more hopeful course. By framing ambitious and visionary goals, and by highlighting the dangers and risks of inaction, this corps of skilled and forward-looking individuals in groups, organizations, corporations and governments could inspire others. The numbers involved could grow exponentially, and as institutions became thoroughly oriented toward achieving transformation, enormous resources could be mobilized, accelerating the transformation process still further. One generation of intensely focused investment, research, and redevelopment— redesigning our energy systems, overhauling our chemical industries, rebuilding our cities, finding substitutes for wood and replanting lost forests, and so much more—could transform the world as we know it into something far more beautiful, satisfying, and sustainable. This I believe: Sustainability is possible. Sustainability is desirable. Sustainability is a goal worthy of one’s life’s work. Sustainability is the great task of the next century. Sustainability is the next challenge on the road to our destiny. (1-8)

**Transition Wars**

**The alt causes backlash and transition wars**

**Anderson 1984.** professor of sociology – UCLA, ’84 (Perry, In the tracks of historical materialism, p. 102-103)

That background also indicates, however, what is essentially missing from his work. How are we to get from where we are today to where he point us to tomorrow? There is no answer to this question in Nove. His halting discussion of “transition” tails away into apprehensive admonitions to moderation to the British Labor Party, and pleas for proper compensation to capitalist owners of major industries, if these are to be nationalized. Nowhere is there any sense of what a titanic political change would have to occur, with what fierceness of social struggle, for the economic model of socialism he advocates ever to materialize. Between the radicalism of the future end-state he envisages, and the conservatism of the present measures he is prepared to countenance, there is an unbridgeable abyss. How could private ownership of the means of production ever be abolished by policies less disrespectful of capital than those of Allende or a Benn, which he reproves? What has disappeared from the pages of The Economics of Feasible Socialism is virtually all attention to the historical dynamics of any serious conflict over the control of the means of production, as **the record of the 20th century demonstrates** them. **If capital could visit such destruction on even so poor and small an outlying province of its empire in Vietnam, to prevent its loss, is it likely that it would suffer its extinction meekly in its own homeland? The lessons of the past sixty-five years or so are in this respect without ambiguity or exception, there is no case, from Russia to China, from Vietnam to Cuba, from Chile to Nicaragua, where the existence of capitalism has been challenged, and the furies of intervention, blockade and civil strife have not descended in response. Any viable transition to socialism in the West must seek to curtail that pattern: but to shrink from or to ignore it is to depart from the world of the possible altogether**. In the same way, **to construct an economic model of socialism in one advanced country is a legitimate exercise: but to extract it from any computable relationship with a surrounding, and necessarily opposing, capitalist environment—as this work does—is to locate it in thin air**.

**That causes extinction**

**Kothari 1982**

Kothari, profrssor of political science – University of Delhi, ‘82

(Rajni, Towards a Just Social Order, Alternatives, p. 571)

**Attempts at global economic reform could also lead to a world racked by increasing turbulence, a greater sense of insecurity among the major centres of power -- and hence to a further tightening of the structures of domination** and domestic repression – **producing** in their wake **an intensification of** the old **arms race and militarization of regimes, encouraging** regional **conflagrations and setting the stage for eventual global holocaust**.

**Transition fails—causes war—consumption would reemerge even worse—try or die assessments are wrong**

George **Monbiot**. **2009**. The Guardian, Is there any point in fighting to stave off industrial apocalypse?, [www.guardian.co.uk/commentisfree/cif-green/2009/aug/17/environment-climate-change](http://www.guardian.co.uk/commentisfree/cif-green/2009/aug/17/environment-climate-change)

I detect in your writings, and in the conversations we have had, an attraction towards – almost a yearning for – this apocalypse, a sense that you see it as a cleansing fire that will rid the world of a diseased society. If this is your view, I do not share it. I'm sure we can agree that **the immediate consequences of collapse would be hideous: the breakdown of the systems that keep most of us alive; mass starvation; war. These alone** surely **give us sufficient reason to fight on**, **however faint our chances appear**. But even if we were somehow able to put this out of our minds, I believe that **what is likely to come out on the other side will be worse than our current settlement.**¶ Here are three observations: 1 **Our species** (unlike most of its members) **is** tough and **resilient**; 2 **When civilisations collapse, psychopaths take over;** 3 **We seldom learn from others' mistakes**.¶ From the first observation, this follows: even if you are hardened to the fate of humans, you can surely see that our species will not become extinct without causing the extinction of almost all others. **However hard we fall, we will recover sufficiently to land another hammer blow on the biosphere**. We will continue to do so until there is so little left that even Homo sapiens can no longer survive. This is the ecological destiny of a species possessed of outstanding intelligence, opposable thumbs and an ability to interpret and exploit almost every possible resource – in the absence of political restraint.¶ From the second and third observations, this follows: **instead of gathering as free collectives** of happy householders, **survivors of** this **collapse will be subject to the will of people seeking to monopolise remaining resources. This will** is likely to **be imposed through violence. Political accountability will be a distant memory. The chances of conserving any resource in these circumstances are** approximately **zero**. **The human and ecological consequences of** the first global **collapse are likely to persist for** many **generations**, perhaps for our species' remaining time on earth**. To imagine that good could come of the involuntary failure of industrial civilisation is also to succumb to denial.** The answer to your question – what will we learn from this collapse? – is nothing.

**Ext- Transition Link**

**( ) Turn – Transition wars – Alternative causes them.**

**Aligica ’03**

(Paul Aligica, Fellow at the Mercatus Center at George Mason University and Adjunct Fellow at the Hudson Institute, “The Great Transition and the Social Limits to Growth: Herman Kahn on Social Change and Global Economic Development”, April 21, http://www.hudson.org/index.cfm?fuseaction=publication\_details&id=2827)

Stopping things would mean if not to engage in an experiment to change the human nature, at least in an equally difficult experiment in altering powerful cultural forces: "We firmly believe that despite the arguments put forward by people who would like to 'stop the earth and get off,' it is simply impractical to do so. Propensity to change may not be inherent in human nature, but it is firmly embedded in most contemporary cultures. People have almost everywhere become curious, future oriented, and dissatisfied with their conditions. They want more material goods and covet higher status and greater control of nature. Despite much propaganda to the contrary, they believe in progress and future" (Kahn, 1976, 164). As regarding the critics of growth that stressed the issue of the gap between rich and poor countries and the issue of redistribution, Kahn noted that what most people everywhere want was visible, rapid improvement in their economic status and living standards, and not a closing of the gap (Kahn, 1976, 165). The people from poor countries have as a basic goal the transition from poor to middle class. The other implications of social change are secondary for them. Thus a crucial factor to be taken into account is that while the zero-growth advocates and their followers may be satisfied to stop at the present point, most others are not. Any serious attempt to frustrate these expectations or desires of that majority is likely to **fail and/or create disastrous counter reactions.** Kahn was convinced that "any concerted attempt to stop or even slow 'progress' appreciably (that is, to be satisfied with the moment) **is catastrophe-prone**". At the minimum, "it would probably require the creation of extraordinarily repressive governments or movements-and probably a repressive international system" (Kahn, 1976, 165; 1979, 140-153). The pressures of overpopulation, national security challenges and poverty as well as the revolution of rising expectations could be **solved only in a continuing growth environment**. Kahn rejected the idea that continuous growth would generate political repression and absolute poverty. On the contrary, it is the limits-to-growth position "which creates low morale, destroys assurance, undermines the legitimacy of governments everywhere, erodes personal and group commitment to constructive activities and encourages obstructiveness to reasonable policies and hopes". Hence this position "increases enormously the costs of creating the resources needed for expansion, makes more likely misleading debate and misformulation of the issues, and make less likely constructive and creative lives". Ultimately "it is precisely this position the one that increases the potential for the kinds of disasters which most at its advocates are trying to avoid" (Kahn, 1976, 210; 1984).

### AT Transition

#### No transition

Barnhizer ‘6

(David R., Emeritus Professor at Cleveland State University’s Cleveland-Marshall College of Law; “Waking from Sustainability's "Impossible Dream": The Decisionmaking Realities of Business and Government.” 2006 Georgetown International Environmental Law Review. 18 Geo. Int'l Envtl. L. Rev. 595 L/N)

We face a combination of ecological, social, and economic crises. These crises involve the ability to fund potentially conflicting obligations for the provision of social benefits, health care, education, pensions, and poverty alleviation. They also include the need for massive expenditures to "fix" what we have already broken. n59 Part of the challenge is that in the United States and Europe we have made fiscal promises that we cannot keep. We also have vast economic needs for [\*620] continuing wealth generation as a precondition for achieving social equity on national and global levels. Figuring out how to reduce some of those obligations, eliminate others, and rebuild the core and vitality of our system must become a part of any honest social discourse. Even Pollyanna would be overwhelmed by the choices we face. There will be significant pain and sacrifice in any action we take. But failing to take prompt and effective action will produce even more catastrophic consequences. The scale of social needs, including the need for expanded productive activity, has grown so large that it cannot be shut off at all, and certainly not abruptly. It cannot even be ratcheted down in any significant fashion without producing serious harms to human societies and hundreds of millions of people. Even if it were possible to shift back to systems of local self-sufficiency, the consequences of the transition process would be catastrophic for many people and even deadly to the point of continual conflict, resource wars, increased poverty, and strife. What are needed are concrete, workable, and pragmatic strategies that produce effective and intelligently designed economic activity in specific contexts and, while seeking efficiency and conservation, place economic and social justice high on a list of priorities. n60 The imperative of economic growth applies not only to the needs and expectations of people in economically developed societies but also to people living in nations that are currently economically underdeveloped. Opportunities must be created, jobs must be generated in huge numbers, and economic resources expanded to address the tragedies of poverty and inequality. Unfortunately, natural systems must be exploited to achieve this; we cannot return to Eden. The question is not how to achieve a static state but how to achieve what is needed to advance social justice while avoiding and mitigating the most destructive consequences of our behavior. Many developing country groups involved in efforts to protect the environment and resist the impacts of free trade on their communities have been concerned with the harmful effects of economic change. Part of the concern is the increased scale of economic activity. Some concerns relate to who benefits and who loses in the changing context imposed by globalization. These concerns are legitimate and understandable. So are the other deep currents running beneath their political positions, including those of resistance to change of any kind and a [\*621] rejection of the market approach to economic activities. In the system described inaccurately as free market capitalism, economic activity not only breaks down existing systems, it creates new systems and--as Joseph Schumpeter observed--continually repeats the process through cycles of "creative destruction." n61 This pattern of creative destruction unfolds as necessarily and relentlessly as does the birth-maturation-death-rebirth cycle of the natural environment. This occurs even in a self-sufficient or autarkic market system capable of managing all variables within its closed dominion. But when the system breaks out of its closed environment, the ability of a single national actor to control the system's dynamics erodes and ultimately disappears in the face of differential conditions, needs, priorities, and agendas. Globalization's ability to produce wealth for a particular group simultaneously produces harms to different people and interests and generates unfair resource redistribution within existing cultures. This is an unavoidable consequence of globalization. n62 The problem is that globalization has altered the rules of operation of political, economic, and social activities, and in doing so multiplied greatly our ability to create benefit and harm. n63 While some understandably want the unsettling and often chaotic effects of globalization to go away, it can only be dealt with, not reversed. The system in which we live and work is no longer closed. There are few contexts not connected to the dynamics of some aspect of the extended economic and social systems resulting from globalization. This means the wide ranging and incompatible variables of a global economic, human rights, and social fairness system are resulting in conflicts and unanticipated interpenetrations that no one fully understands, anticipates, or controls. n64 Local [\*622] self-sufficiency is the loser in this process. It can remain a nostalgic dream but rarely a reality. Except for isolated cultures and niche activities, there is very little chance that anyone will be unaffected by this transformational process. Change is the constant, and it will take several generations before we return to a period of relative stasis. Even then it will only be a respite before the pattern once again intensifies.

#### Even dedev hacks concede the transition causes multiple regional nuclear wars

Lewis 98
Chris H. Lewis, Professor of American Studies at the University of Colorado-Boulder, 1998, in The Coming Age of Scarcity, ed Dobkowski and Wallimann, p 56-57

Most critics would argue, probably correctly, that instead of allowing underdeveloped countries to withdraw from the global economy and undermine the economies of the developed world, the United States, Europe, Japan, and others will fight neocolonial wars to force these countries to remain within this collapsing global economy. These neocolonial wars will result in mass death, suffering, and even regional nuclear wars. If First World countries choose military confrontation and political repression to maintain the global economy, then we may see mass death and genocide on a global scale that will make the deaths of World War II pale in comparison. However, these neocolonial wars, fought to maintain the developed nations' economic and political hegemony, will cause the final collapse of our global industrial civilization. These wars will so damage the complex economic and trading networks and squander material, biological, and energy resources that they will undermine the global economy and its ability to support the earth's 6 to 8 billion people. This would be the worst-case scenario for the collapse of global civilization.

#### Market capitalism is inevitable – crisis empirically promotes capitalist growth

Zakaria 2009,

serves on the board of Yale University, The Council on Foreign Relations, The Trilateral Commission, and Shakespeare and Company.; received a B.A. from Yale and a Ph.D. in political science from Harvard; editor of Newsweek International,

Fareed, “The Capitalist Manifesto: Greed Is Good”, Jun 13, 2009, http://www.newsweek.com/id/201935/output/print)

A specter is haunting the world—the return of capitalism. Over the past six months, politicians, businessmen and pundits have been convinced that we are in the midst of a crisis of capitalism that will require a massive transformation and years of pain to fix. Nothing will ever be the same again. "Another ideological god has failed," the dean of financial commentators, Martin Wolf, wrote in the Financial Times. Companies will "fundamentally reset" the way they work, said the CEO of General Electric, Jeffrey Immelt. "Capitalism will be different," said Treasury Secretary Timothy Geithner. No economic system ever remains unchanged, of course, and certainly not after a deep financial collapse and a broad global recession. But over the past few months, even though we've had an imperfect stimulus package, nationalized no banks and undergone no grand reinvention of capitalism, the sense of panic seems to be easing. Perhaps this is a mirage—or perhaps the measures taken by states around the world, chiefly the U.S. government, have restored normalcy. Every expert has a critique of specific policies, but over time we might see that faced with the decision to underreact or overreact, most governments chose the latter. That choice might produce new problems in due course—a topic for another essay—but it appears to have averted a systemic breakdown. There is still a long road ahead. There will be many more bankruptcies. Banks will have to slowly earn their way out of their problems or die. Consumers will save more before they start spending again. Mountains of debt will have to be reduced. American capitalism is being rebalanced, reregulated and thus restored. In doing so it will have to face up to long-neglected problems, if this is to lead to a true recovery, not just a brief reprieve. Many experts are convinced that the situation cannot improve yet because their own sweeping solutions to the problem have not been implemented. Most of us want to see more punishment inflicted, particularly on America's bankers. Deep down we all have a Puritan belief that unless they suffer a good dose of pain, they will not truly repent. In fact, there has been much pain, especially in the financial industry, where tens of thousands of jobs, at all levels, have been lost. But fundamentally, markets are not about morality. They are large, complex systems, and if things get stable enough, they move on. Consider our track record over the past 20 years, starting with the stock-market crash of 1987, when on Oct. 19 the Dow Jones lost 23 percent, the largest one-day loss in its history. The legendary economist John Kenneth Galbraith wrote that he just hoped that the coming recession wouldn't prove as painful as the Great Depression. It turned out to be a blip on the way to an even bigger, longer boom. Then there was the 1997 East Asian crisis, during the depths of which Paul Krugman wrote in a Fortune cover essay, "Never in the course of economic events—not even in the early years of the Depression—has so large a part of the world economy experienced so devastating a fall from grace." He went on to argue that if Asian countries did not adopt his radical strategy—currency controls—"we could be looking at the kind of slump that 60 years ago devastated societies, destabilized governments, and eventually led to war." Only one Asian country instituted currency controls, and partial ones at that. All rebounded within two years. Each crisis convinced observers that it signaled the end of some new, dangerous feature of the economic landscape. But often that novelty accelerated in the years that followed. The 1987 crash was said to be the product of computer trading, which has, of course, expanded dramatically since then. The East Asian crisis was meant to end the happy talk about "emerging markets," which are now at the center of world growth. The collapse of Long-Term Capital Management in 1998—which then–Treasury secretary Robert Rubin described as "the worst financial crisis in 50 years"—was meant to be the end of hedge funds, which then massively expanded. The technology bubble's bursting in 2000 was supposed to put an end to the dreams of oddball Internet startups. Goodbye, Pets.com; hello, Twitter. Now we hear that this crisis is the end of derivatives. Let's see. Robert Shiller, one of the few who predicted this crash almost exactly—and the dotcom bust as well—argues that in fact we need more derivatives to make markets more stable. A few years from now, strange as it may sound, we might all find that we are hungry for more capitalism, not less. An economic crisis slows growth, and when countries need growth, they turn to markets. After the Mexican and East Asian currency crises—which were far more painful in those countries than the current downturn has been in America—we saw the pace of market-oriented reform speed up. If, in the years ahead, the American consumer remains reluctant to spend, if federal and state governments groan under their debt loads, if government-owned companies remain expensive burdens, then private-sector activity will become the only path to create jobs. The simple truth is that with all its flaws, capitalism remains the most productive economic engine we have yet invented. Like Churchill's line about democracy, it is the worst of all economic systems, except for the others. Its chief vindication today has come halfway across the world, in countries like China and India, which have been able to grow and pull hundreds of millions of people out of poverty by supporting markets and free trade. Last month India held elections during the worst of this crisis. Its powerful left-wing parties campaigned against liberalization and got their worst drubbing at the polls in 40 years.

#### No transition – decline devastates movements

Mead 9

2/4, Walter Russell, Henry A. Kissinger Senior Fellow in U.S. Foreign Policy at the Council on Foreign Relations, Only Makes You Stronger: Why the recession bolstered America, The New Republic

Every crisis is different, but there seem to be reasons why, over time, financial crises on balance reinforce rather than undermine the world position of the leading capitalist countries. Since capitalism first emerged in early modern Europe, the ability to exploit the advantages of rapid economic development has been a key factor in international competition. Countries that can encourage--or at least allow and sustain--the change, dislocation, upheaval, and pain that capitalism often involves, while providing their tumultuous market societies with appropriate regulatory and legal frameworks, grow swiftly. They produce cutting-edge technologies that translate into military and economic power. They are able to invest in education, making their workforces ever more productive. They typically develop liberal political institutions and cultural norms that value, or at least tolerate, dissent and that allow people of different political and religious viewpoints to collaborate on a vast social project of modernization--and to maintain political stability in the face of accelerating social and economic change. The vast productive capacity of leading capitalist powers gives them the ability to project influence around the world and, to some degree, to remake the world to suit their own interests and preferences. This is what the United Kingdom and the United States have done in past centuries, and what other capitalist powers like France, Germany, and Japan have done to a lesser extent. In these countries, the social forces that support the idea of a competitive market economy within an appropriately liberal legal and political framework are relatively strong. But, in many other countries where capitalism rubs people the wrong way, this is not the case. On either side of the Atlantic, for example, the Latin world is often drawn to anti-capitalist movements and rulers on both the right and the left. Russia, too, has never really taken to capitalism and liberal society--whether during the time of the czars, the commissars, or the post-cold war leaders who so signally failed to build a stable, open system of liberal democratic capitalism even as many former Warsaw Pact nations were making rapid transitions. Partly as a result of these internal cultural pressures, and partly because, in much of the world, capitalism has appeared as an unwelcome interloper, imposed by foreign forces and shaped to fit foreign rather than domestic interests and preferences, many countries are only half-heartedly capitalist. When crisis strikes, they are quick to decide that capitalism is a failure and look for alternatives. So far, such half-hearted experiments not only have failed to work; they have left the societies that have tried them in a progressively worse position, farther behind the front-runners as time goes by. Argentina has lost ground to Chile; Russian development has fallen farther behind that of the Baltic states and Central Europe. Frequently, the crisis has weakened the power of the merchants, industrialists, financiers, and professionals who want to develop a liberal capitalist society integrated into the world. Crisis can also strengthen the hand of religious extremists, populist radicals, or authoritarian traditionalists who are determined to resist liberal capitalist society for a variety of reasons. Meanwhile, the companies and banks based in these societies are often less established and more vulnerable to the consequences of a financial crisis than more established firms in wealthier societies. As a result, developing countries and countries where capitalism has relatively recent and shallow roots tend to suffer greater economic and political damage when crisis strikes--as, inevitably, it does. And, consequently, financial crises often reinforce rather than challenge the global distribution of power and wealth. This may be happening yet again.

### Too Late

#### Past the tipping point and dedev doesn’t solve

Savory 8

Allan Savory, Savory Center for Holistic Management Founder, received the Australian International Banksia Award for the person or organization doing the most for the environment on a global scale, 2008, A Global Strategy for Addressing Global Climate Change, holisticmanagement.org.au/PDF/A+Global+Strategy+for+Addressing+Climate+Change+2%5B1%5D.pdf

Simplistic and counter intuitive as it may be the fate of civilization today hangs on two slender threads – the correct management of livestock and the rapid development of benign energy to sustain cities and mass transport. Excessive emissions of carbon and other gases from fossil fuels are not the only causes of global climate change, nor are they the greatest cause of climate change, as popularly espoused. Humans began to change climate in ancient times through their actions that began to disrupt complex living communities. Diminishing biodiversity and replacing the role of large herbivores and predators in the world's savannas with fire. Ancient practices, continued to this day, ensured land degradation (desertification) and increased atmospheric carbon dioxide and other gases from fires and soil. This process of environment destruction had destroyed many civilizations before coal and oil were discovered or widely used. Essential as it is, stopping carbon emissions entirely will not alone solve the potential catastrophe facing humanity because a great part of what amounts to global environmental malfunction cannot be attributed to carbon emissions. If tomorrow we somehow achieved zero emissions from fossil fuels we still would not avert major catastrophe. Grassland and savanna burning would continue, desertification would continue to accelerate with soils increasingly unable to store either carbon or water and the climate continued to change.

### AT Environment

#### Transition hurts the environment

Bast 94

Joseph Bast, president, Heartland Institute, ECO-SANITY, 1994, p. 193

The superior economic and environmental performance of capitalism is probably not what many environmentally conscious readers expected. The images that have stayed with us from grade school or college classes are of the industrial revolution’s smoky factories, sweatshops, violent strikes, child labor, and colonialism. A system that would allow such atrocities, we feel almost instinctively, cannot be trusted to protect the rights of workers or a fragile environment. Even a professional writer on economics, the aforementioned Frances Cairncross, writes: For it is only government that can decide how much society should value the environment, and how that value should be inserted into economic transactions. The market, that mechanism that so marvelously directs human activity to supply human needs, often has no way of putting a proper price on environmental resources, It is time to update our attitudes toward capitalism, and particularly our understanding of how it puts “a proper price on environmental resources.” Capitalism is based on a system of markets and private property rights. When rights are correctly defined and enforced, capitalism will protect the environment for four reasons: ti It creates incentives to do the right things; ti It generates and distributes needed information; ti It enables people to trade things or rights in order to solve problems that otherwise can’t be solved; and r/ It enables property rights to evolve over time. The free-enterprise system creates wealth, rewards efficiency, and \_ protects the environment better than any other system yet devised by man. The tireless campaign against this system by some quarters of the environmental movement is wrong-headed and counterproductive.

### Solves War

#### And, their defenses don’t apply – there’s strong historical data that economic interdependency solves war, but decline leads to escalatory global conflict

Royal 10

Jedediah, Director of Cooperative Threat Reduction at the U.S. Department of Defense, 2010, Economic Integration, Economic Signaling and the Problem of Economic Crises, in Economics of War and Peace: Economic, Legal and Political Perspectives, ed. Goldsmith and Brauer, p. 213-215

Less intuitive is how periods of economic decline may increase the likelihood of external conflict. Political science literature has contributed a moderate degree of attention to the impact of economic decline and the security and defence behaviour of interdependent stales. Research in this vein has been considered at systemic, dyadic and national levels. Several notable contributions follow. First, on the systemic level. Pollins (20081 advances Modclski and Thompson's (1996) work on leadership cycle theory, finding that rhythms in the global economy are associated with the rise and fall of a pre-eminent power and the often bloody transition from one pre-eminent leader to the next. As such, exogenous shocks such as economic crises could usher in a redistribution of relative power (see also Gilpin. 19SJ) that leads to uncertainty about power balances, increasing the risk of miscalculation (Fcaron. 1995). Alternatively, even a relatively certain redistribution of power could lead to a permissive environment for conflict as a rising power may seek to challenge a declining power (Werner. 1999). Separately. Pollins (1996) also shows that global economic cycles combined with parallel leadership cycles impact the likelihood of conflict among major, medium and small powers, although he suggests that the causes and connections between global economic conditions and security conditions remain unknown. Second, on a dyadic level. Copeland's (1996. 2000) theory of trade expectations suggests that 'future expectation of trade' is a significant variable in understanding economic conditions and security behaviour of states. He argues that interdependent states are likely to gain pacific benefits from trade so long as they have an optimistic view of future trade relations. However, if the expectations of future trade decline, particularly for difficult to replace items such as energy resources, the likelihood for conflict increases, as states will be inclined to use force to gain access to those resources. Crises could potentially be the trigger for decreased trade expectations either on its own or because it triggers protectionist moves by interdependent states.4 Third, others have considered the link between economic decline and external armed conflict at a national level. Mom berg and Hess (2002) find a strong correlation between internal conflict and external conflict, particularly during periods of economic downturn. They write. The linkage, between internal and external conflict and prosperity are strong and mutually reinforcing. Economic conflict lends to spawn internal conflict, which in turn returns the favour. Moreover, the presence of a recession tends to amplify the extent to which international and external conflicts self-reinforce each other (Hlomhen? & Hess. 2(102. p. X9> Economic decline has also been linked with an increase in the likelihood of terrorism (Blombcrg. Hess. & Wee ra pan a, 2004). which has the capacity to spill across borders and lead to external tensions. Furthermore, crises generally reduce the popularity of a sitting government. "Diversionary theory" suggests that, when facing unpopularity arising from economic decline, sitting governments have increased incentives to fabricate external military conflicts to create a 'rally around the flag' effect. Wang (1996), DcRoucn (1995), and Blombcrg. Hess, and Thacker (2006) find supporting evidence showing that economic decline and use of force arc at least indirecti) correlated. Gelpi (1997). Miller (1999). and Kisangani and Pickering (2009) suggest that Ihe tendency towards diversionary tactics arc greater for democratic states than autocratic states, due to the fact that democratic leaders are generally more susceptible to being removed from office due to lack of domestic support. DeRouen (2000) has provided evidence showing that periods of weak economic performance in the United States, and thus weak Presidential popularity, are statistically linked lo an increase in the use of force. In summary, rcccni economic scholarship positively correlates economic integration with an increase in the frequency of economic crises, whereas political science scholarship links economic decline with external conflict al systemic, dyadic and national levels.' This implied connection between integration, crises and armed conflict has not featured prominently in the economic-security debate and deserves more attention.

### Brain Chemistry

#### And, brain chemistry

Allenby 7

(Brad, Professor of Civil and Environmental Engineering at Arizona State University, “The Benefits of Our Hardwired Need to Consume,” GreenBiz.com, March 7, 2007, http://www.greenbiz.com/blog/2007/03/08/the-benefits-our-hardwired-need-consume, AD: 7-6-9)

That humans are inclined to make choices that offer more pleasure than pain comes as no surprise, but a look at how marketing -- whether of consumer goods or environmental causes -- offers intriguing ideas on how to create change, Brad Allenby writes. The issue of consumption is perhaps one of the most vexed in the environmental and sustainability discourses, especially when contrasting the United States, which tends towards more of a free market, free consumer choice philosophy, with the European Union. Some interesting recent work indicates that it may also be much more complex than we generally realize. Take the recent work by George Lowenstein at Carnegie-Mellon University, Brian Knutson of Stanford, and Drazen Prelec of MIT. In order to better understand the brain chemistry underlying consumption, they presented product choices, then payment choices, to volunteers while scanning their brains with functional magnetic resonance imaging. They found that the nucleus accumbens, which is involved in processing reward stimuli (food, recreational drugs) was activated by presentation of desirable products such as chocolates, while the insular cortex, linked to expectations of pain, was activated by price information. After both product and price were presented, the prefrontal cortex, an area associated with rational calculation, engaged as well. This not only indicated that modern behavior ("rational" consumption choices) are piggybacking on neural circuits evolved for much different circumstances (not a surprise), but leads to some interesting if speculative possibilities. A fairly straightforward interpretation of these data is the suggestion that, at the neural level, consumption is affected, perhaps significantly, by a weighing of immediate pleasure versus immediate pain, rather than rational calculation, which only comes later. This may not sound revolutionary, especially to marketing gurus, but it nonetheless has some substantial implications. To begin with, it emphasizes the importance of marketing and presentation in consumption: if the benefits of a product can be made explicit and attractive from the beginning, the decision to purchase can be encouraged before the "rational weighing" process is even engaged. This might argue against the traditional environmental project of reducing consumption by generating large amounts of environmental information to be appended to particular products: if the V8 GT or large SUV is initially appealing, information on fuel consumption may be only marginally relevant because it enters the cognitive processes after the purchasing decision is essentially made. Conceptually, in other words, the environmental approach to reducing consumption through product specific information implicitly accepts "the rational consumer" model of human behavior: provide more information on social and environmental costs, and consumers, rationally balancing their options, will choose the more “rational” outcome -- that is, environmental preferability (remembering that consumers may not share the values prioritization of environmentalists). This appears to be an oversimplistic, if not incorrect, model of consumer cognition. However, while this research might discourage product-by-product information schemes, it might support general anti-consumption campaigns. After all, such campaigns when successful make the act of consumption itself more negative emotionally, and thus enhance the expectations of pain associated with any consumption (the downsides of consistently negative messages from environmentalists are well known, however, and might generate consumer backlash that outweighs such consumption reduction effects over time). Another, perhaps more difficult, implication is the possibility that use of credit, which on balance reduces the immediate “pain” of a purchase because nothing material is apparently given up in exchange, creates a context within which consumers are inherently weighted towards consumption (the researchers have not yet tested this hypothesis). The growth and differentiation of credit mechanisms, and the dematerialization of money, are long-term trends in developed economies, and a major mechanism supporting the continued growth in complexity of financial and economic structures. Thus, it becomes problematic for anti-consumption activists if the inherent dynamics and structure of economic systems as they evolve shifts the balance between consumption and pain towards consumption. That consumption has deep emotional dimensions, and that access to credit encourages economic growth, and along with it consumption, are not revolutionary findings. But that consumption decisions engage particular brain pathways in ways that affect the effectiveness of environmental campaigns and projects is both interesting and important, even if at this point it may be difficult to be sure quite how these new discoveries cut. At the least, however, the demonstration that even apparently straightforward decisions are, in fact, grounded in pre-rational cognitive information processing suggests that environmental and sustainability activists need to become more sophisticated in the way they think about, and seek to socially engineer, consumption decisions. For social engineering is a double-edged sword, and especially in areas like consumption, increasingly understood as involving complex and fundamental behaviors, such efforts can rebound against those who seek to impose such behavior change, regardless of their good intentions.

## Digger

### Framework

#### Framework: the affirmative must defend a topical plan, the negative must defend the status quo or a competing policy option.

#### a) Best for real world education – our fw most closely resembles how policymakers decide on advocacy.

#### b) Fairness – our interp provides a clear way to compare two advocacies by weighing impacts which is essential to fairness. Their fw makes opportunity cost impossible and invites judge intervention.

#### c) Predictability – our fw ensures predictable aff ground because we predict args based upon our aff literature.

#### d) Infinitely regressive – there are an infinite number of philosophical perspectives from which they can argue

**Extinction O/W**

**Life should be valued as apriori – it precedes the ability to value anything else**

Amien **Kacou. 2008**. WHY EVEN MIND? On The A Priori Value Of “Life”, Cosmos and History: The Journal of Natural and Social Philosophy, Vol 4, No 1-2 (2008) cosmosandhistory.org/index.php/journal/article/view/92/184

Furthermore, that manner of **finding things good** that is in pleasure **can certainly not exist in any world without consciousness (i.e., without “life,”** as we now understand the word)—slight analogies put aside. In fact, we can begin to develop a more sophisticated definition of the concept of “pleasure,” in the broadest possible sense of the word, as follows: it is the common psychological element in all psychological experience of goodness (be it in joy, admiration, or whatever else). In this sense, pleasure can always be pictured to “mediate” all awareness or perception or judgment of goodness: there is pleasure in all consciousness of things good; pleasure is the common element of all conscious satisfaction. In short, it is simply the very experience of liking things, or the liking of experience, in general. In this sense, **pleasure is, not only uniquely characteristic of life but also, the core expression of goodness in life—the most general sign or phenomenon for favorable conscious valuation**, in other words. This does not mean that “good” is absolutely synonymous with “pleasant”—what we value may well go beyond pleasure. (The fact that we value things needs not be reduced to the experience of liking things.) However, what we value beyond pleasure remains a matter of speculation or theory. Moreover, we note that a variety of things that may seem otherwise unrelated are correlated with pleasure—some more strongly than others. In other words, there are many things the experience of which we like. For example: the admiration of others; sex; or rock-paper-scissors. But, again, what they are is irrelevant in an inquiry on a priori value—what gives us pleasure is a matter for empirical investigation. Thus, we can see now that, in general, **something primitively valuable is attainable in living—that is, pleasure itself.** And it seems equally clear that we have a priori logical reason to pay attention to the world in any world where pleasure exists. Moreover, **we can now also articulate a foundation for a security interest in our life: since the good of pleasure can be found in living** (to the extent pleasure remains attainable),[17] **and only in living, therefore, a priori, life ought to be continuously (and indefinitely) pursued at least for the sake of preserving the possibility of finding that good.** However, this platitude about the value that can be found in life turns out to be, at this point, insufficient for our purposes. It seems to amount to very little more than recognizing that our subjective desire for life in and of itself shows that life has some objective value. For what difference is there between saying, “living is unique in benefiting something I value (namely, my pleasure); therefore, I should desire to go on living,” and saying, “I have a unique desire to go on living; therefore I should have a desire to go on living,” whereas the latter proposition immediately seems senseless? In other words, “life gives me pleasure,” says little more than, “I like life.” Thus, we seem to have arrived at the conclusion that **the fact that we already have some (subjective) desire for life shows life to have some (objective) value.** But, if that is the most we can say, then it seems our enterprise of justification was quite superficial, and the subjective/objective distinction was useless—for all we have really done is highlight the correspondence between value and desire. Perhaps, our inquiry should be a bit more complex.

### Ontology Focus Bad

#### Debates about ontology are irrelevant to real world policy debates – pragmatism is more effective at facilitating social change

David McClean. 2001. philosopher, writer and business consultant, conducted graduate work in philosophy at NYU. “The cultural left and the limits of social hope” http://www.american-philosophy.org/archives/past\_conference\_programs/pc2001/Discussion%20papers/david\_mcclean.htm

There is a lot of philosophical prose on the general subject of social justice. Some of this is quite good, and some of it is quite bad. What distinguishes the good from the bad is not merely the level of erudition. Displays of high erudition are gratuitously reflected in much of the writing by those, for example, still clinging to Marxian ontology and is often just a useful smokescreen which shrouds a near total disconnect from empirical reality. This kind of political writing likes to make a lot of references to other obscure, jargon-laden essays and tedious books written by other true believers - the crowd that takes the fusion of Marxian and Freudian private fantasies seriously. Nor is it the lack of scholarship that makes this prose bad. Much of it is well "supported" by footnotes referencing a lode of other works, some of which are actually quite good. Rather, what makes this prose bad is its utter lack of relevance to extant and critical policy debates, the passage of actual laws, and the amendment of existing regulations that might actually do some good for someone else. The writers of this bad prose are too interested in our arrival at some social place wherein we will finally emerge from our "inauthentic" state into something called "reality." Most of this stuff, of course, comes from those steeped in the Continental tradition (particularly post-Kant). While that tradition has much to offer and has helped shape my own philosophical sensibilities, it is anything but useful when it comes to truly relevant philosophical analysis, and no self-respecting Pragmatist can really take seriously the strong poetry of formations like "authenticity looming on the ever remote horizons of fetishization." What Pragmatists see instead is the hope that we can fix some of the social ills that face us if we treat policy and reform as more important than Spirit and Utopia.

### Permutation

#### Perm: do both.

#### Only by combining methods can we avoid fragmentation and facilitate real political change to prevent planetary extinction – even if the perm risks cooption the apocalyptic imagery of the aff is rejuvenating to ecocriticism

JL Schatz. 2012. Professor of English and Feminist Evolutionary Studies & Director of Debate at Binghamton University. The Importance of Apocalypse: The Value of End-Of-The-World Politics While Advancing Ecocriticism. Journal of Ecocriticism: A New Journal of Nature, Society and Literature. 4(2)

There are three things ecocriticism must keep in mind to retain its effectiveness in the poststructuralist era. First and foremost ecocritics must not allow their infighting over tactics and academic maneuvers to become debilitating. Ecocritics have enough on their plate fighting dominant political institutions. To never directly take up arms against ecologically destructive practices will merely cede potential avenues of resistance while we fight amongst ourselves. We must take from those ecocritics we partially disagree with what we can and then operate from a different platform so as to always be spectral in our resistance. Adopting varied tactics enables an ecological coalition centered on the connectedness that arises from the belief that we all have a shared stake in the planet. Awakening to our collective stake in the environment can overcome the illusionary boundaries of the nation-­‐state, species, or even sentience. Every molecule of the Earth’s ecology is interconnected. When one part dies we all stand on the brink of extinction. For ecocriticism to embrace this interconnection it must not erect borders between different approaches so long as the foundation of the struggle is premised upon the commons of our universe. Unfortunately, “what characterizes much campus left discourse is a substitution of moral rhetoric about evil policies[, leaving] ... absent ... a sober reckoning with the preoccupations and opinions of the vast majority of Americans ... who do not believe that the discourse of ‘anti-­‐imperialism’ speaks to their lives” (Isaac). As a result, there is a need for ecocritics to not just speak to the choir that mostly already agrees with them. They must also speak to the populations who don’t intuitively see the link between imperialism, technology, and capitalism with environmental destruction. Apocalyptic rhetoric can do precisely that because of its underlying tenant of self-­preservation. The above point is absolutely crucial because ecocriticism cannot be effective if its focus never goes beyond the individual alone. No single person is the entire ecology so no individual can save it. While each individual undoubtedly impacts the environment and can cause change, no large scale transformation can take place if we never inspire collective action. In evolutionary terms, ideas, thoughts, and actions must be passed on in order to survive. For that to happen it takes a combined effort, even though it can start by a single mutation. Luke reminds us that the typical consumer does not control the critical aspects of his or her existence[.] ... The absurd claim that average consumers only need to shop, bicycle, or garden their way to an ecological future merely moves most of the responsibility and much of the blame away from the institutional centers of power whose decisions actually maintain the wasteful, careless ways of material exchange[. It also] ... ignores how corporate capital, big government, and professional experts pushed the practices of ... affluent society ... as a political strategy to sustain economic growth, forestall mass discontent, and empower scientific authority. People did choose to live this way, but their choices were made from a very narrow array of alternatives presented to them as rigidly structured, prepackaged menus of very limited options. (Luke, 1997: 127-­‐128) In turn, ecocritics must not displace the blame away from current hegemonic structures by calling on individuals to act alone. Instead ecocriticism must articulate its arguments to influence change in both institutions of power and the very people whose mindsets make up the current collective. Many environmental groups have been able to do precisely that. For instance, “NGOs and social movements active in global civil society have ... introduce[ed] ... dystopian scenarios ... as rhetorical devices that act as ‘wake-­up calls’... to jolt citizens out of their complacency and ... foster ... public deliberation about the potential cataclysms facing humankind” (Kurasawa 464). Ecocritics must not cut down such NGOs for adopting end-­of-­the-­world tactics even though their rhetoric might get co-opted when specific policies get enacted. Secondly, ecocriticism must never forget that what they do is politics. There are two implications to this. On the one hand it means that activists who directly lobby the government should not denounce the academically-oriented ecocritic for struggling within the academy. On the other hand it means that those who denounce the managerial tendencies that come along with governmental policies shouldn’t condemn activists who operate within the system. Instead of attacking one another, ecocritics should understand opposing discourses and ontologies as part of a spectral strategy that works against the environmental imperialism of the status-quo. We should take each opportunity for its fullest even in the face of failure. Once we acknowledge the virtual inevitability of co-optation the emphasis should be on creating successive struggles from a variety of standpoints. Captain Paul Watson, for instance, does not merely pack up his flagship the Steve Irwin and head home after the Japanese whaling season ends. He goes on to fight for seals, dolphins, and a number of other animals all the while participating within a larger discourse surrounding planetary ecology. Not all of Watson’s tactics have been successful. Neither has anyone else’s. However, that doesn’t mean we should give up. Quite the opposite. For example, just because revolutionaries like Che Guevara have been turned into trendy t-­‐shirts, fueling the industries of capitalism, doesn’t mean he shouldn’t have fought against imperialism in the first place. In the same way, just because environmental activists are inevitably going to fall victim to constructing an image of the planet on the brink of extinction, it doesn’t mean that we should discount their battles against such destruction. Their counter constructions enable a contestation over what it means to be human in relationship to the rest of the world. Absent these counter narratives only a singular construction of anthropocentric managerial domination would exist. A consequence to this second point is that the willingness to continually deploy different tactics is more powerful for ecocriticism than coming up with the perfect strategy. That way even when we become co-opted in one place we are already struggling from somewhere else. In turn, ecocriticism should focus on the underlying motivations that compel others to act in order to determine which ecocritics to be allies with. Through this way human beings can repair the willed manipulation inherent in calculative thinking and realize a patient equanimity toward Life. It is only in the context of this reawakened sense of the unity of life that revolutionary action gains an authentic basis. It is the engagement with “the Other” that shows the ELF actions are truly about defense of plant and animal life, and they demonstrate genuine liberation concerns that typically are trapped within Enframing. That is to say, ELF (and similar) actions, show themselves as part of a ... profound solidarity ... [that] serves as a general basis for a post-­‐Enframing, post-­‐capitalist order, an ecological, not a capitalist society. (Best and Nocella 83) This shift allows ecocriticism to formulate ever-­‐greater coalitions while at the same time preventing a descent into moral relativism. We can still utilize political action by eco-activists and NGOs such as PETA and Greenpeace productively, even if they result in reformist managerialism, so long as the sole focus doesn’t fall upon a singular tactic. Only a profound orientation of solidarity will ever have the hopes of succeeding. Everything we do is deeply political and we must understand that in acting or in thinking we necessarily impact the world. Uniting behind images of planetary omnicide holds the potential to collectively bring us together by awakening humanity to its shared stake in the global environment. Third, and most importantly, ecocritics must adopt tactics that can most effectively influence other people without proscribing end goals. By this I mean that ecocritics must use those tools that can appeal to the masses while simultaneously making their appeals in such a way as not to force a choice upon them. Apocalyptic imagery is ideal for this task. It appeals to notions of shared planetary concerns that serve as motivation for others to act, even without fully knowing how the apocalypse can truly be averted. By creating a compelling urge to do something that arises out of the image of planetary annihilation ecocriticism can influence a variety of people to take up arms through a multitude of techniques. Society as a whole will never mobilize to halt the very practices that threaten life without such compelling inspiration. When ecocriticism helps other people see how certain actions risk their very survival it will enable our planet to evolve differently. So long as ecocriticism never gives up on the struggle, even if this different direction may bring new scenarios of apocalypse, humanity as a species can continually evolve its patterns and behaviors to advert extinction. This is not to say we will live forever. Rather it is to say that as a species we can continue to exist in harmony with the lives all around us and give our deaths meaning. Ultimately, it is through imagining the end of the world that we will be able to envision how to save it.

### Managerialism/Enviro Securitization Good

#### Managerialism is necessary to prevent global extinction –processes of environmental destruction are unstoppable without intervention

Dr 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. More over, 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 formulated 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 whom we share this planet, will be decided.

#### ENVIRONMENTAL SECURITIZATION KEY TO HUMAN SURVIVAL AND INCENTIVIZE CONSERVATION.

CHALECKI 2K7 [Elizabeth, “environmental security: a case study of climate change”, pacific institute for studies in development, environment and safety, Asst. Professor in the International Studies Program at Boston College<http://www.pacinst.org/reports/environment_and_security/env_security_and_climate_change.pdf>]

The security of individuals, communities, nations, and the entire global community is increasingly jeopardized by unpremeditated, non-military environmental threats. These threats are self-generated: we perpetrate them on ourselves, by fouling our air and water, and overharvesting our land. These threats are not felt equally around the world. Southern countries face severe problems from desertification, while northern industrial countries deal with acid rain, and polar regions see large depositions of persistent organic chemical pollutants. Climate change will cause uneven effects over the entire globe for the next fifty to 100 years, with some countries benefiting and others suffering. Despite these omnipresent connections, environmental issues are still not high on the national security agenda. Those who study environmental problems such as deforestation, loss of biodiversity, and climate change generally don’t see the connection through to its higher-order effects, and those who study security problems such as non-proliferation, terrorism, and civil conflict often don’t recognize the environmental roots and effects of these problems. So why is this such a hard gap to bridge? Thinking in this multidisciplinary way is not traditional for either environmentalists or security specialists, the majority of whom have defined their fields in specific ways. Consequently the nexus of environmental security is seen neither as a security issue nor an environmental issue. However, environmental issues are often security concerns because even without directly causing open conflict, they have the potential to destabilize regimes, displace populations, and lead to state collapse. The environment is the planetary support system on which all other human enterprises depend. If political, social, cultural, religious, and most importantly economic systems are to remain secure and viable, the environment must also remain secure and viable. This makes global environmental conditions a legitimate national security concern for all countries.

#### Securitizing energy production is key to solve climate change

Guri Bang. 2010. Center for International Climate and Environmental Research in Norway. Energy security and climate change concerns: Triggers for energy policy change in the United States? Energy Policy. 38: 1645-1653.

These examples of debates in Congress show that in a situation with increased public concerns about both energy security and climate change, energy policy is a field that potentially can include a bipartisan agenda where compromise can be found. It provides a new framing of the climate change issue that can attract support from a new set of actors involved in the decision making process, including both politicians and interest groups. However, if energy security policy is considered without taking carbon emissions into account the result will not necessarily be a more environmentally sustainable policy. By allowing emission intensive policy alternatives onto the agenda, the established energy policy majority can avoid problem redefinition, and continue to promote their preferred policy solutions. For instance, if gasoline is replaced with CTL fuel from coal plants without installed sequestration technology, that would result in less dependence on imported oil but increased GHG emissions. Still, energy security concerns could potentially lead to focus on policy solutions that would have a second-order effect for mitigating climate change. Efforts to get cost-effective renewable energy technologies to the market, or to develop carbon sequestration technologies, or build nuclear power plants that can replace fossil fuels like coal, will lead to fewer GHG emissions. But reduced emissions will not necessarily be the most important rationale behind the policy change. Rather, the rationale will be to heighten energy security and avoid high energy costs, and if that also affects emissions and climate policy then it can be used as a political benefit. Having a second-order rationale can in some cases make a vote in favor of new policy solutions easier to endure or survive for politicians. In other words, the effects for reducing GHG emissions can be used by politicians to underscore the importance of policy change, to secure support from the part of the public concerned about global warming, and from environ- mental NGOs and other interest groups that support emission cuts. If that part of the public is not very large, such rationalizing will be less important and the choice of policy solution can be affected. The potential for finding a policy compromise to change energy policy radically in a less fossil fuels based direction is, therefore, limited because high energy security concerns will not be enough by itself to redefine the perceived need for a major energy policy change away from fossil fuels. Without the inclusion on the policy agenda of concerns about climate change, proponents of new, environmentally sustainable policy solutions may not be able to attract enough support to overturn the political majority opposed to change, and therefore policy changes will not necessarily come about as direct renewal of federal climate policy but rather as incremental energy policy change that would at best not increase GHG emissions.

#### Warming risks global extinction

Deibel 2007 (Terry L, Professor of IR @ National War College, “Foreign Affairs Strategy: Logic for American Statecraft”, Conclusion: American Foreign Affairs Strategy Today)

Finally, there is one major existential threat to American security (as well as prosperity) of a nonviolent nature, which, though far in the future, demands urgent action. It is the threat of global warming to the stability of the climate upon which all earthly life depends. Scientists worldwide have been observing the gathering of this threat for three decades now, and what was once a mere possibility has passed through probability to near certainty. Indeed not one of more than 900 articles on climate change published in refereed scientific journals from 1993 to 2003 doubted that anthropogenic warming is occurring. “In legitimate scientific circles,” writes Elizabeth Kolbert, “it is virtually impossible to find evidence of disagreement over the fundamentals of global warming.” Evidence from a vast international scientific monitoring effort accumulates almost weekly, as this sample of newspaper reports shows: an international panel predicts “brutal droughts, floods and violent storms across the planet over the next century”; climate change could “literally alter ocean currents, wipe away huge portions of Alpine Snowcaps and aid the spread of cholera and malaria”; “glaciers in the Antarctic and in Greenland are melting much faster than expected, and…worldwide, plants are blooming several days earlier than a decade ago”; “rising sea temperatures have been accompanied by a significant global increase in the most destructive hurricanes”; “NASA scientists have concluded from direct temperature measurements that 2005 was the hottest year on record, with 1998 a close second”; “Earth’s warming climate is estimated to contribute to more than 150,000 deaths and 5 million illnesses each year” as disease spreads; “widespread bleaching from Texas to Trinidad…killed broad swaths of corals” due to a 2-degree rise in sea temperatures. “The world is slowly disintegrating,” concluded Inuit hunter Noah Metuq, who lives 30 miles from the Arctic Circle. “They call it climate change…but we just call it breaking up.” From the founding of the first cities some 6,000 years ago until the beginning of the industrial revolution, carbon dioxide levels in the atmosphere remained relatively constant at about 280 parts per million (ppm). At present they are accelerating toward 400 ppm, and by 2050 they will reach 500 ppm, about double pre-industrial levels. Unfortunately, atmospheric CO2 lasts about a century, so there is no way immediately to reduce levels, only to slow their increase, we are thus in for significant global warming; the only debate is how much and how serious the effects will be. As the newspaper stories quoted above show, we are already experiencing the effects of 1-2 degree warming in more violent storms, spread of disease, mass die offs of plants and animals, species extinction, and threatened inundation of low-lying countries like the Pacific nation of Kiribati and the Netherlands at a warming of 5 degrees or less the Greenland and West Antarctic ice sheets could disintegrate, leading to a sea level of rise of 20 feet that would cover North Carolina’s outer banks, swamp the southern third of Florida, and inundate Manhattan up to the middle of Greenwich Village. Another catastrophic effect would be the collapse of the Atlantic thermohaline circulation that keeps the winter weather in Europe far warmer than its latitude would otherwise allow. Economist William Cline once estimated the damage to the United States alone from moderate levels of warming at 1-6 percent of GDP annually; severe warming could cost 13-26 percent of GDP. But the most frightening scenario is runaway greenhouse warming, based on positive feedback from the buildup of water vapor in the atmosphere that is both caused by and causes hotter surface temperatures. Past ice age transitions, associated with only 5-10 degree changes in average global temperatures, took place in just decades, even though no one was then pouring ever-increasing amounts of carbon into the atmosphere. Faced with this specter, the best one can conclude is that “humankind’s continuing enhancement of the natural greenhouse effect is akin to playing Russian roulette with the earth’s climate and humanity’s life support system. At worst, says physics professor Marty Hoffert of New York University, “we’re just going to burn everything up; we’re going to heat the atmosphere to the temperature it was in the Cretaceous when there were crocodiles at the poles, and then everything will collapse.” During the Cold War, astronomer Carl Sagan popularized a theory of nuclear winter to describe how a thermonuclear war between the Untied States and the Soviet Union would not only destroy both countries but possibly end life on this planet. Global warming is the post-Cold War era’s equivalent of nuclear winter at least as serious and considerably better supported scientifically. Over the long run it puts dangers from terrorism and traditional military challenges to shame. It is a threat not only to the security and prosperity to the United States, but potentially to the continued existence of life on this planet.

### Enviro Securitization Inev

#### AND, ENVIRONMENTAL SECURITIZATION IS INEVITABLE – GLOBAL WARMING MAKES PEOPLE REACT TO RESOURCE SCARCITY CONCERNS, NO MATTER HOW EPISTEMOLOGICALLY FLAWED, THE ALT CAN’T CHANGE PERCEPTION.

CHALECKI 2K7

[Elizabeth, “environmental security: a case study of climate change”, pacific institute for studies in development, environment and safety, Asst. Professor in the International Studies Program at Boston College<http://www.pacinst.org/reports/environment_and_security/env_security_and_climate_change.pdf>]

Climate change will mean more natural disasters as a result of shifting weather and precipitation patterns. The Midwest will face a greater risk of tornadoes and riverine floods, the Gulf Coast and other shorelines will face a greater risk of high seas and hurricanes, and (due to changes in amount and timing of precipitation) the West will face greater risk of wildfires. These disasters will change the readiness of the military by forcing the reallocation of troops away from combat operations toward disaster relief. In addition, countries less able to cope with natural disasters will likely face large numbers of refugees, either internally or from nearby countries. As they compete with the local population for scarce resources, civil and ethnic unrest may require peacekeeping troops.

### Inevitable

#### Technological thought has been socialized, internalized, and can’t be eradicated

**Leach 3**, date page modified (Neil, Professor at the University of Southern California, “Forget Heidegger”, August 15, <http://www.china-designer.com/magazine/leach/txt1.htm>)

Adorno's further example of the car reveals how the technological has come to colonise our everyday lives not as standing reserve, but as something to which symbolic intention is always already being 'attached'. The point here is that we have to understand that our engagement with technology involves a moment of 'proprioception'. Technology may come to operate as a form of 'prosthesis' to the human body that is appropriated such that it becomes part of the motility of the body. In driving a car we come to navigate the road through that car. As such, the car as an item of technology is not divorced - alienated - from the body. Indeed it becomes a form of extension to that body. What I am arguing here is not some simplistic manifesto for cyborgs, claiming that human beings can become part human and part machine. Rather I am trying to tease out the logic of mimesis itself. For according to this logic, human beings have absorbed technology at an unconscious level, such that they have come to operate through technology, as though by way of some tele-kinesis.

Not only this, but technology may actually influence the way that human beings think. It may itself affect our consciousness. Let us take the example of the computer. For, if as Walter Benjamin once argued, the factory worker in the modernist age comes to absorb the jolting, jarring repetitive action of the machine, such that those movements are appropriated into the worker's own behaviour, so too people today have absorbed the thinking and fluid circuitry behind the computer screen. New conditions breed new ways of thinking. As Douglas Rushkoff observes, a new computer generation is emerging. The computer kids of today come to behave like their computers. They identify with them, play with them, and mimic their operations. Analogical reasoning is out. Non-linear, multiple-layered thinking is in - Deleuzian surfing. Fractals, rhizomes and clones, fluidity and flux - these are the buzz words of this new generation. In such a context, those who argue against the use of the computer in the contemporary design studio are failing to address the concrete ontological reality of life today, and are doing no service to the students, for whom knowledge of computer has become a 'given' within the contemporary office. It may be that the still prevalent antipathy towards digital technology is merely a form of 'denial'. As in the case of homophobics, who often deny their latent homosexuality, critics of technology may be repressing a secret fascination with technology. An individual 'in denial' may be fascinated by some personal psychic obsession, but, not wishing to acknowledge it, will project that obsession on to some external object, and then criticise it. But whether this antipathy towards digital technology is a form of repressed fascination or not, it is clearly out of place in what has become a highly digitalised world.

This is not to say that the computer should be accepted unproblematically within the studio. Indeed the lessons of those design schools that have accepted the computer wholesale would seem to indicate that the concerns expressed in The Anaesthetics of Architecture about the potential aestheticisation and hence anaesthetisation of social issues are borne out only too clearly in such contexts. Rather it is a call for a self-critical, theoretically informed engagement with such realms. Theory may be unable in itself to combat the potential problems of aestheticisation. Yet it may provide the first crucial step. Once a problem has been exposed, one is no longer trapped by that problem.

The consequences are all too obvious. Not only have we accepted technology as an essential part of our everyday life, such that the distinction once posed between techné and technology seems no longer valid, but our whole existence has become conditioned by technology. In this new digital age, as Sarah Chaplin argues, we have adopted a form of cybervisuality. An important factor, then, is our interface with that technology. For technology may take many forms. Here the question of design becomes crucial. The message of mimesis is not that human beings will adapt to anything, so that design is unimportant, but precisely the opposite. Design becomes an important mechanism for making people feel at one with their world. This relates not simply to whether a piece of technology is itself aesthetically pleasing - as is the case, say, with the iMac computer - , but in the context of digital technology it relates also to the user interface - to software programming and its compatibility with human modes of operation. Far from engendering alienation, well designed technology has the capacity to overcome alienation.

There was a time when Heideggerian thought made a substantial and noteworthy contribution to architectural culture in challenging the spirit of positivism that was once so pervasive. But now Heideggerian thinking must not itself go unchallenged, in that it threatens to install itself as a set of fixed values out of tune with the fluidity and flux of contemporary society. And while some would criticise postmodern thought for being relativistic in accommodating plurality and difference, and questioning the ground on which any particular statement is made, the true relativism lies surely in a tradition that forecloses even the possibility of even asking these questions, by doggedly adhering to an out of date set of values, and by failing to engage substantively with any critical discourse.

In an increasingly digital world, it is time, it would seem, to adopt a more flexible and tolerant attitude towards digital technology. It is time to break free from the shackles of the past. It is time, perhaps, to forget Heidegger.