# 1NC

## 1

#### A – Interpretation is that substantial is more than one.

Dictionary.com [http://dictionary.reference.com/browse/substantially]

1. **of ample or considerable amount, quantity, size, etc**.

#### B – Violation: they only build one reactor.

#### C – Standards

#### Limits – without substantial, affs could implement an infinite number of small changes the status quo.

#### Ground – without being a significant change to the status quo, we don’t have uniqueness or links for disadvantages.

#### Fatal plan flaw – none of their evidence is about matching funds for a single generator. The plan doesn’t do anything so they don’t solve anything—vote neg on presumption.

#### D – Voter for fairness and education.

## 2

#### A. Interpretation – The aff has to affect both resource extraction and conversion into energy

Australian Government, Department of Climate Change and Energy Efficiency 2011 [“Energy Production and Consumption,” http://www.climatechange.gov.au/government/initiatives/national-greenhouse-energy-reporting/publications/supplementary-guidelines/energy-production-consumption.aspx]

Production of energy: in relation to a facility, means the:

1. extraction or capture of energy from natural sources for final consumption by or from the operation of the facility or for use other than in the operation of the facility
2. manufacture of energy by the conversion of energy from one form to another form for final consumption by or from the operation of the facility, or for use other than in the operation of the facility (regulation 2.23(3) NGER Regulations).

#### B. Violation – The plan only incentivizes conversion of nuclear power and does not deal with extraction.

#### C. Reasons to Prefer

#### 1. Predictability –

Only our interpretation guarantees link arguments to both extraction and the burning of resources to produce energy. This is crucial link ground for pollution DAs and domestic/foreign energy tradeoff DAs.

#### 2. Limits –

Requiring the aff to both extract and convert the energy is necessary to eliminate affs that only extract, like capture carbon or methane or stockpile oil as a strategic military reserve with heg advantages. Also key to prevent affs that only burn fuels like Bataille-style affs that encourage rapid consumption or R&D affs that incentivize new ways to burn the same resources.

#### D. Topicality is a voting issue for both Fairness and Educational reasons.

## 3

#### 1. Obama wins – new jobs numbers

Silver 10-5 (Nate, statistician and election guru, 2012, “Jobs News Makes Obama’s Case Easier”, <http://fivethirtyeight.blogs.nytimes.com/2012/10/05/jobs-news-makes-obamas-case-easier/>) PY

The rate of jobs growth is now just slightly behind the [one that was enough to re-elect George W. Bush in 2004](http://fivethirtyeight.blogs.nytimes.com/2012/09/03/in-looking-back-four-years-voters-have-short-memories/), when an average of 168,000 jobs were created between January and September 2004.¶ Although the unemployment rate remains stubbornly high, the recent trajectory now looks more favorable. Unemployment has fallen by 0.7 percent since December 2011, to 7.8 percent from 8.5 percent.¶ Historically, there has been [no relationship at all](http://fivethirtyeight.blogs.nytimes.com/2011/06/02/on-the-maddeningly-inexact-relationship-between-unemployment-and-re-election/) between the unemployment rate on Election Day and the incumbent’s performance.¶ However, there has been a relationship between the change in the unemployment rate in the months leading up to the election and how well the incumbent does. The decline in unemployment under Mr. Obama this year since December is the largest in an election year since Ronald Reagan’s re-election bid, when it declined to 7.3 percent in Sept. 1984 from 8.3 percent in Dec. 1983.

#### 2. Nuclear power is unpopular with the public – best polling

Mariotte 12 (Michael, Executive director and the chief spokesperson for NIRS, has testified in the United States Senate and before the U.S. House of Representatives on nuclear power, a graduate of Antioch College, Jun 5th, “Nuclear Power and Public Opinion: What the polls say” <http://www.dailykos.com/story/2012/06/05/1097574/-Nuclear-Power-and-Public-Opinion-What-the-polls-say>)

Public opinion on nuclear power matters. Should we build new reactors or not? If so, who should pay for them? Should we close existing reactors? Where should nuclear power rank among all the other possible sources of electricity generation? Where should we put our limited resources to attain the best possible energy future?¶ These are all fundamental questions, the answers to which could affect our future far more than, say, who will be the next Senator from Indiana. Yet, perhaps surprisingly, until recently—really the past two or three years—other than regularly-conducted, loudly-trumpeted and rarely relevant industry-sponsored polls, polling of public opinion on nuclear power (and a lot of other energy issues) was haphazard at best.¶ Gallup, for example, over the past 18 years as best as we can find out, has conducted only 10 polls (and most of these only asked a half-sample, putting their numbers into question) asking people their opinion on nuclear power. But beginning in 2009, Gallup has begun polling annually. Unfortunately, Gallup asks the exact same question, with the same wording, that the Nuclear Energy Institute’s (NEI) own well-tested polling does. And the NEI doesn’t ask questions that it doesn’t want the answers to. Even so, Gallup’s answers don’t quite match those NEI gets, and which are usually heavily promoted in the media by NEI.¶ To try to get a better sense of what the public really thinks about nuclear power (and since we can’t afford to conduct our own polling), we took a look at every poll we could find on the issue, and related energy issues, over the past two years, and in some cases further back. Yes, that includes GOP/Fox News favorite Rasmussen.¶ As DailyKos readers know, if not the general public, examining all the possible polls leads to a much greater confidence in conclusions than relying on a single poll. Thus, we have a fairly strong confidence that our conclusions are a good statement of where the American public is at on nuclear power and our energy future in the Spring of 2012.¶ Conclusion 1: The public does NOT want to pay for new nuclear power. It IS willing to pay for renewable energy.¶ This one is a slam dunk.¶ New nuclear reactors are simply too expensive for utilities to build with their own assets. Nor are banks willing to lend money for most nuclear projects; they’re considered too risky given the long history of cost overruns, defaults, cancellations and other problems. Thus, the only two means of financing a new reactor are to either get money from taxpayers, through direct federal loans or taxpayer-backed loan guarantees, or from ratepayers in a few, mostly Southern states, which allow utilities to collect money from ratepayers before reactors are built—a concept known either as “early cost recovery” or Construction Work in Progress (CWIP).¶ ORC International (which polls for CNN, among others) has asked a straightforward question for the past two years (March 2011 and February 2012) in polls commissioned by the Civil Society Institute: “Should U.S. Taxpayers Take on the Risk of Backing New Nuclear Reactors?” The answer? Basically identical both years: 73% opposed in 2011, 72% opposed in 2012.¶ Maybe using the work “risk” skews the poll, you think? So ORC also asked, “Do you favor or oppose shifting federal loan guarantees from nuclear energy to clean renewables?” The answer was basically the same: 74% said yes in 2011, 77% in 2012 with 47% “strongly” holding that opinion both years.¶ A third poll conducted by ORC for Civil Society Institute in March 2012 asked this question: ¶ “Utilities in some states are allowed to charge electricity ratepayers for “Construction Work in Progress” for new power plants. This means that ratepayers – instead of the companies – pay for construction of new nuclear reactors and other major power plants before any electricity ever reaches customers, thereby lowering the financial risks to shareholders. Knowing this, which of the following statements about “Construction Work in Progress” most closely reflects your view?”¶ The answer: fully 80% opposed CWIP.¶ Most pollsters have not asked similar questions; interestingly though, Rasmussen did in May 2012 for an undisclosed client. Their question: “The government is providing billions in loan guarantees to help the development of new nuclear plants. Would that money be better spent on the development of alternative new energy sources?” Unfortunately, Rasmussen did not publicize the results and hid them behind a paywall, which we were not inclined to pursue. But if anyone has access to that, we’d love to know what Rasmussen found.

#### 3. Romney would repeal Obamacare

Yglesias 12 (Matthew, Slate's business and economics correspondent. Before joining the magazine he worked for ThinkProgress, the Atlantic, What Would President Romney Do?

Romney’s promised to scrap Obamacare—and if he wins he can do it, June 28th, http://www.slate.com/articles/news\_and\_politics/politics/2012/06/obamacare\_repeal\_romney\_can\_do\_it\_.html)

Still, though Republicans seem likely to win control of the Senate in any scenario where Romney becomes president, it’s exceedingly unlikely that they’d score the 60 votes needed to overcome a filibuster. Technically speaking, since repealing the bill would increase the budget deficit, it should be ineligible for the budget reconciliation process that Democrats used to pass the bill in the first place with only 59 votes. In reality, this is unlikely to make a difference to a determined GOP. Back in 2001 and 2003, Republicans were able to find gimmicks to pass giant tax cuts under reconciliation orders, and in this case conservatives sincerely believe that the CBO is mistaken and repeal would reduce the deficit.¶ Scrapping the law, in other words, should be a pretty easy lift for Republicans—if they win the election. But if they lose, as provisions of the law roll out during Obama’s second term, they’re likely to find that it’s very difficult to take popular benefits away from people who already have them. By declining to do Republican politicians’ work for them, in other words, John Roberts just made 2012 a very consequential election.

#### 4. Repealing the ACA would drive up health care costs – that kills jobs, destroys innovation and slows wage growth and consumer spending

Cutler 11 (David M. Cutler is Otto Eckstein Professor of Applied Economics, Harvard University, and a Senior Fellow at the Center for American Progress., January 7th, Repealing Health Care Is a Job Killer¶ It Would Slow Job Growth by 250,000 to 400,000 Annually, http://www.americanprogress.org/issues/healthcare/report/2011/01/07/8887/repealing-health-care-is-a-job-killer/)

A successful repeal of health care reform would revert us back to the old system for financing and delivering health care and lead to substantial increases in total medical spending. The consequences of this spending increase would be far reaching. It would hurt family incomes, jobs, and economic growth.¶ Repealing health reform would:¶ Increase medical spending by $125 billion by the end of this decade and add nearly $2,000 annually to family insurance premiums¶ Destroy 250,000 to 400,000 jobs annually over the next decade¶ Reduce the share of workers who start new businesses, move to new jobs, or otherwise invest in themselves and the economy¶ This memo will review these effects in more detail with a particular focus on jobs.¶ High medical spending harms employment and economic growth¶ Before getting to the effects of repeal let’s look at how health costs affect the economy. Health insurance costs are a major issue for Americans. Family health insurance premiums have increased 80 percent in the past decade after adjusting for inflation, while median income has fallen by 5 percent. This is among the reasons why American families are increasingly uneasy about the economy. Businesses are worried as well. Small businesses have consistently ranked the cost of health insurance as their number one problem since 1986. Finally, rising medical costs are the major contributor to the long-run federal deficit, and they hamper state and local governments, too.¶ These costs affect four aspects of economic activity. First, increasing costs reduce net income for workers. The increase in the premiums that employees pay for coverage is most noticeable, but family income is affected in other ways as well. The first response of employers to rising health insurance costs is to reduce salary increases. Salaries for high-income workers have grown less rapidly than productivity as health insurance costs have accounted for a growing share of total compensation.¶ Less rapid growth of wages is not possible for all workers—many of whom have already experienced stagnant or declining take-home pay. For those workers the only viable response to rising medical costs is reduced employment—both involuntary part-time work and layoffs. Several studies show that health insurance costs and employment are negatively related.¶ Neeraj Sood, Arkadipta Ghosh, and José Escarce recently compared employment growth across industries in the United States that differ in how likely they are to provide health insurance. They compared employment in the same industries in the United States and Canada, where medical costs are lower and not paid for by businesses. The study found that every 10 percent increase in excess health care cost growth (cost growth above GDP growth) led to 120,000 fewer jobs. In other words, the high and growing cost of health care means that American firms that offer health coverage create fewer jobs than Canadian firms who need not offer these benefits. These results are consistent with a recent study by Katherine Baicker and Amitabh Chandra, as well as estimates from the president’s Council of Economic Advisers.¶ Beyond the impact on employment, high health insurance costs discourage long-term investments in economic growth. Fear of losing health insurance deters people from moving to new entrepreneurial jobs, from retiring when their health deteriorates, or from switching to part-time work as family needs arise. In the public sector, high medical spending crowds out investment in education, transportation, and electronic infrastructure, which translates into slower growth over time.¶ Health care reform aims to bring rising health costs down, but repealing it would do the opposite and make the above problems worse. The alternative proposals conservatives are offering would lead to continued cost increases as well. I focus primarily on how employment would be affected by health care repeal in this analysis. But the other effects of repeal on the economy are certainly important.¶ Medical spending is rapidly increasing¶ Health care analysts are virtually united in their view that medical spending is higher than it should be. They also agree that the approach taken in the Affordable Care Act is the right one to reduce this excessive spending.¶ Excessive medical spending is seen in several areas. A large literature shows that spending on acute and post-acute care exceeds appropriate levels. To take just a few examples, rehospitalization rates in the nation as a whole average twice what they are in the areas with the best care. Imaging has increased rapidly with little sense of whether prior rates were too low or that current rates are right. And care at the end of life is far more intensive than people and their families desire. Estimates suggest that about 30 percent of acute and post-acute care could be eliminated with no adverse health impact, and in many cases health improvements.¶ Prevention is also limited. Medications to control hypertension, high cholesterol, diabetes, depression, and other chronic conditions have been available for decades. Yet no more than one in three people with chronic disease are successfully treated. Lack of access to care, high out-of-pocket costs, and an excessive focus on acute illness over prevention are all factors in this poor performance. The result is too many people becoming sick and needing the expensive armamentarium of the medical system.¶ Finally, administrative costs eat up significant resources that would better be directed elsewhere. Insurance companies’ administrative expenses are widely noted. But they are only the tip of the iceberg. Providers incur costs verifying enrollment, adjudicating claims, and ensuring appropriate reimbursement. Estimates suggest that such costs account for as much as 15 percent of overall medical spending.¶ The Affordable Care Act takes steps to bring costs down¶ The Patient Protection and Affordable Care Act takes steps to address each of these cost drivers. On the administrative end, the legislation establishes insurance exchanges, mandates minimum loss ratios for insurance companies, and streamlines transactions between medical care providers and insurers. Together, these provisions will significantly reduce the administrative costs of medical care.¶ By far the most changes are in the Medicare and Medicaid programs. The philosophy underlying the Affordable Care Act is to make Medicare and Medicaid smarter purchasers of medical care so that providers are rewarded for creating value—not just for providing additional services.¶ The specific changes that promote this philosophical viewpoint include:¶ Payment innovations including greater reimbursement for preventive care services and patient-centered primary care; bundled payments for hospital, physician, and other services provided for a single episode of care; shared savings approaches or capitation payments that reward accountable provider groups that assume responsibility for the continuum of a patient’s care; and pay-for-performance incentives for Medicare providers¶ An Independent Payment Advisory Board with the authority to make recommendations that reduce cost growth and improve quality in both the Medicare program and the health system as a whole¶ A new Innovation Center within the Centers for Medicare and Medicaid Services, or CMS, charged with streamlining the testing of demonstration and pilot projects in Medicare and rapidly expanding successful models across the program¶ Profiling medical care providers on the basis of cost and quality and making that data available to consumers and insurance plans, and providing relatively low-quality, high-cost providers with financial incentives to improve their care¶ Increased funding for comparative effectiveness research¶ Increased emphasis on wellness and prevention¶ The exact amount that will be saved from these provisions is uncertain. Partly as a result of this uncertainty, the Congressional Budget Office, or CBO, and the Office of the Actuary at CMS assume only minor savings. CBO, for example, estimated that the major parts of the law including these provisions will cost $10 billion over the 2010–2019 period, while the Office of the Actuary determined savings of only $2 billion.¶ Other studies suggest much larger changes. Melinda Beeuwkes- Buntin and I estimate a 1.5 percentage point reduction in cost increases annually from significant health care reform.9 Similarly, Peter S. Hussey, Christine Eibner, and M. Susan Ridgely in the New England Journal of Medicine estimate that savings of more than 10 percent are possible largely from payment reforms like bundled-payment systems. Realizing these savings over a decade implies cost reductions of nearly 1.5 percentage points annually. Finally, a Commonwealth Fund report indicates that provisions like these will slow annual growth in national health expenditures from 6.5 percent to 5.6 percent over the 2010–2020 period.¶ Taking all these studies into consideration, Karen Davis, Kristof Stremikis, and I estimate that the Affordable Care Act will reduce medical spending by 1.0 percentage points annually, beginning in 2014.¶ Repealing the law would increase medical spending¶ Accordingly, repealing health reform would increase spending by the same amount. I also consider a scenario where repeal would increase cost growth by 1.5 percentage points annually to account for the higher estimates in some studies.¶ National health spending would continue to balloon¶ The implications of repealing health care for national medical spending (public and private) are shown in Figure 1. Repealing health reform would add $25 billion to spending in 2014 and $185 billion to spending in 2019. The impact on family premiums will be equally large (see Figure 2). Repealing health reform would add 9 percent or nearly $2,000 annually to family health insurance premiums in 2019.¶ Families would continue to pay more for health insurance¶ How health reform repeal would affect jobs¶ Any proposal that adds $200 billion to our medical spending after a decade will have enormous economic implications. The employment impacts of health care repeal will be particularly severe because many of these costs will fall on businesses. As we’ve already seen, employers facing higher health costs will hire fewer people, lay workers off, and pay lower wages.¶ A total of 250,000 jobs will be lost annually if health reform is repealed¶ To estimate these employment impacts, I followed the methodology of myself and Neeraj Sood. That paper took estimates of the medical spending change associated with health reform and combined that with the econometric model of Sood, Arkadipta Ghosh, and José Escarce that estimated the employment impacts of changes in medical costs. I use the model to estimate the employment impact of repealing reform.¶ Figure 3 shows the net impact of repealing health reform on total employment. The baseline estimates show that 250,000 jobs will be lost annually if health reform is repealed. Annual job losses would average 400,000 using the greater estimate of 1.5 percentage point cost increases annually resulting from repeal. Figure 4 shows the estimated employment change by industry in 2016 (omitting health care, which will have more employment). More than 200,000 jobs will be lost in manufacturing and nearly 900,000 jobs will be lost in nonhealth care services.¶ Repeal will lead to more than 200,000 jobs lost in manufacturing and nearly 900,000 jobs lost in nonhealth care services¶ These job losses are not the only impact of repealing health reform, however. Family incomes would fall by as much as $2,000 annually as medical costs increase beyond forecasted levels. Federal deficits also would rise. The Congressional Budget Office has predicted that repealing health reform would add $230 billion to federal deficits in the next decade because provisions in the law intended to bring down costs would be repealed.¶ Job transitions would also be affected. Millions of people are “locked” into their current job because they fear becoming uninsured or underinsured if they were to change. Repealing health reform would thus stifle job transitions, new business startups, and movements into and out of the labor force. Millions more workers would be affected.¶ Conclusion¶ Medical care accounts for one-sixth of the economy, which means that any health reform that improves the efficiency of medical care will boost economic performance. Conversely, legislation that raises medical spending will be a job killer.¶

#### 5. Economic crisis causes war–strong statistical support

Royal 10(Jedediah, director of Cooperative Threat Reduction at the U.S. Department of Defense, Economics of War and Peace: Economic, Legal, and Political Perspectives, pg 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 defense behavior of interdependent states. Research in this vein has been considered at systemic, dyadic and national levels. Several notable contributions follow. First, **on the systemic level**, Pollins (2008) advances Modelski and Thompson’s (1996) work on leadership cycle theory, finding that rhythms in the global economy are associated with the rise and fall of a pre-eminent power **and the often bloody transition from one pre-eminent leader to the next**. As such, exogenous **shocks** such as economic crises **could usher in a redistribution of relative power** (see also Gilpin, 1981) **that leads to uncertainty about power balances, increasing the risk of miscalculation** (Fearon 1995). Alternatively, **even a relatively certain redistribution of power could lead to a permissive environment for conflicts 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, althou gh he suggests that the causes and connections between global economic conditions and security conditions remains unknown. Second, on a dyadic level, Copeland’s (1996, 2000) theory of trade expectations suggest that “**future expectation of trade” is a significant variable in understanding economic conditions and security behavior 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 item 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. Third, others have considered the link between economic decline and external armed conflict at a national level. Blomberg and Hess (2002) find a strong correlation between internal conflict and external conflict**, particularly during periods of economic downturn. They write, The linkages between internal and external conflict and prosperity are strong and mutually reinforcing. **Economic conflict tends to spawn internal conflict, which in turn returns the favor. Moreover, the presence of a recession tends to amplify the extent to which international and external conflicts self-reinforce each other**. (Blomberg and Hess, 2002, p. 89) **Economic decline has also been linked with an increase in the likelihood of terrorism (Blomberg, Hess and Weerapana, 2004), which has the capacity to spill across borders and lead to external tensions. Furthermore, crises generally reduce the popularity of a sitting government. “Diversionary theory” suggests that, when facing unpopularity arising from economic decline, sitting governments have increased incentives to fabricate external military conflicts to create a “rally around the flag” effect**. Wang (1996), DeRouen (1995) and Blomberg, Hess and Thacker (2006) find supporting evidence showing that economic decline and use of force are at least indirectly correlated. Gelpi (1997), Miller (1999), and Kisangani and Pickering (2009) suggest that the tendency towards diversionary tactics are greater for democratic states than autocratic states due to the fact the democratic leaders are generally more susceptible to being removed from office due to lack of domestic support. De DeRouen (2000) has provided evidence showing that periods of weak economic performance in the United States and thus weak Presidential popularity are statically linked to an increase in the use of force. In summary, recent economic scholarship positively correlates economic integration with an increase in the frequency of economic crises, whereas political science scholarship links economic decline with external conflict at systemic, dyadic and national levels. This implied connection between integration, crises and armed conflict has not featured prominently in economic-security debate and deserves more attention. This observation is not contradictory to other perspectives that link economic interdependence with a decrease in the likelihood of external conflict, such as those mentioned in the first paragraph of this chapter. Those studies tend to focus on dyadic interdependence instead of global interdependence and do not specifically consider the occurrence of and conditions created by economic crises. As such the view presented here should be considered ancillary to those views.

## 4

#### **California should establish a matching funds program to develop and build a Liquid Fluoride Thorium Nuclear Reactor in the Lawrence Berkeley National Laboratory.**

#### **Solves – modeled off of California’s discovery grant program with LBNL**

Lawrence Berkeley National Laboratory 9 (http://www.lbl.gov/tt/industry/ResearchOpps/index.html)

Some of the most innovative technology transfer at Berkeley Lab involves collaborative projects with industry. DOE and industry may jointly sponsor a project under a Collaborative Research and Development Agreement (CRADA). Costs, personnel, facilities, equipment, or research capabilities may be shared for mutual benefit. This provides industry with an excellent way to leverage R&D funds and conduct research that might otherwise not be possible.

Berkeley Lab also conducts industry-sponsored research and provides numerous National User Facilities.  See below for more details.

Government Sponsored Collaborative Research Programs

* **Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)**

SBIR and STTR are U.S. Government programs through which federal agencies support research and development with small businesses. Such subcontracting is frequent with SBIR awards and partnering with a U.S. non-profit institution (e.g. university or national lab) is required for STTR awards.  Many companies partner or subcontract with a national lab to conduct part of the research.  For more information, see [www.science.doe.gov/sbir](http://www.science.doe.gov/sbir) and [www.sba.gov/aboutsba/sbaprograms/sbir/sbirstir/index.html](http://www.sba.gov/aboutsba/sbaprograms/sbir/sbirstir/index.html). For a list of available FY2012 SBIR Tech Transfer Opportunities from LBNL, see [http://www.lbl.gov/Tech-Transfer/industry/ResearchOpps/SBIR\_Phase1\_Release1\_LBNL.html](http://www.lbl.gov/Tech-Transfer/industry/ResearchOpps/SBIR_Phase1_Release1_LBNL.html" \t "_blank).

* University of California Discovery Grant

These California state grants strengthen and expand California's economy through supporting industry-university research partnerships. Up to $60 million/year is available from state, industry and university/lab sources to fund researchUp to $60 million/year is available from state, industry and university/lab sources to fund research in the following nine fields:  biotechnology; communications and networking; digital media innovation; electronics manufacturing and new materials; information technology for life sciences; microelectronics; energy; health and wellness; and nanotechnology. The grant program is open to researchers at UC (including those at LBNL) in partnership with businesses that have R&D or manufacturing operations in California related to the submitted proposal or that have a relevant R&D alliance with a firm in California. See more on the UC Discovery Grants.

## 5

#### The rapacious drive to secure energy is a symptom of “challenging-forth,” a mindset that renders everything as disposable. Only through rejecting challenging forth and embracing bringing forth can we avoid this hollowing out of Being. Questions of ontology have to come first.

Waddington 5 A Field Guide to Heidegger: Understanding 'The Question concerning Technology' more by David Waddington Educational Philosophy and Theory, Vol. 37, No. 4, 2005 http://concordia.academia.edu/DavidWaddington/Papers/538046/A\_Field\_Guide\_to\_Heidegger\_Understanding\_The\_Question\_concerning\_Technology

Most essays on technology focus primarily on practical issues surrounding the use of particular technologies . Heidegger’s essay, however, does not—instead, it focuses on the ways of thinking that lie behind technology. Heidegger (1977, p. 3) thinks that by coming to understand these ways of thinking, humans can enter into a ‘free relationship’ with technology. After dismissing the conventional account of technology, which supposedly states that technology is simply a means to an end, Heidegger commences a discussion on ancient craftsmanship. He suggests that the ancient craftsmanship involves the four Aristotelian causes: material, formal, ﬁnal, and efﬁcient. Intuitively, one might think that the efﬁcient cause of a given craft-item (the craftsman) was the most signiﬁcant of the four. However, although the craftsman has an important role in that she unites the four causes by considering each of them carefully, each of the four causes is equally co-responsible for the particular craft-item that is produced. Heidegger comments, ‘The four ways of being responsible bring something into appearance. They let it come forth into presencing’ (1977, p. 9). Appropriately enough, Heidegger names this process bringing-forth . Notably, bringing-forth is not merely a descriptive genus under which the four causes are subsumed—rather, it is a uniﬁed process, ‘a single leading-forth to which [each of the causes] is indebted’ (Lovitt, 1972, p. 46).Heidegger writes that bringing-forth ‘comes to pass only insofar as something concealed comes into unconcealment’ (1977, p. 11). Thus, instead of the craft-item being created by the craftsman, as one would think, it was revealed or unconcealed .In ‘The Thing’, Heidegger comments on the making of a jug, The jug is not a vessel because it was made; rather, the jug had to be made because it is this holding vessel. The making … lets the jug come into its own. But that which in the jug’s nature is its own is never brought about by its making. (1971, p. 168)Clearly, revealing/unconcealing in the mode of bringing-forth contains strong hints of Platonism. Bringing-forth is the mode of revealing that corresponds to ancient craft. Modern technology, however, has its own particular mode of revealing, which Heidegger calls challenging-forth . Thinking in the mode of challenging-forth is very different from thinking in the mode of bringing-forth: when challenging-forth, one sets upon the elements of a situation both in the sense of ordering (i.e. setting a system upon) and in a more rapacious sense (i.e. the wolves set upon the traveler and devoured him). In bringing-forth, human beings were one important element among others in the productive process; in challenging-forth, humans control the productive process. Efﬁciency is an additional important element of thinking in the mode of challeng-ing forth; the earth, for example, is set upon to yield the maximum amount of ore with the minimum amount of effort. Essentially, challenging-forth changes the way we see the world—as Michael Zimmerman pointedly remarks, ‘To be capable of transforming a forest into packaging for cheeseburgers, man must see the forest not as a display of the miracle of life, but as raw material, pure and simple’ (1977, p. 79).Production in the mode of challenging-forth reveals objects that have the status of standing-reserve . Objects that have been made standing-reserve have been reduced to disposability in two different senses of the word: (1) They are disposable in the technical sense; they are easily ordered and arranged. Trees that once stood chaotically in the forest are now logs that can be easily counted, weighed, piled, and shipped. (2) They are also disposable in the conventional sense; like diapers and cheap razors, they are endlessly replaceable/interchangeable and have little value. For the most part, challenging things forth into standing-reserve is not a laudable activity, and thus it makes sense to wonder what drives human beings to think in this way. Heidegger’s answer to this motivational question is unconventional— instead of suggesting that the origins of this motivation are indigenous to human beings, he postulates the existence of a phenomenon that ‘sets upon man to order the real as standing-reserve’ (1977, p. 19). Heidegger calls this mysterious phenomenon enframing ( Ge-stell in German). The word ‘Ge-stell’ gathers together several meanings of the -stellen family of German verbs: in Ge-stell, humans are ordered ( bestellen ), commanded ( bestellen ), and entrapped ( nachstellen ) (Harries 1994,p. 229). Heidegger thinks that our default state is that of being trapped by Ge-stell; this is what he means when he writes, ‘As the one who is challenged forth in this way, man stands within the essential realm of [Ge-stell]. He can never take up a relationship to it only subsequently’ (1977, p. 24; Sallis, 1971, p. 162). According to Heidegger (1977, p. 25), there are different ‘ordainings of destining’ for human beings. Although the default destining is that of Ge-stell, it is possible to choose an alternate road. Heidegger thinks that human beings have been granted the special role of ‘Shepherds of Being’—we have been granted the power to reveal the world in certain ways (Ballard, 1971, p. 60). Trapped in Ge-stell, we tend to reveal things in the mode of challenging-forth, but we can also choose to reveal things in the mode of bringing-forth. Heidegger comments, ‘Placed between these possibilities, man is endangered from out of destining’ (1977, p. 26). However, by carefully considering the ways of thinking that lie behind technology, we can grasp the ‘saving power’. We can realize that we, the Shepherds of Being, have a choice : we can bring-forth rather than challenge-forth. Thus, once we understand the thinking behind technology, we become free to choose our fate—‘… we are already sojourning in the open space of destining’ (Heidegger, 1977, p. 26).

## Case

### Solvency

#### No nuclear renaissance – global trend.

Mez, Department of Political and Social Sciences, Freie Universitat Berlin, ‘12

[Lutz, “5-7-12, “Nuclear Energy—Any Solution for Sustainability and Climate Protection?”, http://www.sciencedirect.com/science/article/pii/S0301421512003527]

Is the entire world really building nuclear power plants? By no means. According to the IAEA, 63 blocks with a rating of 61,032 MW are currently under construction (see Table 1). The building projects are spread out among fourteen countries: China (26), Russia (10), India (6), South Korea (5), the Ukraine (2), Japan (2), Slovakia (2), Bulgaria (2) and Taiwan (2) and one block each in Argentina, Brazil, Finland, France, and the USA. The World Nuclear Association (WNA) only lists 61 reactors under construction, but another 156 reactors in the category ‘planned.’ Actual development of nuclear technology teaches us, however, that planned reactors by no means automatically move into the category of ‘under construction.’ In 1979, before the Three Mile Island accident in Harrisburg, there were 233 reactors under construction in the world, and over 100 cancellations followed (Schneider, Froggatt, Thomas, 2011). In view of these facts, the metaphor ‘renaissance of nuclear power’ must be viewed as an ideological weapon. Examined more closely, it would appear that nuclear power has even taken a nose-dive in the Western industrialized countries. In the European Union there were 177 reactors in 1989, whereas the IAEA only lists 134 operational reactors in February 2012. Of the 192 members of the United Nations, only 31 countries had nuclear power plants in operation at the beginning of 2012. Three countries (Italy, Kazakhstan and Lithuania) have in the meantime closed down their nuclear power plants, while in Austria a reactor was built in Zwentendorf but never connected to the grid. A similar reactor project is the completed but never fueled Bataan Nuclear Power Plant in the Philippines. The six biggest countries operating nuclear power plants (USA, France, Japan, Russia, Germany and South Korea) include several countries possessing nuclear weapons (USA, France and Russia) and produce three-fourths of total nuclear power. In 2009 nuclear power plants only produced 13.4 percent of electrical power worldwide. This corresponds to 5.8 percent of Total Primary Energy Supply and a little more than two percent of global final energy consumption. In comparison to nuclear power, the potential contribution of renewable energies to easing the strain on the environment and tackling climate change is much higher because they account for 19.5 percent of global power production and more than 12 percent of primary energy production (IEA, 2011). The United States has the most nuclear capacity and generation among the 31 countries in the world that have commercial nuclear power plants. There are currently 104 operational nuclear reactors at 65 nuclear sites in 31 states. Most of the commercial reactors are located east of the Mississippi River, near water sources. Illinois has 11 reactors and the most nuclear capacity. Since 1990, the nuclear power share of the total electricity generation has averaged about 20%. Nuclear generation of electricity has roughly tracked the growth in total electricity output. Between 1985 and 1996, 34 reactors were connected to the grid. In addition, nuclear generation has increased as a result of higher utilization of existing capacity and from technical modifications to increase nuclear plant capacity. In 2007 the American construction site Watts Bar-2 overtook first place for years as far as delays in construction were concerned, replacing the Bushehr nuclear power plant in Iran, for which cement was first poured on 1 May 1975. The construction of Watts Bar-2 began 40 years ago on 1 December 1972, with the project then being frozen in 1985. The company which owns the plant, the Tennessee Valley Authority (TVA), announced in October 2007 that it would complete the reactor at a cost of US-$ 2.5 billion. Connection to the electricity grid is scheduled for August 2012. In August 2009, the U.S. Nuclear Regulatory Commission (NRC) issued an Early Site Permit for two new reactors at Southern Nuclear's Vogtle site. The two new units are the reference plant for the Westinghouse AP1000 pressurized water reactor design. In February 2010, President Obama announced that the DOE had offered a loan guarantee up to 80% of the project estimated cost of $14.5 billion. Southern Nuclear will only have to pay a credit subsidy fee for the $11.6 billion loan. On February 9, 2012, the Nuclear Regulatory Commission (NRC) voted 4 to 1 to issue the Combined Operating License for Vogtle units 3 and 4. This is the first license to be approved in the United States in over 30 years. In the European Union thirteen out of the twenty-seven member states do not produce any nuclear power themselves or have abolished this technology for technical or economic reasons following political decisions. Fourteen EU member states are currently using nuclear energy, while three countries have shut down their nuclear power plants. Two countries decided after Fukushima to phase-out nuclear power and the remaining countries do not have a nuclear energy program. Eight high-risk reactors were closed down in the new accession countries in the expansion of the EU to Eastern Europe, with the EU and other Western donor countries contributing more than one billion Euros to meet the costs of closure. Four reactors are labeled “under construction” in all of Eastern Europe at present, although a series of new nuclear power plants are being planned. In spite of liberalization and partial privatization of the electrical power sector, the completion or construction of new nuclear power plants constitutes a virtually insurmountable financing problem. Looking at the historical development, there were still a total of 134 nuclear power blocks in operation in Europe in February 2012–116 of them in Western Europe and, following the closure of Ignalina nuclear power plant in Lithuania, a total of 18 in Central and Eastern European countries. According to the IAEA, there are two reactor blocks under construction in Western Europe: one in Finland and since December 2007 one in France. Construction of the first so-called European Pressurized Reactor (EPR) with a rating of 1,600 MW began in Olkiluoto, Finland on 12 August 2005. Since then the project has been overshadowed by exploding costs and delays: originally slated for 2009, commercial operation will probably not take place before August 2013 and instead of the originally planned € 3.2 billion, the reactor will cost almost € 6 billion. An EPR is also being built in France. Construction officially commenced on 3 December 2007 and it was expected that it would take 54 months to complete the plant, i.e. by May 2012. According to inspection reports from the supervisory authority ASN, a host of problems have also cropped up here. As a result, the ambitious time schedule cannot be met and connection to the grid is now scheduled for the end of 2016. The three biggest emerging market countries—India, China and Brazil—embarked on their nuclear energy programmes decades ago, but have only partially achieved their goals.

#### Their Martin evidence says that they should also fund small commercial versions of the reactors to solve. They don’t do that.

#### Incentives are insufficient

Maize, contributing editor – POWER Magazine, ’12

[Kennedy, 7-1-12, “Fukushima Disaster Continues to Cloud Nuclear Outlook,” POWERnews]

J. Frank Russell, senior vice president at Concentric Energy Advisors, described the ambiguous status of nuclear power today from a U.S. perspective. By many counts, he said, “this should be a year of celebration for ‘new nuclear’ in the U.S.” because Southern Co. is building Vogtle Units 3 and 4, and Scana Corp. has a green light from the Nuclear Regulatory Commission (NRC) for the two new units at its V.C. Summer station. In contrast to what could be justified optimism, “the reality is different,” Russell said. “The pipeline is empty, with other proposed units stalled or delayed by the sponsors.” The promise of “up to a dozen” new units that was common in the industry a few years ago “has mostly gone away,” and the industry has awakened to a less-friendly environment. Many reasons account for faded nuclear dreams in the U.S., Russell said. The 2008 recession lowered demand for power and reduced financial markets’ appetite for risk. The collapse of natural gas prices as a result of the shale gas revolution undercut the economics. So did the federal government’s failure to put a price on carbon emissions. Fukushima also played a role. But the key factor dogging the U.S. nuclear sector has been the high and growing cost of nuclear power plants. “While many of these issues may be considered temporary,” said Russell, “the sheer total cost of large-scale new nuclear units is just too large for many companies to bear.” Few companies have the capitalization and appetite for risk to take on a project that could cost $10 billion, the current estimate for a new nuclear unit in the U.S. For a merchant generator, finding the equity capital for such an undertaking is problematic. “Even with a loan guarantee,” he said, “the equity may be impossible to raise.”What will it take for a real U.S. nuclear turnaround? Russell offered a list, with each item necessary to achieving rebirth but none sufficient in itself. He said that demand growth will have to return and that the current generating capacity surplus must decline. Natural gas prices will have to double to at least $4/million cubic feet. A carbon price also must be put in place. The Vogtle and Summer units must come in on schedule and must meet budget targets (an outcome already put in doubt by cost increases recently announced at Vogtle). And policy makers and the public must be positive and supportive.

#### **Government incentives for thorium fail – technology isn’t proven, not sustainable and no one is interested.**

Rees, Staff Writer, ‘11

[Eifon, “Don't believe the spin on thorium being a greener nuclear option”, The Guardian, 6-23-11,

<http://www.guardian.co.uk/environment/2011/jun/23/thorium-nuclear-uranium>, RSR]

'Even if thorium technology does progress to the point where it might be commercially viable, it will face the same problems as conventional nuclear: it is not renewable or sustainable and cannot effectively connect to smart grids. The technology is not tried and tested, and none of the main players is interested. Thorium reactors are no more than a distraction.'

#### Thorium is not economical – more expensive production and hazards make worker protection more expensive.

Makhijani and Boyd, Physicians for Social Responsibility, ‘9

[Arjun and Michele, “Thorium Fuel: No Panacea for Nuclear Power”, Physicians for Social Responsibility,

http://ieer.org/wp/wp-content/uploads/2012/04/thorium2009factsheet.pdf, RSR]

Thorium may be abundant and possess certain technical advantages, but it does not mean that it is economical. Compared to uranium, the thorium fuel cycle is likely to be even more costly. In a once-through mode, it will need both uranium enrichment (or plutonium separation) and thorium target rod production. In a breeder configuration, it will need reprocessing, which is costly. In addition, as noted, inhalation of thorium-232 produces a higher dose than the same amount of uranium-238 (either by radioactivity or by weight). Reprocessed thorium creates even more risks due to the highly radioactive U-232 created in the reactor. This makes worker protection more difficult and expensive for a given level of annual dose.

#### Their Hargreaves ev under solvency says that licensing has to be undertaken in conjunction with national lab development. They don’t do that.

#### Regulatory reform is a prerequisite to subsidy effectiveness.

Spencer and Slobodien, ‘12

[Jack (Research Fellow in Nuclear Energy at the Heritage Foundation) and Rachael (Energy Policy Analyst at the Heritage Foundation), “Is a Nuclear Renaissance Approaching?” <http://blog.heritage.org/2012/02/15/is-a-nuclear-renaissance-approaching/>]

When the Nuclear Regulatory Commission (NRC) voted last week to approve permits to begin construction on two nuclear reactors, many hailed the decision as the start of a nuclear renaissance. Without a doubt, the NRC’s action is noteworthy, because it marks the first time in over three decades that the NRC granted a license to build new reactors. While the NRC’s action should not be downplayed, it’s also important to place this decision in the appropriate context of our nation’s nuclear energy policy. To say this represents a full-scale rebirth of the nuclear industry would be both narrow-sighted and naïve. The Vogle Plant approval does not mitigate the reality that our nation’s nuclear energy policy is in dire need of reform. However, just because the decisions last week alone are not enough to prompt a full-blown nuclear resurgence, that doesn’t mean that one cannot occur. To maximize the full potential of nuclear energy, three fundamental policy issues should be addressed. The U.S. should: Fix how nuclear waste is managed, Develop a more efficient regulatory regime for nuclear energy, and Allow market forces to determine what technologies move forward. Our nation’s current approach to managing nuclear waste is flawed. Private nuclear plants produce waste, but the federal government is responsible for managing it. This removes the incentive for the nuclear utilities to have any interest in how the waste is managed. The nuclear industry is capable of running safe nuclear power plants, is fully capable of managing its own waste, and should have the responsibility to do so. Introducing market forces to waste management will transform the way U.S. handles waste and is critical to securing the long-term success of nuclear power. Next, the government should address the inflexible and often unpredictable regulatory regime that governs the nuclear industry. Rather than providing fair and efficient oversight, current regulations impose unnecessary and harmful barriers that prevent our nation from realizing nuclear industry’s full potential. Additionally, inefficient licensing and rulemaking are responsible for increasing investors’ financial risks and creating a virtual suspension of technological development. The federal government should establish a stable regulatory environment—one that also eliminates burdensome and ineffective regulations—that is conducive to commercial nuclear growth. Unfortunately, nuclear energy advocates have largely turned to federal subsidies to mitigate the financial risks associated with our nation’s outdated regulatory system. And that brings us to the third reform, which is to abandon the flawed notion that the government can subsidize the nuclear industry into success. Subsidies discourage innovation and perpetuate mediocrity. The United States does not need the government to dictate how it produces energy, and government bureaucrats should step aside and allow market forces to determine the future of the nuclear industry. Combined with a regulatory system that allows for technological diversity, this approach would also encourage the introduction of new technologies and services into the market as they are needed. While the approval of construction and operations permits for two reactors was welcomed news, it does not by itself portend a happy ending for nuclear energy. For the rest of America to share with Georgia the opportunities provided by nuclear power, much more must be done.

#### Their Yin evidence is in the context of CARBON FIBERS, not nuclear power. They don’t read any evidence on why the industries are comparable.

#### Natural gas will wreck the industry

WSJ, ’12

[“Cheap Natural Gas Unplugs U.S. Nuclear-Power Revival”]

What killed the revival wasn't last year's nuclear accident in Japan, nor was it a soft economy that dented demand for electricity. Rather, a shale-gas boom flooded the U.S. market with cheap natural gas, offering utilities a cheaper, less risky alternative to nuclear technology. "It's killed off new coal and now it's killing off new nuclear," says David Crane, chief executive of NRG Energy Inc., NRG +3.58% a power-generation company based in Princeton, N.J. "Gas has come along at just the right time to upset everything." Across the country, utilities are turning to natural gas to generate electricity, with 258 plants expected to be built from 2011 through 2015, federal statistics indicate. Not only are gas-fired plants faster to build than reactors, they are much less expensive. The U.S. Energy Information Administration says it costs about $978 per kilowatt of capacity to build and fuel a big gas-fired power plant, compared with $5,339 per kilowatt for a nuclear plant. Already, the inexpensive natural gas is putting downward pressure on electricity costs for consumers and businesses. The EIA has forecast that the nation will add 222 gigawatts of generating capacity between 2010 and 2035—equivalent to one-fifth of the current U.S. capacity. The biggest chunk of that addition—58%—will be fired by natural gas, it said, followed by renewable sources, including hydropower, at 31%, then coal at 8% and nuclear power at 4%. "What utility doesn't want cheap fuel?" says Steve Piper, associate director of energy fundamentals at SNL Financial, a research company. He predicts natural gas will remain the "default fuel" for as long as gas production remains high and prices stay low.

#### Waste destroys long term industry growth and causes public backlash

GAO, Government Accountability Office, ‘11

["Commercial Nuclear Waste, Effects of a Termination of the Yucca Mountain Repository Program and Lessons Learned," April, GAO-11-229]

The proposed termination of Yucca Mountain, which had been planned to be opened in 2020, will likely prolong storage at reactor sites, which would increase on-site storage costs. Because of delays in opening the Yucca Mountain repository, on-site storage at commercial nuclear facilities has been the de facto near-term strategy for managing spent nuclear fuel. Most spent nuclear fuel is stored at reactor sites, immersed in pools of water designed to cool it and isolate it from the environment. With the extension of on-site storage because of the delays in opening Yucca Mountain, some reactors are running out of space in their pools and have turned to dry-cask storage systems. In 2009, we reported that such systems for reactor operators cost from about $30 million to $60 million per reactor, with costs increasing as more spent nuclear fuel is added to dry storage.34 We also reported that the spent nuclear fuel would likely have to be repackaged about every 100 years, although experts said this is uncertain and research is under way to better understand the longevity of dry-cask systems. This repackaging could add from about $180 million to nearly $500 million, assuming initial repackaging operations, with costs dependent on the number of casks to be repackaged and whether a site has a transfer facility, such as a storage pool. Prolonging on-site storage would add to the taxpayer burden by increasing the substantial liabilities that DOE has already incurred due to on-site storage at commercial nuclear reactors. Were DOE to open Yucca Mountain in 2020, as it had planned, and begun taking custody of spent nuclear fuel, it would still have taken decades to take custody of the entire inventory of spent nuclear fuel. Assuming a 2020 opening of Yucca Mountain, DOE estimated that the total taxpayer liabilities for the backlog as of 2020 would be about $15.4 billion and would increase by $500 million for each year of delay thereafter.35 It is important to recognize that these liabilities are outside of the nearly $15 billion already spent on developing a repository and the estimated $41 to $67 billion still to be spent if the Yucca Mountain repository were to be constructed and become operational, most of the cost of which is borne by the Nuclear Waste Fund. Instead, these liabilities are borne by taxpayers because of the government’s failure to meet its commitment to take custody of the waste has resulted in lawsuits brought by industry.36 Furthermore, not all of the lawsuits have been resolved and industry has claimed that the lawsuits still pending could result in liabilities of at least $50 billion. Some former DOE officials and industry and community representatives stated that the termination of the Yucca Mountain program could result in an additional delay in the opening of a repository by at least 20 years, which would lead to additional DOE liabilities in the billions of dollars. Until a final disposition pathway is determined, there will continue to be uncertainties regarding the federal government’s total liabilities. At decommissioned reactor sites, prolonged on-site storage could further increase costs or limit opportunities for industry and local communities, according to industry and community representatives.37 As long as the spent nuclear fuel remains, the sites would not be available for other purposes, and the former operators may have to stay in business for the sole purpose of monitoring, storing, and providing costly security for the fuel. Local communities could lose the potential use of the site for alternative purposes, potentially impacting economic growth and tax revenue. For example, according to an industry representative, a local government in Illinois would like to encourage development of property fronting Lake Michigan near a shutdown nuclear reactor planned for decommissioning. A local government official stated in an interview with the media, however, that it may be difficult to develop and sell the property because prospective buyers may feel uneasy about living next to a site storing spent nuclear fuel. Similarly, a local government official from Minnesota expressed concern about having to provide security and emergency response for the Prairie Island reactor site and its spent nuclear fuel because tax revenues from the facility will decrease substantially after it is decommissioned. However, these issues may not affect all reactor sites. For example, officials in Oregon told us they did not feel dry-cask storage at Trojan, a decommissioned reactor, adversely affected economic growth or tax revenue. This site is about 42 miles north of Portland, Oregon, and is not in a major metropolitan area. Prolonging on-site storage could also increase opposition to expansion of the nuclear industry, according to state and industry officials. Without progress on a centralized storage facility or repository, some experts have stated that some state and local opposition to reactor storage site recertification will likely increase and so will challenges to nuclear power companies’ applications for reactor license extensions and for new reactor licenses.38 For example, Minnesota officials noted that negative public reaction to a proposal to increase dry-cask storage at a nuclear plant led the state legislature to impose a moratorium on new nuclear plants. At least 12 other states have similar prohibitions on new construction, 9 of which can be lifted when a means of disposing of spent nuclear fuel can be demonstrated. Representatives from some tribal and environmental organizations said they were concerned with the long-term on-site storage of spent nuclear fuel. They said nuclear plants should take additional measures to ensure the safety and security of dry-cask storage sites, and they have raised these concerns in objecting to the relicensing of commercial reactors in Minnesota and New Jersey. For instance, tribal officials from the Prairie Island Indian Community in Minnesota told us they opposed relicensing the Prairie Island Nuclear Generating Plant because of environmental and safety concerns they have about living just 600 hundred yards from spent nuclear fuel.

### Prolif

#### Your evidence is all hype - there’s a 1 in 3.5 billion chance of a terrorist strike.

Schneidmiller 9

[Chris, GSN Writer, Citing John Mueller of Ohio State, “Experts Debate Threat of Nuclear, Biological Terrorism,” January 13th,

<http://www.globalsecuritynewswire.org/gsn/nw_20090113_7105.php>]

There is an "almost vanishingly small" likelihood that terrorists would ever be able to acquire and detonate a nuclear weapon, one expert said here yesterday (see GSN, Dec. 2, 2008). In even the most likely scenario of nuclear terrorism, there are 20 barriers between extremists and a successful nuclear strike on a major city, said John Mueller, a political science professor at Ohio State University. The process itself is seemingly straightforward but exceedingly difficult -- buy or steal highly enriched uranium, manufacture a weapon, take the bomb to the target site and blow it up. Meanwhile, variables strewn across the path to an attack would increase the complexity of the effort, Mueller argued. Terrorists would have to bribe officials in a state nuclear program to acquire the material, while avoiding a sting by authorities or a scam by the sellers. The material itself could also turn out to be bad. "Once the purloined material is purloined, [police are] going to be chasing after you. They are also going to put on a high reward, extremely high reward, on getting the weapon back or getting the fissile material back," Mueller said during a panel discussion at a two-day Cato Institute conference on counterterrorism issues facing the incoming Obama administration. Smuggling the material out of a country would mean relying on criminals who "are very good at extortion" and might have to be killed to avoid a double-cross, Mueller said. The terrorists would then have to find scientists and engineers willing to give up their normal lives to manufacture a bomb, which would require an expensive and sophisticated machine shop. Finally, further technological expertise would be needed to sneak the weapon across national borders to its destination point and conduct a successful detonation, Mueller said. Every obstacle is "difficult but not impossible" to overcome, Mueller said, putting the chance of success at no less than one in three for each. The likelihood of successfully passing through each obstacle, in sequence, would be roughly one in 3 [and a half] 1/2 billion, he said, but for argument's sake dropped it to 3 1/2 million. "It's a total gamble. This is a very expensive and difficult thing to do," said Mueller, who addresses the issue at greater length in an upcoming book, Atomic Obsession. "So unlike buying a ticket to the lottery ... you're basically putting everything, including your life, at stake for a gamble that's maybe one in 3 1/2 million or 3 1/2 billion." Other scenarios are even less probable, Mueller said. A nuclear-armed state is "exceedingly unlikely" to hand a weapon to a terrorist group, he argued: "States just simply won't give it to somebody they can't control." Terrorists are also not likely to be able to steal a whole weapon, Mueller asserted, dismissing the idea of "loose nukes." Even Pakistan, which today is perhaps the nation of greatest concern regarding nuclear security, keeps its bombs in two segments that are stored at different locations, he said (see GSN, Jan. 12). Fear of an "extremely improbable event" such as nuclear terrorism produces support for a wide range of homeland security activities, Mueller said. He argued that there has been a major and costly overreaction to the terrorism threat -- noting that the Sept. 11 attacks helped to precipitate the invasion of Iraq, which has led to far more deaths than the original event. Panel moderator Benjamin Friedman, a research fellow at the Cato Institute, said academic and governmental discussions of acts of nuclear or biological terrorism have tended to focus on "worst-case assumptions about terrorists' ability to use these weapons to kill us." There is need for consideration for what is probable rather than simply what is possible, he said.

#### No retaliation – government has shelved the idea.

Schmitt and Shanker ’11

[BY ERIC SCHMITT, THOMAS SHANKER | SEPTEMBER 6, 2011 Eric Schmitt is a terrorism and national security correspondent for the New York Times. Thomas Shanker is a Pentagon and national security correspondent for the Times.]

3. The Threat to Bomb Mecca **As fears of a second attack mounted following the 9/11 strikes, U.S. government planners frantically cast about for strategies to protect the country. Even the most far-fetched ideas had a hearing, however briefly. In one case, some government planners proposed that if al Qaeda appeared ready to attack America again, the United States should publicly threaten to bomb the city of Mecca in Saudi Arabia, the holiest site in all of Islam, in retaliation. "Just nuts!" one Pentagon aide wrote to himself when he heard the proposal. The idea was quickly and permanently shelved.**

#### No brink on the terror impact. Reactors have existed for 60 years yet no impact.

#### Thorium reactors have a greater risk of proliferation

Makhijan 12 (Dr. Arjun Makhijan, President of the Institute for Energy and Envrionmental Research, 5/4, http://www.npr.org/2012/05/04/152026805/is-thorium-a-magic-bullet-for-our-energy-problems)

Quickly on proliferation, then I'll talk about waste. The Princeton University paper says that the inline reprocessing, and this is a quote, offers a way to completely bypass the uranium-232, this terrible radioactive material, contamination problem, because the 27-day half-life of protactinium-233 could be separated out before it decays to uranium-233. I didn't want to say that earlier, but the bottom line from that is you have that reprocessing, you can actually get rid of the U-232 problem. This particular reactor is more vulnerable to proliferation, and I think Mr. Martin should revisit this question just for accuracy. But on waste, here's what Mr. Weinberg, who was the father, guru of this reaction, Dr. Weinberg, is very enthusiastic about nuclear energy. But in the '70s, he grew more cautious on proliferation and waste. He coined the phrase Faustian bargain. It will give you a great energy source, but you've got to worry about proliferation and waste. He also said that, looking back, this enthusiasm about these reactors reminds me of what Mr. Weinberg said sort of ruefully about his own excitement. He says: I was a little bit like the Ayatollah is at the moment. He said that in 1981. And then in 1994, when he wrote his memoir, he really rued the fact that waste had been relegated to a secondary issue, which is exactly what the proponents of (unintelligible), the really solid ones, you know, enthusiastic, rah-rah crowd is doing, which is relegating to a secondary issue.

#### US won’t exert nonproliferation leadership

Cleary, American Enterprise Institute Research Assistant, ‘12

[Richard, 8/13/12, Richard Cleary: Persuading Countries to Forgo Nuclear Fuel-Making, npolicy.org/article.php?aid=1192&tid=30]

The cases above offer a common lesson: The U.S., though constrained or empowered by circumstance, can exert considerable sway in nonproliferation matters, **but** often **elects not to apply the most powerful tools at its disposal for fear of jeopardizing other objectives**. The persistent dilemma of how much to emphasize nonproliferation goals, and at what cost, has contributed to cases of **nonproliferation failure**. The inconsistent or incomplete application of U.S. power in nonproliferation cases is most harmful when it gives the impression to a nation that either sharing sensitive technology or developing it is, or will become, acceptable to Washington. **U.S. reticence** historically, with some exceptions, **to prioritize nonproliferation**—and in so doing reduce the chance of success in these cases—**does not leave room for** great **optimism about future U.S. efforts at persuading countries to forgo nuclear fuel-making**.

#### Prefer our evidence—history proves

Cleary, American Enterprise Institute Research Assistant, ‘12

[Richard, 8/13/12, Richard Cleary: Persuading Countries to Forgo Nuclear Fuel-Making, npolicy.org/article.php?aid=1192&tid=30]

In recent years, there has been a resurgence of proposals designed to limit the spread of nuclear fuel-making facilities, with the understanding that ostensibly peaceful technology can allow for the production of the fissile material required for a nuclear weapon. With U.S. proposals ranging from the Global Nuclear Energy Partnership (GNEP) to a revamped, “Gold Standard” bilateral nuclear cooperation agreement, a wider array of tools has been put at the disposal of American policy makers. Prominent members of the international community have become agitated about the prospect of the proliferation of fuel-making technology as well, with numerous proposals of fuel assurances put forward by such disparate figures as Vladimir Putin and Mohamed ElBaradei. But **renewed enthusiasm for nonproliferation begs questions about how novel the instruments proposed are, and**, moreover, **how effective they are likely to be,** particularly for the country historically at the head of nonproliferation efforts, the United States. A review of this historical record suggests that **optimism** about the U.S. ability to dissuade countries from this path **is misplaced**. This essay considers supply side proposals of fuel assurance, multilateral fuel-making, as well as specific interventions on both the supply and demand sides, consulting particular cases in Iran (1974-1978), West Germany-Brazil (1975-1977), South Korea (1974-1976) and Pakistan (1972-1980) to draw lessons about the effectiveness of U.S. practices under differing circumstances. The record these cases give is mixed, due to two principal causes. The first is the failure of the U.S. to consistently prioritize nonproliferation efforts given Washington’s global and competing interests, interests that tend to be embraced by different factions in the federal government apparatus but whose ultimate arbiter is the president (along with his close advisors). The second is the tendency of decisions about nuclear fuel-making by the state in question to be influenced more by fundamental trends or factors than diplomatic maneuvering from Washington; diplomacy is most effective when it has the political, economic and military backing to implicate these issues. The most important factor in U.S. efforts has tended to be the bilateral relationship between Washington and the country at hand. Decision-makers who consider their country’s relationship with the U.S. to be strategically vital—and believe that fuel-making would threaten this relationship—are most likely to forgo enrichment and reprocessing (ENR) technology. This calculus can be informed by a range of dynamics, some beyond U.S. control, such as security concerns, issues of prestige, and commercial and industrial interests. Domestic politics and public opinion, both in the United States and in the country considering fuel-making, can be influential. One of the fundamental tensions of American nonproliferation efforts lies with the Nuclear Nonproliferation Treaty (NPT), the international legal framework of reference in nonproliferation matters. The prevailing interpretation of the NPT centers on what has been referred to as the “fundamental bargain”: in exchange for nuclear-weapons states’ movement toward disarmament and their sharing of technology and expertise for peaceful nuclear energy, nonnuclear weapons states will not pursue the bomb.1 One portion of the NPT, in particular, has borne on U.S. efforts to persuade countries not to pursue nuclear fuel-making technology: Article IV. Here, the NPT enshrines the “inalienable right…to develop research, production and use of nuclear energy for peaceful purposes,” and pledges signatories to “undertake to facilitate…the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy.”2 Traditionally, the U.S. has elected for an ambiguous middle ground, not denying an Article IV “inalienable” right to fuel-making, but not acknowledging it either.3 While U.S. interpretations of the NPT have not, as a practical matter, stemmed its attempts to convince countries to eschew nuclear fuel-making technology, the NPT’s bargain has shaped certain stances, particularly supply side proposals such as fuel assurances. The application of U.S. national power, on both the supply and demand sides of nuclear fuel-making, can play a role in convincing countries of the benefits of their relationship with Washington and the costs to be incurred if this relationship were fractured. The adroit use of “sticks” and “carrots” can withhold or provide incentives for cooperation, convincing countries considering ENR that the risks of doing so outweigh the benefits. The **case studies** examined here **suggest** that if the United States is to give the impression that a bilateral relationship rests in the balance, Washington may have to undertake risks of its own, perhaps compromising other policy objects for the sake of nonproliferation. **When** the **circumstances** have **called for Washington to put nonproliferation goals above others, policy makers** have often **failed to do so.**

#### US leadership on prolif-resistant nuclear energy cooperation fails, causes backlash that undermines nonproliferation

Hibbs 12

Mark Hibbs, Carnegie Nuclear Policy Program Senior Associate, 8/7/12, Negotiating Nuclear Cooperation Agreements, carnegieendowment.org/2012/08/07/negotiating-nuclear-cooperation-agreements/d98z

**U.S. resolve to include a no-ENR pledge in the body of new bilateral agreements will be seen** by some countries **as arrogant and unacceptable**. Incorporating ENR terms into side-letters or preambles may be less offensive. That approach would also more easily facilitate including reciprocal commitments by the United States into its 123 bargains with foreign countries. These might include guaranteeing nuclear fuel supply through participation in the U.S. fuel bank, facilitating the country’s access to other back-up sources of nuclear fuel, and, in the future, perhaps even taking back U.S.-origin spent fuel. The outcome of any negotiation for a bilateral nuclear cooperation agreement will depend on the leverage both sides bring to the table. When the United States negotiated most of the 22 such agreements in force today, it was the world’s leading provider of nuclear technology, equipment, and fuel. As the examples of Jordan and Vietnam show, unlike half a century ago, nuclear newcomers today don’t need to buy American. The vendor field is populated by firms in Argentina, Australia, Canada, the European Union, Japan, Kazakhstan, Namibia, Niger, Russia, and South Korea, and in the future they will be joined by others in China and India. Governments in these countries do not seek to establish a no-ENR requirement as a condition for foreign nuclear cooperation. Some of them, Australia and Canada for example, have strong nonproliferation track records. **Countries** now **seeking** to form **foreign industrial partnerships to set up nuclear power** programs **have numerous options and they will favor arrangements that provide them the most freedom and flexibility**. **Equity in international nuclear affairs matters**. By negotiating with its partners voluntary political agreements, including side benefits to limit the application of sensitive technologies, instead of trying to legally **compel** them to make **concessions that are politically onerous, the U**nited **S**tates **can** serve its nonproliferation and security interests while **avoid**ing the **challenge to U.S. credibility** that would follow from rigid application of a one-size-fits-all policy. The United States should show nonproliferation leadership by generally discouraging countries without enrichment and reprocessing capabilities from embarking in this direction. But negotiators need policy guidelines that provide for flexibility and encourage them to create incentives to get desired results. To some extent, the current policy may be informed by the insight that trying to negotiate no-ENR terms into the operative text of an agreement may fail, and that other approaches may be more productive. It also reflects the reality that U.S. leverage on nuclear trade is declining.

#### No widespread proliferation.

Hymans, USC Associate Professor of IR, ‘12

[Jacques, /16/12, North Korea's Lessons for (Not) Building an Atomic Bomb, www.foreignaffairs.com/articles/137408/jacques-e-c-hymans/north-koreas-lessons-for-not-building-an-atomic-bomb?page=show]

Washington's miscalculation is not just a product of the difficulties of seeing inside the Hermit Kingdom. It is also a result of the broader tendency to overestimate the pace of global proliferation. For decades, Very Serious People have predicted that strategic weapons are about to spread to every corner of the earth. **Such warnings have routinely proved wrong** - for instance, the intelligence assessments that led to the 2003 invasion of Iraq - but they continue to be issued. In reality, despite the diffusion of the relevant technology and the knowledge for building nuclear weapons, the world has been experiencing a great proliferation slowdown. Nuclear weapons programs around the world are taking much longer to get off the ground - and their failure rate is much higher - than they did during the first 25 years of the nuclear age. As I explain in my article "Botching the Bomb" in the upcoming issue of Foreign Affairs, the key reason for the great proliferation slowdown is the absence of strong cultures of scientific professionalism in most of the recent crop of would-be nuclear states, which in turn is a consequence of their poorly built political institutions. In such dysfunctional states, the quality of technical workmanship is low, there is little coordination across different technical teams, and technical mistakes lead not to productive learning but instead to finger-pointing and recrimination. **These problems are debilitating**, and **they cannot be fixed** simply by bringing in more imported parts through illicit supply networks. In short, as a struggling proliferator, North Korea has a lot of company.

#### No impact to prolif – empirics prove that caution and disarmament win out.

Mueller, Professor of Political Science at Ohio State University, ‘11

[John, International Relations and Security Network, “'Clocking' Nuclear Weapons”, 6-7-11,

<http://www.isn.ethz.ch/isn/Digital-Library/ISN-Insights/Detail/?contextid734=129859&contextid735=129857&id=129859&lng=en&tabid=129857>, RSR]

For nuclear weapons to fade toward oblivion, perhaps nothing needs to be done except wait, while their low value and high cost cause more and more peo­ple to question their usefullness. In an important sense, nuclear weapons have been "managed" exceedingly well since 1945. They have been around, even­tually in great numbers, for two-thirds of a century, and none have been detonated either in anger or by accident. Nevertheless, legions of alarmed pundits over the decades have predicted inevitable doom: That clock on the cover of the Bul­letin of the Atomic Scientists has remained suggestively poised at shortly before mid­night since the 1940s. But it will come as no shock (especially in Switzerland) to suggest that clocks with hands that do not rotate are useless. And so, as it happens, are nuclear weapons. When the value is too low… It is difficult to see how any country that has possessed nuclear weapons has found them beneficial since World War II. They have supplied little diplomatic advantage, and no nuclear-armed country has discov­ered an effective use for them in the many wars waged in places like Vietnam, Korea, Afghanistan, the Falklands, Algeria, Leba­non, Kashmir, Kosovo, Iraq, Grenada, Panama and Hungary. Nor have they been useful in deterring war. Their supposed chief achievement was to prevent World War III during the Cold War, but this notion continues to be undercut with each leak from Soviet archives. Al­though highly sympathetic to revolution­ary and civil war violence, Soviet ideology dismissed direct war against the capitalist world, whether nuclear or not, as stupen­dously stupid. That is, there was nothing for the nukes to deter. Those who experienced World War II scarcely needed visions of mushroom clouds to realize that it was im­perative to be cautious about major war. The weapons' uselessness also helps to ex­plain why alarmists have been wrong for decades about the pace of nuclear prolifer­ation. Dozens of countries have been tech­nologically capable of obtaining nuclear arsenals, but very few have done so.

### Warming

#### Can’t solve warming

#### A.) Deforestation

Howden 7(Daniel Howden, The Independent “Deforestation: The Hidden Cause of Global Warming” 14 May 2007. DOA August 15, 12 sphinx.tsf.hu/new/iny/files/1645.doc)

**Most people think of forests** only in terms of the CO2 they absorb. The rainforests of the Amazon, the Congo basin and Indonesia are thought of **as the lungs of the planet.** But **the destruction of those forests will in the next four years** alone, in the words of Sir Nicholas Stern, **pump more CO2 into the atmosphere than every flight in the history of aviation to at least 2025.¶** Indonesia became the third-largest emitter of greenhouse gases in the world last week. Following close behind is Brazil. Neither nation has heavy industry on a comparable scale with the EU, India or Russia and yet they comfortably outstrip all other countries, except the United States and China.¶ What both countries do have in common is tropical forest that is being cut and burned with staggering swiftness. Smoke stacks visible from space climb into the sky above both countries, while satellite images capture similar destruction from the Congo basin, across the Democratic Republic of Congo, the Central African Republic and the Republic of Congo.¶ According to the latest audited figures from 2003, **two billion tons of CO2 enters the atmosphere** every year **from deforestation.** That destruction amounts to 50 million acres - or an area the size of England, Wales and Scotland felled **annually.¶** The remaining standing forest is calculated to contain 1,000 billion tons of carbon, or double what is already in the atmosphere.¶ As the GCP's report concludes: **"If we lose forests, we lose the fight against climate change."**

#### B.) Live stock

FAO 6 ("Spotlight: Livestock Impacts on the Environment." FAO: FAO Home. Food and Agriculture Organization of the United Nations, Nov. 2006. Web. 15 August 12. <<http://www.fao.org/ag/magazine/0612sp1.htm>>.)

The livestock sector is by far the single largest anthropogenic user of land. Grazing occupies 26 percent of the Earth's terrestrial surface, while feed crop production requires about a third of all arable land. Expansion of grazing land for livestock is a key factor in deforestation, especially in Latin America: some 70 percent of previously forested land in the Amazon is used as pasture, and feed crops cover a large part of the reminder. About 70 percent of all grazing land in dry areas is considered degraded, mostly because of overgrazing, compaction and erosion attributable to livestock activity.¶ At the same time, the livestock sector has assumed an often unrecognized role in global warming. Using a methodology that considered the entire commodity chain *(see box below)*, FAO estimated that livestock are responsible for 18 percent of greenhouse gas emissions, a bigger share than that of transport. It accounts for nine percent of anthropogenic carbon dioxide emissions, most of it due to expansion of pastures and arable land for feed crops. It generates even bigger shares of emissions of other gases with greater potential to warm the atmosphere: as much as 37 percent of anthropogenic methane, mostly from enteric fermentation by ruminants, and 65 percent of anthropogenic nitrous oxide, mostly from manure.

#### Their Pearce evidence is from 2007. No reason why we haven’t hit the tipping point system since then or when we will.

#### Nuclear power increase CFCs which contribute more to warming than carbon dioxide and depletes the ozone.

Stein, Chairman of Three Mile Island Alert Inc., ‘8

[Eric Joseph, “The "Brown Side" of Nuclear Power,”

http://www.depweb.state.pa.us/ news/cwp/view.asp?A=3&Q=501756]

Nuclear advocates argue that the problem of greenhouse gases can be solved by nuclear power plants which do not emit carbon dioxide - at the point of production. What they don¹t tell you is what happens to the nuclear wonder pill before it is magically transformed into green penicillin. The nuclear-carbon shell game only works if you ignore the environmental cost on the "front end" of nuclear power production. From the moment uranium is mined - then milled, enriched, fabricated and transported - it releases large of airborne pollutants. How much? Glad you asked. The enrichment of uranium at the Paducah Gaseous Diffusion plant releases massive amounts of chlorofluorocarbons (CFCs) which are more damaging as a global warmer than carbon dioxide. Nuclear fuel production in America creates at least 800,000 pounds of CFCs annually. CFCs remain the primary agent for stratospheric ozone depletion. The industry's official strategy to reduce CFC emissions was to close its Portsmouth enrichment plant and eliminate "roughly half as many miles of leaky pipes." The Ohio fuel plant is closed, but is undergoing a massive site cleanup to recover uranium, treat and isolate contaminated water and sewage, and decontaminate and remove miles of radioactive tubes, pipes and equipment. The production of fuel for nuclear reactors is extremely energy intensive. The Paducah plant, which is currently the plant is also undergoing a $191 million cleanup, requires the electrical output of two 1000-megawatt carbon dioxide producing, coal-fired plants.

#### Independently, Ozone depletion causes extinction.

Williams, Author of Tetron Natural Unified Field Theory, ‘96

[David Crockett, “THE SCIENTIFIC SPIRITUAL REVOLUTION”, 2-7-96,

http://www.angelfire.com/on/GEAR2000/video96.htmls]

Today all life on earth is threatened by many problems associated with the materialistic and shortsighted human activities out of harmony with nature that have led to an oxygen crisis from massive deforestation and fossil fuel combustion which has created global warming responsible for increased weather extremes, flooding, droughts, disease vectors, etc., and an ozone layer depletion that threatens all life on earth by the imminent destruction of the ocean's phytoplankton which produce over half of earth's oxygen and form the beginning of the oceanic food chain. Nuclear testing has caused lasting increases in seismic and volcanic activity, explainable by free energy science, which threatens cataclysmic earth changes. The danger of nuclear conflagration still exists. All these conditions have been predicted independently by many different religious prophecies since many hundreds of years ago. How can this be understood and resolved?

#### Nuclear power produces heat emissions which exacerbate global warming

Science Daily 9 (July 13th, Trapping Carbon Dioxide Or Switching To Nuclear Power Not Enough To Solve Global Warming Problem, Experts Say, http://www.sciencedaily.com/releases/2009/07/090713085248.htm)

Attempting to tackle climate change by trapping carbon dioxide or switching to nuclear power will not solve the problem of global warming, according to energy calculations published in the July issue of the International Journal of Global Warming. Bo Nordell and Bruno Gervet of the Department of Civil and Environmental Engineering at Luleå University of Technology in Sweden have calculated the total energy emissions from the start of the industrial revolution in the 1880s to the modern day. They have worked out that using the increase in average global air temperature as a measure of global warming is an inadequate measure of climate change. They suggest that scientists must also take into account the total energy of the ground, ice masses and the seas if they are to model climate change accurately. The researchers have calculated that the heat energy accumulated in the atmosphere corresponds to a mere 6.6% of global warming, while the remaining heat is stored in the ground (31.5%), melting ice (33.4%) and sea water (28.5%). They point out that net heat emissions between the industrial revolution circa 1880 and the modern era at 2000 correspond to almost three quarters of the accumulated heat, i.e., global warming, during that period. Their calculations suggest that most measures to combat global warming, such as reducing our reliance on burning fossil fuels and switching to renewables like wind power and solar energy, will ultimately help in preventing catastrophic climate change in the long term. But the same calculations also show that trapping carbon dioxide, so-called carbon dioxide sequestration, and storing it deep underground or on the sea floor will have very little effect on global warming. "Since net heat emissions accounts for most of the global warming there is no or little reason for carbon dioxide sequestration," Nordell explains, "The increasing carbon dioxide emissions merely show how most net heat is produced. The "missing" heat, 26%, is due to the greenhouse effect, natural variations in climate and/or an underestimation of net heat emissions, the researchers say. These calculations are actually rather conservative, the researchers say, and the missing heat may be much less. The researchers also point out a flaw in the nuclear energy argument. Although nuclear power does not produce carbon dioxide emissions in the same way as burning fossil fuels it does produce heat emissions equivalent to three times the energy of the electricity it generates and so contributes to global warming significantly, Nordell adds.

#### Don’t solve warming – tipping point inevitable, timeframe and insufficient amount of reductions block solvency.

Smith, Environmental Journalist, ‘11

[Gar, He is the former editor of Earth Island Journal, and currently edits Earth Island Institute's weekly "eco-zine" The-Edge, “NUCLEAR ROULETTE: THE CASE AGAINST A NUCLEAR RENAISSANCE”

http://ifg.org/pdf/Nuclear\_Roulette\_book.pdf]

More than 200 new reactors have been proposed around the world but not enough reactors can be built fast enough to replace the world’s vanishing fossil fuel resources.2 Even if nuclear output could be tripled by 2050 (which seems unlikely in light of the industry’s record to date), this would only lower greenhouse emissions by 25 to 40 billion annual tons—12.5 to 20 percent of the reductions needed to stabilize the climate.3 The International Energy Agency estimates that renewables and efficiency measures could produce ten times these savings by 2050. The IEA estimates that cutting CO2 emissions in half by mid-century would require building 1,400 new 1,000-MW reactors—32 new reactors every year. But since it usually takes about 10 years from groundbreaking to atom-smashing, these reactors could not be constructed fast enough to prevent an irreversible “tipping” of world climate. This hardly seems feasible since the industry has only managed to bring 30 new reactors on-line over the past ten years. Of the 35 reactors the IEA listed as “under construction” in mid-2008, a third of these had been “under construction” for 20 years or longer. Some may never be completed. By contrast, a 1.5 MW wind turbine can be installed in a single day and can be operational 4 | The Watts Bar-1 reactor, 60 miles southwest of Knoxville, Tennesee, took 24 years to build. NUCLEAR REGULATORY COMMISSION in two weeks.4 Still, the pace of nuclear construction has picked up lately. In 2010, the number of reactor projects underway had ballooned to 66—with most located in China (27) and Russia (11). And it’s not just a matter of designing and building new reactors.The construction of 1,400 new nuclear reactors also would require building 15 new uranium enrichment plants, 50 new reprocessing plants and 14 new waste storage sites—a deal-breaker since the sole proposed U.S. storage site at Yucca Mountain is apparently dead .The cost of this additional nuclear infrastructure has been estimated at $3 trillion.5 Moreover, since the operating lifetime of these new reactors would still be a mere 40 years, even if new construction was practical, quick and affordable, it would only “solve” the global-warming problem for another 40 years, at which point the plants would need to be decommissioned.

#### Can’t solve China, India, etc. No tech transfer – subsidies distort the market.

Hall and Helmers 10

[Bronwyn H. Hall, Professor of the Graduate School – UC Berkeley, Christian Helmers, University of Oxford - Department of Economics, The role of patent protection in (clean/green) technology transfer 24 October 2010 http://www.voxeu.org/index.php?q=node/5706]

There are a number of other issues apart from intellectual property rights that are of first-order importance in setting incentives for the development and transfer of technologies. Developing countries themselves may generate powerful distortions inhibiting the production and transfer of green technologies. A report by Copenhagen Economics (2009) suggests that subsidies for the consumption of fossil fuels in some developing countries, such as Venezuela, Iran and Indonesia, may represent a significant barrier to the development and transfer of green technologies in these countries. Barton (2007) suggests that import tariffs on photo-voltaic and wind technology in place in India and China may also act as a barrier to technology development and transfer. In contrast, import tariffs and subsidies for biofuels in place in industrialised countries, above all the EU and US, are viewed as hampering the development of this industry in developing countries, such as Brazil (World Bank 2010). Such import barriers on green technologies represent a complex issue. Due to the environmental externality, it is desirable to have policy interventions in place in developed countries dedicated to market creation, such as subsidies, to promote demand for green technologies (Taylor 2008). From a political economy perspective, however, it is unclear to what extent developed economies are willing to subsidise demand for green technology produced abroad, in particular in large emerging economies.