### T

#### Production is extraction, conversion, and distribution of energy – excludes demonstration

Koplow 4 Doug Koplow is the founder of Earth Track in Cambridge, MA. He has worked on natural resource subsidy issues for 20 years, primarily in the energy sector "Subsidies to Energy Industries" Encyclopedia of Energy Vol 5 2004www.earthtrack.net/files/Energy%20Encyclopedia,%20wv.pdf

3. SUBSIDIES THROUGH THE FUEL CYCLE

Because no two fuel cycles are exactly the same, examining subsidies through the context of a generic fuel cycle is instructive in providing an overall framework from which to understand how common subsidization policies work. Subsidies are grouped into preproduction (e.g., R&D, resource location), production (e.g., extraction, conversion/generation, distribution, accident risks), consumption, postproduction (e.g., decommissioning, reclamation), and externalities (e.g., energy security, environmental, health and safety).

#### Violates production - Demonstration reactors are distinct from power reactors used to produce electricity

Ingersoll 8, a senior program manager in Oak Ridge National Laboratory's Reactors and Nuclear Systems Division

<http://wiki.ornl.gov/sites/gnstd/gssec/meeting1/Shared%20Documents/2_4_Nuclear%20Reactors%20and%20Proliferation%20Risk.pdf>

Reactors Come In Many Flavors

• Research Reactors

– To provide neutrons for basic and applied research

• Test Reactors

– To develop specific reactor technologies or explore operational characteristics

• Prototype or Demonstration Reactors

– To validate the overall performance of new reactor types

• Production Reactors

– To produce special nuclear materials for weapons

• Power Reactors

– To produce electricity

**Kisrch** – “We should build a $3B demonstration plant now to get started”

#### Demonstration isn’t a financial incentive

GSWH 11 Global Solar Water Heating Market Transformation and Strengthening Initiative, This publication is the result of a joint effort from the following contributors: The European Solar ThermalIndustry Federation (ESTIF), the United Nations Environment Program (UNEP) through its Division ofTechnology, Industry and Economics (DTIE) and the Global Environment Fund (GEF). "Guidelines for policy and framework conditions" No Specific Date Cited, Most Recent Citations From 2011 www.solarthermalworld.org/files/policy\_framework.pdf?download

8 Non financial incentives for solar thermal

Non Financial Incentives include all public policies that support the creation of public good, even when providing an indirect financial advantage to the solar thermal market. For instance: an awareness raising campaign financed from public money or a programme to subsidise craftsmen training or R&D, etc. Obviously, all these instruments create an indirect financial advantage for companies involved in the market and this benefit is then passed on to the users.

8.1 Solar thermal obligations

• What is a Solar Thermal Obligation (STO)?

STO are legal provisions making mandatory the installation of solar thermal systems in buildings. The obligation mainly applies to new buildings and those undergoing major refurbishment. The owner must then install a solar thermal system meeting legal requirements. Most of the existing STOs are connected to national or regional energy laws and implemented through the municipal building codes. A growing number of European municipalities, regions and countries have adopted solar thermal obligations. Already today, more than 150 million people live in regions covered by a STO.

• Benefits

A major benefit of solar thermal ordinances is their effectiveness combined with low costs and limited administrative overheads for public authorities. As part of the building permit process, the inspection with regard to the renewable energy requirement is simple and thus does not strain public finances.

The introduction of a solar thermal ordinance prevents market fluctuation caused by inconsistent incentive programmes. It provides a stable planning environment for market actors and investors, encouraging local economic growth and creating new jobs in this sector.

• Unwanted effects and flanking measures

Solar obligations have a profound effect on the solar thermal market's structure. Therefore, to maximise their benefits, they require flanking measures.

In a market where solar thermal becomes mandatory, promoters and customers will tend to question the solar systems' operation and react more negatively than in a voluntary market.

Ends users and the construction sector will often go for the cheapest possible solution, while building owners will try to circumvent the obligation through exemptions. The real impact of any regulation strongly depends on its technical parameters and control procedures.

It is vital, therefore, that the regulations adopted ensure state-of-the-art quality assurance, products, planning, installation and maintenance of the system, guaranteeing the same high level of customer satisfaction as in the current voluntary market. Poor performance of "mandatory" systems would not only undermine public acceptance of the obligation, but also, possibly, of the solar thermal technology in general.

Israel, 30 years of experience with solar thermal ordinances

Thirty years ago, Israel was the first country to pass legislation on solar thermal installations. With the second oil crisis at the end of the 1970s, members of parliament examined ways to make their country less dependent on imported energy. The result was a law, which made solar water heaters mandatory in new buildings such as residential housing, hotels, guest houses and old people's homes up to 27 metres high. The legislation entered into force in 1980.

Nowadays over 80% of Israel's households get their domestic hot water from solar rooftop heaters. A typical domestic unit consists of a 150 litre insulated storage tank and a 2 m2 collector. These hot water heaters save the country the need to import about 4% of its energy needs, and replace about 9% of the electricity production.

The law has now become redundant. More than 90% of the solar systems are installed on a voluntary basis, i.e. they are installed in existing buildings, or the systems are larger than required by the obligation.

Source: PROSTO project

8.2 Quality, standards and certification policy

The need and methods to ensure quality in the market are so important for solar thermal, that a complete guide is dedicated to this topic in the framework of the GSWH project.

Why do we need standards?

The objective of standardisation and quality assurance is to guarantee product safety and quality, as well as lower prices. At every stage of market development, the capacity of solar thermal systems to deliver the expected level of performance is a key factor. In the early stage of the market, quality issues have had long lasting devastating effects. The existence of standards is the cornerstone of quality assurance.

The actors of standards and certification

Standardisation and quality for solar thermal should be the result of a joint effort from public authorities (market regulation), the industry, the technical community and, when they are adequately organised, the end users.

• Public authorities have a key role to play in imposing stringent quality requirements and in initiating, facilitating and controlling the standardisation process.

• The industry must provide product and technical expertise. It must understand the benefits

of ensuring standardised level of quality. Public authorities should guarantee that the standards are neutral and do not favour certain products or companies.

• I t is essential to be able to rely on independent testing facilities and certification bodies. If the private initiative is not adequate, then public authorities should actively support the creation of such structures.

• Consumer organisations can bring a useful contribution to the process. Quality installation for quality products

Solar thermal products usually need to be installed. This operation can be simple to the extent that it might not require the intervention of a specialist, e.g. some termosiphons systems, but on average it should be undertaken by a professional. To guarantee performance, the quality of the installation is as important as the quality of the system. Minimum requirements in terms of training and qualification of installers should be implemented in parallel with product requirements. Public authorities should regulate in the absence of initiatives from trade and industry.

Performance and quality for a sustainable market

Performance and quality measures do not constitute flanking or accompanying measures. Framework and regulations should be developed, and relevant bodies involved from the beginning, even if this has to be imposed to the market to some extent.

The market tends to be shortsighted; industry will naturally prefer to avoid costs and regulations. The benefits of high quality regulations and market surveillance will emerge eventually and guarantee a sustainable market. Public authorities should ensure that incentives and promotion endorse quality.

8.3 Research and development, demonstration projects (definition, importance, recommendations, examples)

Solar thermal is a simple and mature technology; however, research and development are necessary to guarantee that performance will continue to improve and costs to decrease. Research and development can also contribute to adapt the technical features of products to local needs, e.g. improve water tightness in tropical areas, resistance to frost in mountainous regions. Research and development cannot proceed only from public initiative but, through public universities and public research centres, public authorities have a leading role to play.

Building up centres of technical excellence

Applied research, engineering education, development, product innovation, standardisation, testing are closely linked and there are a lot of synergies between those fields. Most of the time, the same persons will be likely to teach, test and lead research projects. A sustainable market will always require relying on a high level engineering community. Public authorities should encourage the creation of multi disciplinary technical facilities for solar thermal engineering and encourage or even impose on the industry to participate in this effort.

Importance of demonstration projects

For both promotion and technical (experimental) reasons demonstrations projects are extremely useful. Projects implementing technologies that are not market ready, but which have an important potential, will allow testing and improving the solution, gather data, monitor functioning and finally demonstrate the feasibility to the general public and the industry in order to prepare the introduction on the market.

9 Financial incentives (direct, indirect, tax incentives, low interest loans): definition, importance, recommendations, examples

Financial Incentives include any public policy giving a financial advantage to those who install a solar thermal system or that use solar thermal energy.

#### Vote neg for limits and precision — enables obscure energy types that financial incentive research wouldn’t cover—overstretched neg burdens and prevents any limiting function based on object content

### DA

#### Obama pushing for sequestration deal now – key to avert economic collapse

Susa Crabtree (writer for the Washington Times) February 6, 2013 “Obama ramps up pressure to resolve sequester;¶ Sets up another partisan battle” Lexis

Warning of serious repercussions for the economy and the military if Congress fails to halt the next round of $85 billion in budget cuts next month, President Obama on Tuesday called for replacing the automatic spending "sequesters" with a vague mix of smaller cuts and more tax increases.¶ At a time when many top Republicans have said the cuts should take effect, Mr. Obama's call renews the battle over spending that has dominated Washington for the past two years, but which seemed to cool after the January deal that raised taxes across the board.¶ The president said he would like another big tax reform that targets the wealthy, cutting deductions and loopholes, but said at the very least Congress should avert the sequester, which he called an avoidable self-inflicted economic wound.¶ "If they can't get a bigger package done by the time the sequester is scheduled to go into effect, then I believe they should at least pass a smaller package," he said. "There is no reason that the jobs of thousands of Americans who work in national security or education or clean energy - not to mention the growth of the entire economy - should be put in jeopardy."¶ His offer is a rehash of proposals he has made to end tax breaks and lower projected increases in health care spending, though the White House has yet to lay out a full list of deductions it wants Congress to target.¶ Even before Mr. Obama spoke, Republicans were rejecting his offer.¶ House Speaker John A. Boehner, Ohio Republican, issued a statement saying it was the president who came up with the sequester idea. He also said House Republicans have passed two bills to avert the sequesters, so Mr. Obama must lay out his own specific plan.¶ Still smarting from his "fiscal cliff" deal with Democrats in which Republicans agreed to increase taxes without spending cuts, the speaker made it clear that he was ruling out any need to increase taxes further.¶ "President Obama first proposed the sequester and insisted it become law. Republicans have twice voted to replace these arbitrary cuts with common-sense cuts and reforms that protect our national defense," he said. "We believe there is a better way to reduce the deficit, but Americans do not support sacrificing real spending cuts for more tax hikes.¶ "The president's sequester should be replaced with spending cuts and reforms that will start us on the path to balancing the budget in 10 years," he said.¶ Senate Minority Leader Mitch McConnell, Kentucky Republican, rebuked Mr. Obama for lecturing Congress about the need to avoid the cuts he proposed.¶ "If Democrats have ideas for smarter cuts, they should bring them up for debate," he said. "But the American people will not support more tax hikes in place of the meaningful spending reductions both parties already agreed to and the president signed into law."¶ Mr. McConnell also criticized Mr. Obama for failing to submit a budget by the statutory deadline this year.¶ "The clock is ticking. It's time to get serious," he added.¶ The White House first came up with the idea of the arbitrary, across-the-board spending cuts during budget talks in summer 2011 as a way to pressure Democrats and Republicans in Congress into coming up with their own spending cut plan to reduce the deficit over the next decade.¶ But partisan Washington gridlock quickly took hold and a supercommittee of lawmakers tasked with coming up with a plan to find alternative spending cuts to replace the sequester failed to reach a deal after negotiating for months.¶ As the country braced for the cuts to kick in and Washington to tumble off the fiscal cliff Jan. 1, lawmakers struck a last-minute deal that shifted the first two months of cuts into future spending bills and replaced the rest with an increase in the way retirement accounts are taxed. Still, the deal postponed another $85 billion in cuts to March 1 - a way to buy more time to find alternative sources of revenue.¶ The Pentagon in recent weeks has grown increasingly pessimistic about the chances of avoiding the cuts, and the branches of the military have issued memos outlining what programs and sections would be hit hardest.¶ Washington think tanks and policy centers have warned repeatedly of the havoc that the cuts could wreak on the economy. The Bipartisan Policy Center has estimated that 1 million jobs could be lost this year and next as a direct result of the spending cuts, and defense industry analysts say that number could rise to 2 million this year alone.¶ The president made his plea as Senate Democrats were meeting in Annapolis for their annual retreat. Mr. Obama is scheduled to address the group Wednesday.

#### Plan unpopular – costs PC

Dardenon 9 [Steve is a writer for The Seeker Blog. “How The Integral Fast Reactor Was killed,” Oct 21, http://nuclearstreet.com/nuclear\_power\_industry\_news/b/nuclear\_power\_news/archive/2009/10/21/how-the-integral-fast-reactor-was-killed-10214.aspx]

Here’s a concise history of the Integral Fast Reactor, including how Sen. John Kerry orchestrated the killing: The anti-IFR forces were led by John Kerry. He was the principal speaker and the floor manager of the anti forces in the Senate debate. He spoke at length, with visual aids; he had been well prepared. His arguments against the merits of the IFR were not well informedand many were clearly wrong. But what his presentation lacked in accuracy it made up in emotion. He attacked from many angles, but principally he argued proliferation dangers from civilian nuclear power. While all serious weapons development programs everywhere in the world have always taken place in huge laboratories, in specialized facilities, behind walls of secrecy, and there has been negligible involvement with civilian nuclear power, it is impossible to argue that there CAN be none. For this reason the IFR processes were specifically designed to further minimize such possibilities, and, if developed, they would have represented a significant advance over the present situation. This did not slow Senator Kerry, as he went through the litany of anti-nuclear assertions, articulately and confidently. After both sides had their say the vote came, and the pro-IFR forces prevailed. But now the funding bill had to go to conferencea compromise committee of both houses whose job was to consolidate the different versions passed by the two houses into one bill to be sent to the President for signature into law. There was brief hope that IFR development could continue even in the face of the powerful opposition. But the conference committee, behind the closed doors normal to such meetings, upheld the House position. There was to be no IFR funding. The IFR was dead. A few weeks later, the mid-term elections swept Republicans into power in Congress. The IFR votes had always been politicized. With some significant exceptions, in fact just enough each year to fund the IFR, the vote had always been along party lines. Had the IFR been able to hang on for a few more weeks its development almost certainly would have gone on to completion.

#### Economy is at the top of the agenda – all of Obama’s PC is key

Wolf Blitzer and Gloria Borger (CNN political analysts) February 1, 2013 “Wall Street Soars; Senate Scandal; Super Bowl Advertising; Al Gore Defends Selling to Al Jazeera; The Most Expensive Election; Hillary Clinton Resigns; Kerry Arrives at Swearing in Ceremony; Geraldo Rivera for Senator?; New Jersey Senate Showdown; Once Powerful Cardinal Disciplined; $8M a Minute; Controversy Over Some Super Bowl Ads; New York Mourns Ed Koch” Lexis

BLITZER: So, there's more jobs created, another 150,000 last month. They revised figures for November and December, another 200,000 beyond those earlier announced.¶ So how is this going to impact his legislative agenda on some of these critically important issues?¶ BORGER: Before he gets to immigration and everything else, he has to go through all of the business speed bumps, the economic speed bumps.¶ BLITZER: And there are plenty of them.¶ BORGER: And there are plenty of them coming up.¶ And I think both sides can make the case, Wolf, and they will, that a dysfunctional Washington really hurts consumer confidence and hurts business hiring. Republicans will say you have got to decrease the deficit and the president will say, you know what, we have to perhaps think about spending a little bit of money to get out of this and to try and reduce that unemployment rate.¶ So they are going to come at it from different sides, Wolf. The big thing to think about here is the president's approval rating. It is now at 52 percent. That gives him an awful lot of leverage on these economic issues.¶ BLITZER: He's going to need that if he's going to get some of these agenda items through.¶ BORGER: He will need every bit of it. Yes.

#### Economic collapse causes global nuclear war

Friedberg and Schoenfeld, 2008 [Aaron, Prof. Politics. And IR @ Princeton’s Woodrow Wilson School and Visiting Scholar @ Witherspoon Institute, and Gabriel, Senior Editor of Commentary and Wall Street Journal, “The Dangers of a Diminished America” <http://online.wsj.com/article/SB122455074012352571.html>]

Then there are the dolorous consequences of a potential collapse of the world's financial architecture. For decades now, Americans have enjoyed the advantages of being at the center of that system. The worldwide use of the dollar, and the stability of our economy, among other things, made it easier for us to run huge budget deficits, as we counted on foreigners to pick up the tab by buying dollar-denominated assets as a safe haven. Will this be possible in the future? Meanwhile, traditional foreign-policy challenges are multiplying. The threat from al Qaeda and Islamic terrorist affiliates has not been extinguished. Iran and North Korea are continuing on their bellicose paths, while Pakistan and Afghanistan are progressing smartly down the road to chaos. Russia's new militancy and China's seemingly relentless rise also give cause for concern. If America now tries to pull back from the world stage, it will leave a dangerous power vacuum. The stabilizing effects of our presence in Asia, our continuing commitment to Europe, and our position as defender of last resort for Middle East energy sources and supply lines could all be placed at risk. In such a scenario there are shades of the 1930s, when global trade and finance ground nearly to a halt, the peaceful democracies failed to cooperate, and aggressive powers led by the remorseless fanatics who rose up on the crest of economic disaster exploited their divisions. Today we run the risk that rogue states may choose to become ever more reckless with their nuclear toys, just at our moment of maximum vulnerability. The aftershocks of the financial crisis will almost certainly rock our principal strategic competitors even harder than they will rock us. The dramatic free fall of the Russian stock market has demonstrated the fragility of a state whose economic performance hinges on high oil prices, now driven down by the global slowdown. China is perhaps even more fragile, its economic growth depending heavily on foreign investment and access to foreign markets. Both will now be constricted, inflicting economic pain and perhaps even sparking unrest in a country where political legitimacy rests on progress in the long march to prosperity. None of this is good news if the authoritarian leaders of these countries seek to divert attention from internal travails with external adventures.

### K

**Energy production brings nature to serve, turning the world into a global gas station, eviscerating and erasing being. The ultimate result is nuclear annihilation and meaninglessness—comparatively outweighs**

Callister 2007 (Paul, Associate Professor of Law and Director of the Leon E. Bloch Law Library, University of Missouri‑Kansas City School of Law. Law and Heidegger’s Question Concerning Technology: Prolegomenon to Future Law Librarianship Law Library Journal [Vol. 99:2)

1 Following World War II, the German philosopher Martin Heidegger offered one of the most potent criticisms of technology and modern life. His nightmare is a world whose essence has been reduced to the functional equivalent of “a giant gasoline station, an energy source for modern technology and industry. This relation of man to the world [is] in principle a technical one. . . . [It is] altogether alien to former ages and histories.”2 For Heidegger, the problem is not technology itself, but the technical mode of thinking that has accompanied it. Such a viewpoint of the world is a useful paradigm to consider humanity’s relationship to law in the current information environment, which is increasingly technical in Heidegger’s sense of the term. 2 Heidegger’s warning that a technical approach to thinking about the world obscures its true essence is directly applicable to the effects of the current (as well as former) information technologies that provide access to law. The thesis of this article is that Heidegger provides an escape, not only for libraries threatened by obsolescence by emerging technologies, but for the law itself, which is under the same risk of subjugation. This article explains the nature of Heidegger’s criticisms of technology and modern life, and explores the threat specifically identified by such criticism, including an illustration based upon systematic revision of law in Nazi Germany. It applies Heidegger’s criticisms to the current legal information environment and contrasts developing technologies and current attitudes and practices with earlier Anglo-American traditions. Finally, the article considers the implications for law librarianship in the current information environment. Heidegger’s Nightmare: Understanding the Beast Calculative Thinking and the Danger of Subjugation to a Single Will 3 The threat is not technology itself; it is rather a danger based in the essence of thinking, which Heidegger describes as “enframing”3 or “calculative thinking.”4 For Heidegger, the problem is that mankind misconstrues the nature of technology as simply “a means to an end.”5 4 Heidegger’s articulation of the common conception of technology as a “means” applies equally well to information technologies, including legal databases. True, it is hard to think of technology in any other way, but what Heidegger argues is that this failure to consider the essence of technology is a threat to humanity.6 5 He defines the threat in two ways. First, humans become incapable of seeing anything around them as but things to be brought into readiness to serve some end (a concept he refers to as “standing reserve”).7 They are thereby cut off from understanding the essence of things and, consequently, their surrounding world.8 Second, man is reduced to the role of “order-er” of things, specifically to some purpose or end, and, as a result, risks becoming something to be ordered as well.9 Heidegger illustrates these concerns as follows: The forester who, in the wood, measures the felled timber and to all appearances walks the same forest path in the same way as did his grandfather is today commanded by profitmaking in the lumber industry, whether he knows it or not. He is made subordinate to the orderability of cellulose, which for its part is challenged forth by the need for paper, which is then delivered to newspapers and illustrated magazines. The latter, in their turn, set public opinion to swallowing what is printed, so that a set configuration of opinion becomes available on demand.10 In other words, the trees, the wood, the paper, and even the forester (whose ancestors once understood the sanctity of the woods) are ultimately subordinated to the will to establish orderly public opinion. The forester, in proverbial fashion, “cannot see the forest for the trees.” Instead of appreciating the majesty and mystery of the living forest, he sees only fodder for the paper mill, which will pay for his next meal. 6 The same cynicism might be applied to legal publishing. Whole forests have given their lives to the publication of legal information in order to provide a stable basis for society—after all, the “law must be stable and yet it cannot stand still,”11 or as our comrades from Critical Legal Studies might put it, law is simply a tool “to perpetuate the existing socioeconomic status quo.”12 Cadres of West editors (commonly referred to in generic fashion as human resources, ironically making them all the less human)13 work feverishly to digest points of law and assign 55,000 cases into a taxonomy with more than 100,000 class distinctions,14 all for the sake of a predictable legal system and stable society. 7 For Heidegger, the threat is revealed in mankind’s perpetual quest to gain mastery over technology. “Everything depends on our manipulating technology in the proper manner as a means. We will, as we say, ‘get’ technology ‘spiritually in hand.’ We will master it. The will to mastery becomes all the more urgent the more technology threatens to slip from human control.”15 When Heidegger published these words (first in 1962, but based on lectures from 1949 and 1950),16 the implications of nuclear energy and atomic warfare occupied much academic discussion. Heidegger points out that the popular question of this period did not concern how to find sufficient energy resources, but “[i]n what way can we tame and direct the unimaginably vast amounts of atomic energies, and so secure mankind against the danger that these gigantic energies suddenly—even without military actions— break out somewhere, ‘run away’ and destroy everything?”17 The modern question is about our mastery over technology, not about sufficiency of resources. 8 Similar concerns are apparent with respect to information technologies, where the primary problem is not lack of access, but too much access: for example, illegal music file swapping,18 the anti-circumvention provisions of the Digital Millennium Copyright Act (DMCA),19 and trends to use licensing to control and preserve the economic value of information (and to prohibit otherwise lawfully competitive practices, such as reverse engineering).20 With respect to law and government, we see such examples as retraction of government documents,21 the Patriot Act,22 the furor over unpublished electronic precedent,23 and the recent frenzy of e-discovery.24 Some stakeholders seem to have liked things better when information resources were scarce.25 Universal access is destabilizing—hence, the considerable interest in getting a “handle” on technology through legal sanction and yet additional technological innovation (the so-called “access control” technologies). 26 9 Heidegger’s genius is in recognizing that all the fuss about mastering technologies, although close to the mark, concerns the wrong issue. The more insidious threat is not nuclear fallout or economic devaluation of intellectual property, but the worldview of “calculative” thinking that accompanies rapid technological change: “The world now appears as an object open to attacks of calculative thought, attacks that nothing is believed able any longer to resist.”27 For Heidegger, calculative thought is not limited to the manipulation of machine code or numbers. Rather, the concept is grounded in “Machiavellian scheming” and the pursuit of power. “Calculative thinking computes. It computes ever new, ever more promising and at the same time more economical possibilities. Calculative thinking races from one prospect to the next.”28 The threat Heidegger envisions to human thought is even more dangerous than nuclear warfare.29 10 Heidegger’s threat is based on the separation of man from his or her nature. By pursuing economic calculation, man is cut off from the transformative powers of his or her environment. In such a world, law does not have the capacity to educate or to provide the basis for social harmony;30 rather, like any resource, law must be employed to more economic ends. The implication is that calculative thinking mandates that everything (including law) be subjected to a single will. While Heidegger recognized the danger of subjecting everything to a single will, the issue of whether, and when, he equated the danger with Nazi totalitarianism, which he had originally supported, would require a line of historical inquiry far beyond the scope of this article.31 Regardless of Heidegger’s own political and moral journey, Nazism effectively illustrates Heidegger’s philosophical fear—that technological thinking risks the “ordering” of all the world, including humanity, as resources subject to a singular will.

*We do not endorse the gendered language in this card*

**Be skeptical of their solvency claims – they endorse tech progressivism which turns policy**

Carper and Schmid 11 (Ross Carper (rosscarper@gmail.com), a writer based in Washington state, is the founding editor of the creative nonfiction project BeyondtheBracelet.com. Sonja Schmid (sschmid@vt.edu) is an assistant professor in Science and Technology Studies at Virginia Tech. “The Little Reactor That Could?” <http://www.issues.org/27.4/carper.html>)

“It turns out that most of the … mishaps [in nuclear plants] actually involve humans. So we were thinking today, what do we do to create a power plant control system to minimize that kind of impact? We came up with the following. The power plant of the future will have three control devices: a computer, a dog, and a guy. The computer runs the power plant because, as I said, most power plant mishaps happen because of human interaction. The dog keeps people away from the computer. And the guy is just there to feed the dog.” After lingering on the title slide a moment longer—“New. Clear. Energy.” in yellow letters—he advanced the screen and gave his opening line, a message he would revisit throughout his talk. “It’s more of a battery metaphor.” As the co-founder and president of Hyperion Power Generation, Deal was referring to his company’s starring product, which he believes will represent a radical revolution for nuclear power. He has also described the Hyperion Power Module (HPM), which is only a few feet wide and not much taller, as the iPhone of nuclear power: a compact, technologically elegant device that will be a worldwide sensation for its portability, ease of use, and applications. These first moments of a normal overview presentation contain two of Hyperion’s prominent talking points: a piece of imagery and a problem solved. HPMs are batteries that eliminate nuclear energy’s obstacles related to human error and expertise. For the latter point, his Denver talk and many others refer to the goal of taking Homer Simpson out of the equation. When Sonja Schmid and I set out to capture the story of small modular reactors, it quickly became clear that this technological coming-of-age tale is really, at least for now, a story about stories—the imagery industry leaders use to both envision their designs and communicate them to policymakers and the public. Behind the technical fact sheets, and in the years that remain before designs become physical machinery, small reactors are a movement of metaphors. On many topics, imagery doesn’t carry substantive weight. It is added for flavor, to simplify, clarify, or restate content in more vivid terms. But in the house of small nuclear reactors, metaphors seem to be weight-bearing walls. They also come in the context of a debate that couldn’t have higher stakes. On one hand, our world must quickly scale up new sources of carbon-neutral energy. On the other, the nuclear accident in Fukushima, Japan, reminded us that our attempts to do so in the nuclear sector may result in unforeseen complications that can spiral into disasters. In today’s proposals for a new nuclear approach, presentation matters. But how much does corporate imagery reveal about the technology itself and its implications, and how accurate are the pictures the industry paints? Is small beautiful? Overall, the emerging vision of small modular reactors is a major downshift from the custom-built giants of yesteryear to new railcar-ready, factory-manufactured, standardized machines with an electricity output in the range of 25 to 200 megawatts (MW), rather than the 1,000 or more MW that is typical in today’s commercial reactors. A growing faction of promoters believes that these small reactors can provide solid answers to the myriad risks nuclear energy continues to face: safety, weapons proliferation, waste management, and initial capital cost. Each small reactor design offers a unique narrative of how it will remove or reduce these risks. Recurring themes include built-in capsule-like containment, passive cooling features, pledges for more effective disposal or recycling of waste, and a kind of inverse “economies of scale”: advantages offered by small capital investment, standardization, and mass production. Because none of these small designs has yet been licensed by the Nuclear Regulatory Commission (NRC), and all of them are still several years from market deployment in even the most optimistic scenarios, they make a convenient canvas on which to paint metaphors. In the case of radically advanced reactor designs and deployment strategies, both corporations and journalists readily put vivid colors to use. Others are cast in more muted, evolutionary tones: They are miniature versions of the world’s tried-and-true light-water reactors, with substantially improved safety features. Leading revolutionary approaches in fuel, moderation, and cooling include reactors by Hyperion, Toshiba, and GE Hitachi, whereas efforts in favor of a more incremental design change include NuScale, Westinghouse, and Babcock & Wilcox. All leading small reactors create a modular option, which allows them to be pieced together like LEGO blocks to build up a customized power supply. Customers could potentially receive their prepackaged mini-reactors anywhere in the world, as long as the site is accessible by boat, truck, or rail. Judging by a rising emphasis on small modular reactors within President Obama’s past two budget requests, not to mention Energy Secretary Steven Chu’s outspoken affection for the technology, small reactors are increasingly being considered a highly exportable clean energy innovation and therefore prime candidates to implement the administration’s “win the future” message. Returning to Hyperion, the way they present their technology shows that subtlety is not a priority. In some sense, there is a space for this; the small reactor market is already revolutionary in that it allows room for entrepreneurs to join the nuclear energy ranks alongside giant, buttoned-up corporations. And some entrepreneurs have a habit of making big, bold claims—early and often. Most recently, a February 2011 Time magazine article titled “Nuclear Batteries” prominently features the “tanned and enthusiastic” Grizz Deal. Curiously, the author of the piece uses the phrase “nuclear battery” throughout, not as a metaphor but as the default label for Hyperion’s small reactor. Along the way, Deal outlines his goals for the HPM, a commercialized design that is based on work performed at Los Alamos National Laboratory. By the end of the article, he is quoted offering to “take care” of much of the world’s nuclear fuel, precluding the need for new nations to pursue enrichment or reprocessing programs, because these countries will presumably rely entirely on leasing Hyperion’s product. The Time article is not an outlier. In dozens of trade and popular press articles, interviews, and blog posts, the character of Grizz and his imagery shine through. In November 2008, he was quoted in the Guardian on Hyperion’s safety and nonproliferation features: “You could never have a Chernobyl-type event; there are no moving parts,” said Deal. “You would need nation-state resources in order to enrich our uranium. Temperature-wise it’s too hot to handle. It would be like stealing a barbecue with your bare hands.” Seeking out the origins of the venture helped us fill in some of the history behind the enthusiasm. It began with an initial shared motivation, which was recounted to us in an interview with Deborah Deal-Blackwell, Deal’s sister and cofounder of Hyperion. “My brother and I—neither of us have kids,” she said. “About five years ago, we started asking, what can we do to leave a legacy in the world? After some searching, we found that clean water was the answer.” Deal-Blackwell explained the leap from clean water to nuclear reactors. She and Deal had quickly found that providing clean water on large scales, such as through desalination, can be quite energy-intensive. So they began to explore options. After briefly looking into renewable energy sources, they decided on a nuclear solution to pursue their clean water mission. Deal had worked at Los Alamos as an entrepreneur in residence, and he knew of an advanced reactor design by the lab’s Otis Peterson that he thought would be perfect to commercialize. The HPM concept was born. Peterson’s design was technically intriguing to say the least. It would use uranium hydride, a novel nuclear fuel with unique self-regulating features that control the core’s temperature. But in 2009, foreseeing licensing delays with such a revolutionary approach, Hyperion decided on an entirely different design Los Alamos had produced: a uranium nitride–fueled fast reactor cooled by molten lead-bismuth. In other words, instead of forcing the NRC to create a new classification, Hyperion intends, for now, to fit its reactor within the somewhat more familiar, but still far from commercial, Generation IV category. Interestingly, the only previous application of a lead-bismuth cooled reactor was in the Alfa-class Soviet submarines developed in the 1960s. The HPM is also revolutionary in its size and its approach to spent fuel. The smallest of the leading design proposals, each unit would produce 25 MW of electricity, enough to power 20,000 U.S. homes—or considerably more homes in any other nation. Also unique is the approach of providing a factory-sealed unit that would be removed completely for refueling and waste removal every 5 to 10 years, alleviating proliferation concerns related to sensitive material accumulated in spent fuel. This is a clear innovation that, if successful, would be a positive step forward from traditional practice. As a result, the approach offers an advantage over other small reactor designs, which do not seem to contain substantively new solutions for dealing with the on-site accumulation of spent fuel. However, returning to the notion of human expertise reveals a clear weakness. Deal-Blackwell also told a version of the “feed the dog” joke during our interview, a repetition that implies that, in Hyperion’s view, human expertise is best handled by sealing it inside an automated technology. Although concerns about human error are legitimate, neither the public nor government regulators are ready to accept that scenario. Emerging technologies such as Hyperion’s call for a new and robust regulatory plan to determine what kind of human expertise is necessary for their safe operation, as well as how relevant knowledge can be created and maintained, transferred when appropriate (such as during export), and secured from illicit applications. For three years, the “battery” metaphor has been the centerpiece of Hyperion’s identity. Although some of this language seems to have been scrubbed from the company’s Web site, former statements are easy to find on other sites devoted to the leading edge of nuclear technology. One example, from an early Hyperion Web page, began with the text “Hyperion is different. Think Big Battery …” and ended with, “Think battery, with the benefits of nuclear power. Think Hyperion.” With this direct exhortation to nontechnical audiences on exactly how they should think about a small reactor, Hyperion is unmatched in its brazen communications. And as the Time article shows, the image has stuck. The question is whether it fits. In one way, it does. The HPM is envisioned as a self-contained sealed unit, delivered and used until its fuel has depleted, then carefully returned to a proper facility. But the comparison doesn’t hold much further than procedural similarities. A battery is a static device that converts stored chemical energy to electrical energy. It arguably does not belong in the same conversation as harnessing a nuclear chain reaction, the results of which include highly radioactive materials. Images on Hyperion’s Web site of buried, unattended nuclear reactors would make sense if they were merely batteries, but they are not. For this reason, more than one of the nuclear energy experts we interviewed used the term “fantasy” in reference to such scenarios that deploy “walk-away-safe” nuclear reactors. In the middle of Deal’s talk in Denver, he began flipping through some artist-drawn images. The most striking of all shows a small nuclear reactor, buried and unattended at what looked to be less than 15 feet below the surface. Two simple tubes snake upward from the reactor, drawing the eye to a pair of gray above-ground tanks, with the words “Potable Water” stamped on the side. The setting? An impoverished African village complete with about a dozen mud-constructed, thatch-roofed huts. A handful of people were drawn into the image, all of them walking to or from the clean water source, which is apparently powered by a $50 million HPM. Although the humanitarian goals that launched Hyperion are admirable, this quaint portrait of a Third-world problem goes beyond vivid jokes, iPods, batteries, and barbecues to reveal a full savior narrative that casts Hyperion’s small reactor as a solution to some of humanity’s direst needs. And the message is reinforced again and again. A recent news article in South Carolina’s Aiken Standard led with the following sentence: “Nuclear power is the only thing that can save the human race, Hyperion Power Generation CEO John ‘Grizz’ Deal told a crowd of more than 150 in Augusta on Wednesday.” A utopian narrative is not without precedent in the history of nuclear power. In fact, it harkens back to the early 1950s, when the American public first heard rumors that “atoms for peace” would soon yield “electricity too cheap to meter.” Early in our search for the story of small reactors, we began to notice something familiar: The shift to small modular reactors has the nuclear industry playing out the plot of The Little Engine That Could, a slice of mid–20th-century Americana that became a hallmark of children’s self-esteem building. Where the large have failed to try, or tried and failed, the Little Reactor will come along and prevail, pulling the heavy load of toys and goodies over the mountain. Or at least the Little Reactor thinks he can. An emphasis on evolution The Little Reactor character appears in many forms, most of which are far less colorful than Hyperion’s version. We spoke to Bruce Landrey, chief marketing officer at NuScale Power, a small-reactor startup based in Corvallis, Oregon. Landrey has spent his career communicating information about nuclear reactors for various companies. The story of his experiences, at its end, harmonizes well with his current employer’s approach. When Landrey graduated from the University of Oregon in the mid-1970s, he didn’t have a job, and he wasn’t necessarily looking to go into the energy sector. But soon his father was paired on the golf course with a stranger from an electric company that happened to be seeking new communications talent for the rollout of a new nuclear power plant. Eighteen holes later, Landrey’s father had positioned him, without his knowledge, as a prime candidate for the job. He applied, and was hired. “I was thrown into the deep end,” he said, remembering how little he knew about nuclear power. He also encountered an odd phenomenon related to public perception in his region. “We had a lot of protesters and demonstrations at the plant, people chaining themselves to the fence and so on,” he remembers. “But it was ironic, because the protesters were the same people I was drinking beer with the previous year at the university. But here I was, on the other side of the issue.” Landrey decided that if he would be earning his living speaking in favor of nuclear power, he would use his first six months on the job to learn everything he possibly could about the technology and its implications. He did so, becoming immersed in the technical side of nuclear reactors enough to make him confident discussing them from an environmental and safety perspective. “But what I was never comfortable with was the tremendous business risk a large nuclear power plant poses to an electric company, its customers, and its shareholders,” he said. And over the next several years, he had a front-row seat to the downsides of this risk. “The company I worked for tried to build two additional nuclear plants, which became caught up in licensing delays. Then, after the Three Mile Island accident, they were finally just abandoned.” Three decades later, Landrey still finds himself speaking up for nuclear energy, but now for NuScale. He is as risk-averse as ever when it comes to the financial challenges presented by nuclear power. So is NuScale, and this perspective guides both its technical approach and its communications. As the company sees it, their strategy builds on proven market-ready technology, familiar to regulators and the community of existing experts. Compared to revolutionaries such as Hyperion, the essence of NuScale’s metaphor is much less splashy: Our small reactor is really an improved version of the reactor down the road. It is a light-water design, which means it uses normal water as its coolant, and it shares this feature, along with standard fuel rods, with the majority of active nuclear power reactors in the world. Landrey explained some differences between NuScale and its larger predecessors, while also evoking a metaphor: a Thermos. Rather than a large concrete containment building, each reactor module comes inside its own steel vessel, which performs the containment’s safety purposes while also forming a Thermos-like vacuum between the vessel and the reactor module. This enables the reactor’s passive cooling feature, which uses natural circulation by a convection process, eliminating the need for a normal light-water reactor’s mechanical equipment or backup power generation to cool the reactor. Of course, backup power generation was the key failure that set off the Fukushima disaster and is the Achilles heel of all existing nuclear power plants. When we asked about Hyperion and other small reactor designs, Landrey was quick to draw a line in the sand between NuScale and a less traditional approach. “You have to be very careful with small modular reactors,” he said, “to distinguish what goes in the near-term commercialization category and what continues to remain a concept in a laboratory someplace. There is a big gulf—it’s really apples and oranges.” He also mentioned key differences on the topic of human expertise. Rather than automation, Landrey spoke of the importance of education and training in any context that will use NuScale reactors. The company’s plans call for an expert staff to operate the facility. For example, the top image on the company’s “Our Technology” Web page is an overhead view not of a reactor itself, but of the control room and user interfaces for plant operators. For Landrey, the evolution-versus-revolution question is a central issue to explore when looking into small reactors: Which designs, or aspects of the design, grow out of widely used commercial power reactors, and which represent completely new attempts? The unstated perspective is that the evolutionaries represent realistic near-term solutions, whereas the revolutionaries are still far more futuristic than their promoters will admit. Dusting off a design Also quick to emphasize this gulf is Babcock & Wilcox, one of the world’s preeminent suppliers of nuclear reactors. B&W is now partnering with engineering and construction giant Bechtel to develop and produce the “mPower,” a compact new light-water reactor similar in many ways to the NuScale design. Last summer, Christofer Mowry, president of B&W, told the Wall Street Journal, “Bechtel doesn’t get involved in science projects. This [agreement] is a confidence builder that the promise of this small reactor is going to materialize.” Of course, as with Landrey’s comment, such a quote cleverly forces the question into the reader’s mouth: Which of today’s small reactors should be dismissed as mere “science projects”? Although the mPower is certainly an advanced project, its first draft has been around for quite a while; our interviewees spoke of their small-reactor effort beginning by “dusting off a technology from the early eighties.” Compared to a conventional pressurized water reactor, the mPower reactor has the distinction of integrating the entire primary system (the reactor vessel, the steam generator, and the pressurizer) in one containment structure, which, according to one of the B&W engineers, “gives us a lot of inherent safety features that the large reactors don’t have.” The tendency to look backward before moving forward arose not only from B&W’s vast experience with light-water designs. First, it was a conscious response to its perception of the market. Many potential mPower customers are utilities that run today’s fossil fuel plants (not exactly the most venturesome bunch), who will perhaps one day need to turn their turbines using a carbon-neutral technology. Hypothetically, a significant number of these utilities that would be priced out of a large reactor would, in fact, be interested in a more manageably sized, and priced, option. This thinking was the result of an executive saying flatly “show me a customer” when the company’s technical leaders approached him with their idea about a small-sized, budget reactor. But a related and perhaps greater motivation for B&W’s design conservatism is the current regulatory gatekeeper. “The Nuclear Regulatory Commission… is a light water reactor regulatory agency,” one of our B&W interviewees said. “It takes a very long time to come up with a regulatory framework to be able to license another type of technology, and we wanted to get the technology to market as quickly as we could." Another interjected, "The idea was to come up with a design that capitalizes on the tremendous knowledge base that surrounds light water reactors, and then make some evolutionary changes. But when you get into revolutionary changes, the market isn't looking for that right now." The design includes a plan to bury the mPower underground. Although this feature is widely shared across the small-reactor industry, B&W offered an interesting reason when we asked why. They first referred to aesthetics; their initial rationale had been to avoid the stigma associated with the physical appearance of a nuclear power plant. The typical cooling towers and containment structures have acquired almost emblematic status among opponents of nuclear energy. Only after having volunteered these reasons did they add that the underground placement also earned them safety advantages with regard to earthquakes and missile impact. Like Mowry’s reference to “science projects,” B&W’s presentation is subtle but quick to make use of the public’s associations. Rather than taking a direct approach to force positive associations through imagery, B&W and others find the negative associations we already hold, and offer just the opposite. As they do so, the message comes back to their historical credentials, familiar technology, and the inclusion of credible players such as Bechtel. And the continuity of mPower’s design sends its loudest message to the regulatory community: This is a well-known, mastered technology, but upgraded to add significant improvements. The appeal to history Our foray into the light-water approaches coalesced in one question: Does inertia trump innovation in the U.S. nuclear industry? It would seem so, at least judging by NuScale’s and B&W’s carefully chosen paths. To some extent, even Hyperion’s shift in reactor fuel for its initial small reactor sends a similar signal. A familiar picture emerges, where the very entities that serve as the guarantor of safety also represent an obstacle to new, potentially better ideas. Perhaps unintentionally, they provide incentives for companies to continue down the well-trodden path, in exchange for faster licensing approval and shorter time to market. In terms of accounting for human expertise, evolutionary approaches do have a marked advantage. They do not seek a technical fix that eliminates the operator’s crucial role and ignores organizational and educational structures. On the downside, however, slow incremental innovations tend to neglect nuclear energy’s historical problems. The known hurdles with traditional light-water reactors, including low efficiency and unresolved waste management concerns, will arguably continue to live on for another generation, and if their industrial promoters get their way, these problems will be mass-produced and widely exported. Other potentially valuable lessons from history are also ignored; for example, why there is so little commercial experience with small nuclear reactors. In the past, small reactors have been used in research settings, for naval propulsion, and, rarely, to power research or industrial facilities at remote locations. But until recently, most small reactors for research and on submarines and icebreakers operated on highly enriched uranium, material that in sufficient quantities could be used to produce a nuclear weapon. When converted to fuel with lower enrichment, these reactors require more frequent refueling. Furthermore, the United States abandoned small reactors altogether in the 1970s to take advantage of the anticipated economies of scale to be achieved with larger power reactors. As the story has gone, in many cases the word “economy” hasn’t proven to apply. In the 1970s and 1980s, the U.S. nuclear industry was embroiled in a debate over the safety of scaling up. Would substantially increasing the size of nuclear reactors allow extrapolation from existing safety protocols, or would it in fact produce qualitatively new problems? Similar questions should be asked in today’s opposite scenario. It is far from self-evident that a compressed scale automatically produces smaller risks or that the data gathered from similarly fueled and cooled large reactors transfers down. And if the evolutionary approach does lower the risk of a given small modular reactor, who can say whether reduced risks in individual power plants are outweighed by an overall global risk of dispersing a much greater number of nuclear reactors across the planet? The Fukushima disaster has inconveniently shown a problem inherent to installing multiple reactors at one plant. After a scenario of unique failures within several reactors at once, is the prospect of a dozen or more interrelated small modular reactors on one site still as attractive? An overarching question is whether any of these risks are significantly curbed by an approach that offers familiarity, or whether this would encourage complacency. Pyotr Neporozhni, who served as the Soviet minister of energy and electrification for three decades, is reported to have dismissed concerns about nuclear safety with the quip: “A nuclear reactor is just another boiler.” Neporozhni retired in 1985, one year before Chernobyl. Although it is true that the end task is to boil water, it would be a mistake to ignore the intricate, wholly new ways in which small modular reactors will attempt to go about that task, even if widely known materials are used. A small design is not “just another light water-reactor.” Even if, as one B&W representative said, the NRC has traditionally been a “light-water–reactor agency,” its leadership does not seem to be glossing over the novel questions small modular reactors are raising. During a summer 2010 keynote address at a conference devoted to small reactors, William Ostendorff, a current member of the NRC, indicated that the question is open regarding how much history counts toward confidence about new small reactors. “There are substantial differences between the proposed concepts for SMRs [small modular reactors] and the large, light-water reactors that the NRC’s regulations were based upon,” he said. “How will prototype reactors be licensed? How will risk insights be used? How do SMRs fit into the Price-Anderson nuclear liability framework? Questions like these are not easy ones to answer.”

**The impact is extinction – Nuclear power exports violence to the periphery in the form of reactionary nuclear wars and environmental destruction**

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The twenty-first century heralds the unprecedented acceleration and convergence of multiple, interconnected global crises – climate change, energy depletion, food scarcity, and economic instability. While the structure of global economic activity is driving the **unsustainable** depletion of hydrocarbon and other natural resources, this is simultaneously escalating greenhouse gas emissions resulting in global warming. Both global warming and energy shocks are impacting detrimentally on global industrial food production, as well as on global financial and economic instability. Conventional policy responses toward the intensification of these crises have been decidedly inadequate because scholars and practitioners largely view them as separate processes. Yet increasing evidence shows they are deeply **interwoven manifestations** of a global political economy that has breached the limits of the wider environmental and natural resource systems in which it is **embedded**. In this context, orthodox IR's flawed diagnoses of global crises lead inexorably to their ‘securitisation’, **reifying** the militarisation of policy responses, and naturalising the proliferation of violent conflicts. Global ecological, energy and economic crises are thus directly linked to the ‘**Otherisation’** of social groups and problematisation of strategic regions considered pivotal for the global political economy. Yet this relationship between global crises and conflict is not necessary or essential, but a function of a **wider** epistemological failure to holistically interrogate their structural and systemic causes**.** In 2009, the UK government's chief scientific adviser Sir John Beddington warned that without mitigating and preventive action 'drivers' of global crisis like demographic expansion, environmental degradation and energy depletion could lead to a 'perfect storm' of simultaneous food, water and energy crises by around 2030.1 Yet, for the most part, conventional policy responses from national governments and international institutions have been decidedly inadequate. Part of the problem is the way in which these crises are conceptualised in relation to security. Traditional disciplinary divisions in the social and natural sciences, compounded by bureaucratic compartmentalisation in policy-planning and decision-making, has meant these crises are frequently approached as largely separate processes with their own internal dynamics. While it is increasingly acknowledged that cross-disciplinary approaches are necessary, these have largely failed to recognise just how inherently interconnected these crises are. As Brauch points out, 'most studies in the environmental security debate since 1990 have ignored or **failed** to integrate the contributions of the global environmental change community in the natural sciences. To a large extent the latter has also failed to integrate the results of this debate.\*" Underlying this problem is the **lack** of a **holistic systems approach** to **thinking** about not only global crises, but their causal **origins** in the social, political, economic, ideological and value structures of the contemporary international system. Indeed, it is often assumed that these contemporary structures are largely what need to be 'secured\* and protected from the dangerous impacts of global crises, rather than transformed precisely to ameliorate these crises in the first place. Consequently, policy-makers frequently overlook existing **systemic and structural obstacles** to the implementation of desired reforms. In a modest effort to contribute to the lacuna identified by Brauch, this paper begins with an **empirically-oriented, interdisciplinary exploration** of the **best** available **data** on four major global crises — climate change, energy depletion, food scarcity and global financial instability — illustrating the **systemic interconnections** between different crises, and revealing that their causal origins are not accidental but inherent to the structural failings and vulnerabilities of existing global political, economic and cultural institutions. This empirical evaluation leads to a critical appraisal of orthodox realist and liberal approaches to global crises in international theory and policy. This critique argues principally that orthodox IR reifies a highly fragmented, de-historicised ontology of the international system which underlies a reductionist, technocratic and compartmentalised conceptual and methodological approach to global crises. Consequently, rather than global crises being understood causally and **holistically** in the systemic context of the structure of the international system, they are 'securitised\* as amplifiers of traditional security threats, requiring counter-productive militarised responses and/or futile inter-state negotiations. While the systemic causal context of global crisis convergence and acceleration is thus elided, this simultaneously **exacerbates** the danger of **reactionary violence**, the problematisation of populations in regions impacted by these crises and the naturalisation of the consequent proliferation of wars and humanitarian disasters. This moves us away from the debate over whether resource 'shortages\* or 'abundance\* causes conflicts, to the question of how either can generate crises which undermine conventional socio-political orders and confound conventional IR discourses, in turn radicalising the processes of social polarisation that can culminate in **violent conflict**.

**Hence, our alternative: do nothing.**

**Rejecting the call to action in the face of crisis opens space for solidarity to emerge through deep reflection on our relationship with the Earth.**

**McWhorter 92,** Professor of Philosophy at Northeast Missouri State, 92 (LaDelle, Heidegger and the Earth, ed: McWhorter, p. vii-viii)

Heidegger frustrates us. At a time when the stakes are so very high and decisive action is so loudly and urgently called for, Heidegger apparently calls us to do - nothing. If we get beyond the revulsion and anger that such a call initially inspires and actually examine the feasibility of response, we begin to undergo the frustration attendant upon paradox; **how is it possible, we ask, to choose, to will, to *do nothing****?* The call itself places in question the bimodal logic of activity and passivity; it points up the paradoxical nature of our passion for action, of our passion for maintaining control. **The call itself suggests that our drive for acting decisively and forcefully is part of what must be thought through, that** the narrow option of will versus surrender is one of the power configurations of current thinking that must be allowed to dissipate.But of course, those drives and those conceptual dichotomies are part of the very structure of our self-understanding both as individuals and as a tradition and a civilization. Hence, Heidegger's call is a threatening one, requiring great courage, "the courage to make the truth of our own presuppositions and the realm of our own goals into the things that most deserve to be called in question." Heidegger's work pushes thinking to think through the assumptions that underlie both our ecological vandalism and our love of scientific solutions, assumptions that also ground the most basic patterns of our current ways of being human.

**We have evidence specific to your reactor and solvency advocate – fails and driven by military investment**

**Yurman 2009** (Dan, Reporter for Fuel Cycle Week, a nuclear industry trade newsletter, he has industry recognition and has led important seminars with the NRC on reactor safety, this is his blog, 6.28.2009, “GE-Hitachi briefs Congress on PRISM Reactor”, <http://djysrv.blogspot.com/2009/06/ge-hitachi-briefs-congress-on-prism.html>, [CL])

This article [published online](http://www.huffingtonpost.com/steve-kirsch/climate-bill-ignores-our_b_221796.html) at the Huffington Post is a long read, but it is well worth your time if you want to know the science history of the IFR. It includes interviews with some of the principal scientists and agency officials who worked on the technology before it was cancelled in the mid-1990s. There are plenty of links to source materials. Access is free but you must register to post comments. Kirsch (right) is an unusual author for this topic because he is a successful venture capitalist, entrepreneur, and businessman who has no background in nuclear energy. His article has somewhat of a “booster” flavor to it because he has little patience with government bureaucracy. One of the people Kirsch interviews is [Ray Hunter](http://www.skirsch.com/politics/ifr/RayHunterResume.htm), a former high level official at the Department of Energy. Now retired, Hunter offers a frank assessment of why reactor technologies with promising futures, like the IFR, get shuffled aside in the agency. In the mid-1990s I was a project manager at the Idaho National Laboratory working on development of new programs for the lab. Hunter was hired by the lab as a consultant to develop these ideas both in terms of market research and for use in a business plan. I worked with Hunter and found him to be a straight shooter who had a unqiue outlook on the art of the possible in government energy programs. Here’s what he wrote about that experience. “The main reason that nuclear energy development is so screwed up in DOE is that critical elements e.g. nonproliferation, waste, and nuclear R&D are in separate organizations all reporting to the Secretary. It requires real head knocking to integrate the pieces to have a rational program and there is no one in DOE sufficiently interested in nuclear to perform this task.” “The Lockheed-Martin Idaho Technology Company (LMITCO) contracted with me to prepare a projection on the future ofnuclear energyand technology and a possible role for the INEEL in this future. Following interviews with LMITCO employees and contacts with DOE program offices, universities, industrial organizations, and foreign entities; a report was provided that identifies potential nuclear energy opportunities for INEEL. These opportunities are germane today.” What he’s talking about is the IFR reactor design. Kirsch writes that although the IFR was cancelled in 1994, it has popped up repeatedlyin evaluations of future reactor R&D by DOE’s Generation IV R&D program and both the Russians and Chinese are intensely interested in the technology.

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#### The United States Federal Government should eliminate direct federal funding for [commercial Integral Fast Reactors in the United States]. The United States Federal Government should offer substantial, permanent tax credits for private sector research and development for commercial Integral Fast Reactors, valued equivalently to the amount of funding that the affirmative provides in their plan. These tax credits should be annually adjusted for inflation, not be limited to first movers, and not be subject to megawatt limitations.

#### Tax credits are sufficient incentives to spur new reactor development

**Gray, 9** (John, “Choosing the Nuclear Option: The Case for a Strong Regulatory Response to Encourage Nuclear Energy Development” 41 Ariz. St. L.J. 315, Spring, lexis)

Furthermore, an effective nuclear energy policy combines these regulatory options with other incentives for the nuclear industry, helping businesses overcome nuclear power's artificially high capital costs. Because capital expenses and obstacles are a major factor in nuclear power's stagnation, further government support would direct energy policy toward nuclear power in the short-term, allowing its long-term cost-effectiveness to flourish. n179 Although the Energy Policy Act of 2005 began this route, authorizing loan guarantees, production tax credits, and private sector investment protection, n180 continued support is required. For example, government **tax credits for first-mover plants** would create a strong incentive for businesses to be the first to market with new nuclear technology; the initial success would spur additional interest in the industry, encouraging development at an economic price. n181

#### Government demonstrations increase overall costs and inhibit commercialization, incentives for private R&D are superior

**Montgomery, 8** – Vice President of CRA International, directs CRA's Environment Practice. He is an internationally recognized authority in energy and environmental policy and regulation (W. David, “Developing Clean, Innovative Commercial Energy: Will Proposed Federal Subsidies Hurt or Help,” George C. Marshall Institute, 6/13, <http://www.marshall.org/pdf/materials/607.pdf>

This leads me to my conclusion, which is that we need to think about designing direct incentives at the R&D stage. There is really no reason to think about the government doing anything other than putting a price on carbon in order to get those technologies deployed in the market. So let’s take a look at those two ends of the problem. First, let’s talk about deployment and try to distinguish deployment from demonstration. I would argue that **a direct** **government role in** promoting **deployment** of technology for climate purposes is, first, unnecessary, because private investors can expect to capture the rewards of that innovation. The only thing the government needs to do is deal with the primary issue of climate policy, which is putting a price on CO2 emissions, rewarding technologies that have low CO2 emissions, and penalizing technologies that have high CO2 emissions. Then the market can sort it out. What I think we find in policymaking, and I think we have found this for decades, is that funding of large-scale commercial demonstrations really just means the government is picking technology winners and deciding to put billions of dollars into promoting one of them. It is an expedient based on an unwillingness to put in place a broader energy policy that actually deals with the policy problem. So it is working at the end of pushing on the technologies, “pushing on the rope,” if you like, rather than creating a policy which broadly changes the market environment for these policies. The other part, and we can see this very clearly in the analysis we have done of the recent energy bills, is that picking technologies just increases the cost of reducing CO2 emissions. For example, for the electric power sector, we could think about putting a cap on CO2 emissions from electricity generation. It would be better if it is broader, but we could think about doing that. And we could also have policies that require a renewable portfolio standard, for example, we could say that utilities must use a certain amount of what is classified as renewable, basically wind, solar, and biomass. Well, the two most cost-effective ways that are available on a broad scale for reducing greenhouse gas emissions are nuclear power and coal with carbon capture and sequestration, both of which are pushed out of the market by a renewable portfolio standard. Picking those renewable technologies and promoting them separately actually increases the cost of meeting that kind of cap for the utility sector overall.¶ It is this funding of large-scale demonstration projects, with the notion of producing a commercial technology and getting it into the market, where government failures have been most prominent. Everybody should read Linda Cohen and Roger Noll’s book on the pork barrel politics of energy R&D. This is a case where government is necessarily picking winners. The large scale of these projects attracts earmarking and makes the choice of projects something that goes to whomever has the most powerful political backers, rather than anything that has to do with the economics or the science and engineering of developing new technologies. I don’t think I need to go on with this much longer because there was an excellent example in the last couple of weeks. Secretary of Energy Bodman announced that the Department of Energy was going to cancel funding of a huge FutureGen demonstration project for carbon capture and sequestration. His reason was that the costs had been going up, and the private sector participants were unwilling to pay any of those increases in cost. He decided that this was good evidence that the project should not be continued. And he cancelled it. I thought this was a history-making event. This is the first time in my thirty-five years in Washington that a government agency voluntarily canceled a large-scale project, after it was underway, because they found things out that made it proper to cancel it. What happened? Three days later the senator for the state in which that project was going to be built put language into an authorization bill telling DOE it could not cancel the project. I think we have no hope of avoiding potential damages from climate change unless Congress stops doing this. I would say this is the second biggest obstacle to dealing with climate risks. The first biggest obstacle is that China and India, who are the world’s largest contributors of greenhouse gas emissions, are not willing to do anything at this point to reduce their emissions. The second biggest problem is that we need an effective R&D policy that creates new technologies, and if Congress continues with what they have done in the past and what they did with FutureGen, there is no hope of getting it. That is a task for all of you to go back and get to work on! Getting technology off the shelf is the right role for carbon pricing. Putting a price on CO2 emissions sends the right signal to private investors to build a demonstration plant, to put their money into figuring out how to get integrated gasification with combined cycle to work with coal, to do it more cheaply with more availability. There are a lot of things the private sector needs to do. The problem is that unless we have R&D first, the price is going to be much too high because we need the breakthroughs and the basis for new technology for the private sector to work on. The other part of it is that the price that it is going to take to deploy a successful technology is far lower than what it takes to motivate the R&D that will create it. That is the real policy problem that I see investors facing and this gets back to the credibility issue. If a massive amount of private investment by the electric power sector in carbon capture and sequestration or a massive investment by the biotechnology sector produced a biofuel that was not an environmental disaster and could be deployed widely and produce cheaply and efficiently, that would mean government wouldn’t need to put quite so high a price on carbon any more. It would be relatively cheap to achieve carbon goals, and therefore, all of the incentives for government would put a price on carbon that is sufficient to lead that technology to be deployed and will not provide any profits for those who had originally developed it. So we get back to the point that it is really necessary for the government to provide incentives at the R&D stage. And there I would say we clearly need both direct funding for basic science and credible incentives for private sector R&D. I suspect that the scale that we are looking at here is far more than doubling current DOE funding for technology in order to create the kind of breakthroughs that it takes to achieve net zero carbon emissions.

#### Government R&D funding is manipulated politically – it creates incentives to suppress data and this inhibits overall development

**Sutherland and Taylor, 02** - \*professor of law at George Mason University and a consulting economist AND \*\*director of natural resource studies at the Cato Institute. (Ronald and Jerry, “Time to Overhaul Federal Energy R&D,” 2/7, <http://www.cato.org/pubs/pas/pa424.pdf>

The fundamental problem is that selfinterest incentives within government are to add value to government but not to add economic value to taxpayers. Program goals are more likely to be technical than economic, and program managers are technical optimists about their own programs. Economists Linda Cohen and Roger Noll, for instance, reviewed six large government commercialization programs and concluded that a systematic bias exists to continue programs long after their failure becomes imminent.17 According to Cohen and Noll, the Clinch River Breeder Reactor, the supersonic transport plane, and many synfuels survived long after they were unjustifiable. The “bottom line” in government programs is political and not economic. Cohen and Noll conclude: The overriding lesson from the case studies is that the goal of economic efficiency —to cure market failures in privately sponsored commercial innovation— is so severely constrained by political forces that an effective, coherent national commercialization R&D program has never been put in place. The internal incentives within government organizations, the absence of a financial bottom line, and the difficulty of measuring output work together to produce inefficiencies in government.18¶ An example of the incentive within government to meet the interest of government rather than the public can be found in several federal programs advertised as global warming mitigation initiatives. Federal agencies that have internal incentives to protect their existing programs now rationalize those programs as providing climate change benefits. For instance, the Energy Star program of the U.S. Environmental Protection Agency seeks to obtain voluntary agreement from suppliers of personal computers to reduce energy requirements. In exchange for participating, the computer manufacturers put an energy star label on their product. Unfortunately, the relationship between energy use by computers and global warming is dubious at best.19 An honest climate change program would focus on carbon emissions and other greenhouse gas emissions rather than on energy efficiency.20 However, once the program is established, the “internal” incentives are to protect it and, in this case, to argue that it reduces the threat of global warming.¶ Another example of this dynamic at work is the incentive facing program managers in the public sector to fund research projects that will advance their careers. While it’s always possible to fund programs on the basis of their potential to contribute to scientific progress, regardless of their policy implications, supporting research designed to buttress an administration’s policy position is a better career move than presenting scientific evidence that conflicts with an existing policy position. Program managers in the Clinton administration were motivated to fund research likely to conclude that global warming is an imminent threat.21 Researchers, attempting to secure funding from the DOE or the Environmental Protection Agency, are more likely to obtain government funding if their research record and proposal supports the government view rather than the skeptics’ view.

#### Government auspices delay adoption because they make poor development choices

**Apt et al, 07** – executive director of the Electricity Industry Center at Carnegie Mellon University’s Tepper School of Business and the Department of Engineering and Public Policy, where he is a Distinguished Service Professor (Jay, “Promoting Low-Carbon Electricity Production,” Issues in Science and Technology, Spring, <http://www.issues.org/23.3/apt.html>

Conversely, if the government concentrates on supporting large and lengthy demonstration projects, this might delay commercial adoption of new technology by a decade or more. For example, the Department of Energy’s (DOE’s) Future-Gen project, which will construct an IGCC coal-fired plant with CO2 capture and sequestration, may be far less effective in inducing rapid adoption and technological progress than loan guarantees that encourage development of similar technology under private control. Like similar projects in the past, FutureGen’s effectiveness is likely to be blunted because the project in all probability will incorporate too many new (government-driven) technologies that, in combination with a lack of a champion who has the financial commitment to push the project to success, will make CO2 capture look more risky and costly than it will be under commercial development.

#### Earmarked R&D for specific projects wrecks research credibility, undermines the ability to attract scientists because the project has not been peer reviewed

**Greenberg 01** (Daniel S., Guest Scholar at the Brookings Institution and Journalist and Author, Science, Money, and Politics, pg. 185-188)

The research-related earmarks not only elude congressional examination, but, by definition, they also bypass professional peer review, the system sanctified by scientific tradition as the sine qua non for optimal allocation of research resources. The review process varies among federal research agencies and private foundations. But basically it is a blue-ribbon jury system in which panels of researchers evaluate and rank research proposals. Aimed at achieving objective assessment by disinterested experts, peer review is often assailed as intrinsically biased against novelty and innovation because, the critics contend, it relies on people who constitute the status quo of science. Paraphrasing Churchill on democracy, some of the strongest defenders of peer review limply respond that it is the worst possible system, except for all others. As might be expected, the “haves” of federal academic research funding strongly favor peer review and are generally opposed to earmarks. Lesser institutions, however, angrily complain that peer review inevitably assures that the rich get richer while others are excluded. Inequity is inherent to the system, they insist, and justifies alternative means of getting at the money—specifically, earmarking. Despite repeated denunciations as unclean, earmarked money is irresistable for many universities, including some that also compete successfully for peer-reviewed funds. Though the trend is consistently upward, we should keep in mind that in any year, at least so far, the earmarks are a small portion of the many billions, depending on what’s counted, appropriated for academic research via aboveboard routes. In 2000, the official count for all academic research appropriations was over $15 billion, of which alleged earmarks constituted a small share. But the earmarks going to the universities are nonetheless substantial in the scarcity economy of research funding. The earmark process is galling to institutions that feel penalized for complying with the rules, even if the rules favor their success. ¶ The practice outrages the officials of the established system to the point of evoking extravagant recriminations—especially from program managers in federal agencies. When their budgets are hijacked to finance earmarks, decision-making authority over research projects passes to the political budget raiders on Capitol Hill. The right order of things is upset, with far-reaching undesireable consequences, they contend. In 1994, Martha Krebs, the director of energy research at the Department of Energy, told a congressional hearing that earmarks “may also inadvertently discourage young scientists from pursuing research careers because they believe it is not an honest or open process.” This may be so, but as with many provocative speculations and assertions in the politics of science, supportive evidence is lacking.

#### Competitive peer review maintains scientific competitiveness – earmarking R&D destroys innovation and integrity of the process, discouraging scientists

**Greenwood, 94** - Associate Director for Science, Office of Science and Technology Policy (M.R.C., Federal Document Clearing House Congressional Testimony, 9/21, lexis)

The primary problem with academic earmarking is that it is not carried out within the context of national, agency, or Congressional priority setting. With limited resources available to appropriators, earmarks divert funds from key research programs to programs that are not as essential to the achievement of national goals. Further, because earmarking is not a competitive process for recipients, earmarking may result in a generally lower quality scientific product.¶ Much of the tremendous success of American science and technology is directly attributable to the process of merit-based peer review funding that has developed over the years. In the United States, we have developed a unique and extraordinary process of competition that rests on excellence. We encourage investigator initiated research that allows unique ideas and individual creativity to flourish. We also encourage mission-oriented research that allows agencies to pursue research programs that supports the accomplishment of their missions. Our success and leadership in science and technology is a direct derivative of this process. The practice of earmarking runs counter to the very process of research funding that has assured excellence in American science. To destroy the system would be a national tragedy.¶ The General Accounting Office has examined the issue of federal research funding and the system of peer review in a series of reports. In the most recent of these studies, dated June, 1994, the GAO found that the "peer review processes appear to be working reasonably well..." The report further assures us that, 11 ... contrary to what some critics have asserted, reviewers were not more likely to come from elite institutions than were applicants, and there were few differences in region of origin." The GAO findings thus support the contention that the system of competitive funding underlying federal research programs is generally equitable and unbiased.¶ There are essentially two types of academic earmarking, both of which hinder the achievement of Administration and Congressional objectives, and the fulfillment of Agency missions. Certain earmarks direct funding to a specific recipient institution or research program and identify a specific issue to be studied, or a type of facility to be constructed. Such earmarks often may interfere with goals and strategies defined by Congress and the Administration. Furthermore, recipient-specific earmarking is the least likely to yield the best scientific results because such projects undergo no competitive process of selection.¶ The second form of academic earmarking provides funding for facilities or programs related to specific issues but does not direct the monies to a specific recipient. Such earmarks allow agencies to select the most qualified applicant to receive the earmarked funds and some level of peer review and competition is possible. The problem, of course, is that the earmark demands activities and programs that may not be consistent with the agency missions. Thus, both types of earmarks are likely to distort agency programs and the NSTC interagency process we are working so hard to develop.¶ A charitable view of earmarking is to view it in part as a symptom of the success of U.S. science and technology. Academic earmarking results from the fact that academic institutions with quality science and technology programs historically have gained prestige, offered superior training to their students, and spawned local industries, leading to economic prosperity for local districts. Thus, it has become dogma that local economic and intellectual prosperity is associated with the competitiveness of local universities. It is understandable, then, that members of Congress would advocate vigorously for Federal funding for their academic institutions.¶ The Effects of Earmarking on National Priority Setting Perhaps the strongest argument against academic earmarking is that earmarks interfere with established policy and budget priorities on all levels: National, Congressional, and agency.¶ As mentioned earlier, earmarks subvert both the priority-setting and peer review systems that have served our nation so well. On an agency level, earmarking diverts funding from projects that have been identified as essential to the achievement of agency and national goals. On a Congressional level, earmarking may run counter to the desires of the authorizing committees. On a national level, the practice of earmarking reduces the amount of support available for the best competitive projects and detracts from projects that address our national goals. In general, then, the process of earmarking interferes with progress toward goals, erodes the structure of our competitive process, and inadvertently may lower the quality of our research; such results ultimately may discourage young scientists from pursuing research careers.

#### Energy competitiveness key to hegemony

**Klarevas 2k9** (Louis, Professor, Center for Global Affairs, New York University “Securing American Primacy While Tackling Climate Change: Toward a National Strategy of Greengemony,” pg online @ <http://www.huffingtonpost.com/louis-klarevas/securing-american-primacy_b_393223.html> //ghs-ef)

As national leaders from around the world are gathering in Copenhagen, Denmark, to attend the United Nations Climate Change Conference, the time is ripe to re-assess America's current energy policies - but within the larger framework of how a new approach on the environment will stave off global warming and shore up American primacy. By not addressing climate change more aggressively and creatively, the United States is squandering an opportunity to secure its global primacy for the next few generations to come. To do this, though, the U.S. must rely on innovation to help the world escape the coming environmental meltdown. Developing the key technologies that will save the planet from global warming will allow the U.S. to outmaneuver potential great power rivals seeking to replace it as the international system's hegemon. But the greening of American strategy must occur soon. The U.S., however, seems to be stuck in time, unable to move beyond oil-centric geo-politics in any meaningful way. Often, the gridlock is portrayed as a partisan difference, with Republicans resisting action and Democrats pleading for action. This, though, is an unfair characterization as there are numerous proactive Republicans and quite a few reticent Democrats. The real divide is instead one between realists and liberals. Students of realpolitik, which still heavily guides American foreign policy, largely discount environmental issues as they are not seen as advancing national interests in a way that generates relative power advantages vis-à-vis the other major powers in the system: Russia, China, Japan, India, and the European Union. Liberals, on the other hand, have recognized that global warming might very well become the greatest challenge ever faced by mankind. As such, their thinking often eschews narrowly defined national interests for the greater global good. This, though, ruffles elected officials whose sworn obligation is, above all, to protect and promote American national interests. What both sides need to understand is that by becoming a lean, mean, green fighting machine, the U.S. can actually bring together liberals and realists to advance a collective interest which benefits every nation, while at the same time, securing America's global primacy well into the future. To do so, the U.S. must re-invent itself as not just your traditional hegemon, but as history's first ever green hegemon. Hegemons are countries that dominate the international system - bailing out other countries in times of global crisis, establishing and maintaining the most important international institutions, and covering the costs that result from free-riding and cheating global obligations. Since 1945, that role has been the purview of the United States. Immediately after World War II, Europe and Asia laid in ruin, the global economy required resuscitation, the countries of the free world needed security guarantees, and the entire system longed for a multilateral forum where global concerns could be addressed. The U.S., emerging the least scathed by the systemic crisis of fascism's rise, stepped up to the challenge and established the postwar (and current) liberal order. But don't let the world "liberal" fool you. While many nations benefited from America's new-found hegemony, the U.S. was driven largely by "realist" selfish national interests. The liberal order first and foremost benefited the U.S. With the U.S. becoming bogged down in places like Afghanistan and Iraq, running a record national debt, and failing to shore up the dollar, the future of American hegemony now seems to be facing a serious contest: potential rivals - acting like sharks smelling blood in the water - wish to challenge the U.S. on a variety of fronts. This has led numerous commentators to forecast the U.S.'s imminent fall from grace. Not all hope is lost however. With the impending systemic crisis of global warming on the horizon, the U.S. again finds itself in a position to address a transnational problem in a way that will benefit both the international community collectively and the U.S. selfishly. The current problem is two-fold. First, the competition for oil is fueling animosities between the major powers. The geopolitics of oil has already emboldened Russia in its 'near abroad' and China in far-off places like Africa and Latin America. As oil is a limited natural resource, a nasty zero-sum contest could be looming on the horizon for the U.S. and its major power rivals - a contest which threatens American primacy and global stability. Second, converting fossil fuels like oil to run national economies is producing irreversible harm in the form of carbon dioxide emissions. So long as the global economy remains oil-dependent, greenhouse gases will continue to rise. Experts are predicting as much as a 60% increase in carbon dioxide emissions in the next twenty-five years. That likely means more devastating water shortages, droughts, forest fires, floods, and storms. In other words, if global competition for access to energy resources does not undermine international security, global warming will. And in either case, oil will be a culprit for the instability. Oil arguably has been the most precious energy resource of the last half-century. But "black gold" is so 20th century. The key resource for this century will be green gold - clean, environmentally-friendly energy like wind, solar, and hydrogen power. Climate change leaves no alternative. And the sooner we realize this, the better off we will be. What Washington must do in order to avoid the traps of petropolitics is to convert the U.S. into the world's first-ever green hegemon. For starters, the federal government must drastically increase investment in energy and environmental research and development (E&E R&D). This will require a serious sacrifice, committing upwards of $40 billion annually to E&E R&D - a far cry from the few billion dollars currently being spent. By promoting a new national project, the U.S. could develop new technologies that will assure it does not drown in a pool of oil. Some solutions are already well known, such as raising fuel standards for automobiles; improving public transportation networks; and expanding nuclear and wind power sources. Others, however, have not progressed much beyond the drawing board: batteries that can store massive amounts of solar (and possibly even wind) power; efficient and cost-effective photovoltaic cells, crop-fuels, and hydrogen-based fuels; and even fusion. Such innovations will not only provide alternatives to oil, they will also give the U.S. an edge in the global competition for hegemony. If the U.S. is able to produce technologies that allow modern, globalized societies to escape the oil trap, those nations will eventually have no choice but to adopt such technologies. And this will give the U.S. a tremendous economic boom, while simultaneously providing it with means of leverage that can be employed to keep potential foes in check. The bottom-line is that the U.S. needs to become green energy dominant as opposed to black energy independent - and the best approach for achieving this is to promote a national strategy of greengemony.

### Warming

uniqueness of the leadership advantage solves – nuclear dev inevitable

**Warming tipping points inevitable – too late**

**NPR 9** (1/26, Global Warming Is Irreversible, Study Says, All Things Considered, http://www.npr.org/templates/story/story.php?storyId=99888903)

Climate change is essentially irreversible, according to a sobering new scientific study. As carbon dioxide emissions continue to rise, the world will experience more and more long-term environmental disruption. The damage will persist even when, and if, emissions are brought under control, says study author Susan Solomon, who is among the world's top climate scientists. "We're used to thinking about pollution problems as things that we can fix," Solomon says. "Smog, we just cut back and everything will be better later. Or haze, you know, it'll go away pretty quickly." That's the case for some of the gases that contribute to climate change, such as methane and nitrous oxide. But as Solomon and colleagues suggest in a new study published in the Proceedings of the National Academy of Sciences, it is not true for the most abundant greenhouse gas: carbon dioxide. **Turning off the carbon dioxide emissions won't stop global warming**. "People have imagined that if we stopped emitting carbon dioxide that the climate would go back to normal in 100 years or 200 years. What we're showing here is that's not right. It's essentially an irreversible change that will last for more than a thousand years," Solomon says. This is because the oceans are currently soaking up a lot of the planet's excess heat — and a lot of the carbon dioxide put into the air. The carbon dioxide and heat will eventually start coming out of the ocean. And that will take place for many hundreds of years. Solomon is a scientist with the National Oceanic and Atmospheric Administration. Her new study looked at the consequences of this long-term effect in terms of sea level rise and drought.

**No warming**

**Beisner 10** — former associate professor of interdisciplinary studies in economics, government, and public policy, Covenant. PhD, University of St. Andrews (Calvin, Forget Global Warming Mini Ice Age May Be on Its Way, 12 January 2010, http://www.rightsidenews.com/201001128144/energy-and-environment/forget-global-warming-mini-ice-age-may-be-on-its-way.html, AMiles) Note – graph omitted

The UK's MailOnline did just that this week under the headline The mini ice age starts here. Lead paragraph? "The bitter winter afflicting much of the Northern Hemisphere is only the start of a global trend towards cooler weather that is likely to last for 20 or 30 years, say some of the world's most eminent climate scientists." Right. MailOnline reporter David Rose doesn't call them "the world's leading climate skeptics." He calls them "some of the world's most eminent climate scientists"--and he goes on to cite "Mojib Latif, a leading member of the UN's Intergovernmental Panel on Climate Change (IPCC)," "Anastasios Tsonis, head of the University of Wisconsin Atmospheric Sciences Group," and "William Gray, emeritus Professor of Atmospheric Sciences at Colorado State University." Contrary to fears of inexorably diminishing Arctic sea ice, Rose cites the U.S. National Snow and Ice Data Center as reporting that "Arctic summer sea ice has increased by 409,000 square miles, or 26 per cent, since 2007." Though snow's been unusual for most of the southern half of the United Kingdom in recent decades, the Mail published the accompanying satellite photo of Great Britain during the recent cold snap. The island is essentially all covered with snow. Rose reported record lows as far south as Cuba--something I can attest to, living near Miami in south Florida, where we experienced sub-freezing weather over the weekend. He quoted Tsonis as saying that last week 56% of the United States was covered by snow--something that hasn't happened in several decades. And the "'Arctic oscillation'--a weather pattern that sees the development of huge 'blocking' areas of high pressure in northern latitudes, driving polar winds far to the south . . . is at its strongest for at least 60 years. As a result, the jetstream--the high-altitude wind that circles the globe from west to east and normally pushes a series of wet but mild Atlantic lows across Britain--is currently running not over the English Channel but the Strait of Gibraltar." Consequently, most of the Northern Hemisphere is much colder this winter than it's been in decades--and the Southern Hemisphere is cooler, too. According to Rose, Latif, Tsonis, and other scientists attribute the cold shift primarily to a shift in the world's dominant ocean circulations--the Pacific Decadal Oscillation and the Atlantic Multidecadal Oscillation--from a warm phase to a cool phase, something that happens about every 20 to 30 years. "The scientists' predictions also undermine the standard climate computer models, which assert that the warming of the Earth since 1900 has been driven solely by man-made greenhouse gas emissions and will continue as long as carbon dioxide levels rise. They say that their research shows that much of the warming was caused by oceanic cycles when they were in a 'warm mode' as opposed to the present 'cold mode'." That's a point made by Dr. Roy W. Spencer in the science chapter of the Cornwall Alliance's new document A Renewed Call to Truth, Prudence, and Protection of the Poor: An Evangelical Examination of the Theology, Science, and Economics of Global Warming and illustrated in the graph below. "A significant share of the warming we saw from 1980 to 2000 and at earlier periods in the 20th Century was due to these cycles," said Latif, "perhaps as much as 50 per cent. They have now gone into reverse, so winters like this one will become much more likely. Summers will also probably be cooler, and all this may well last two decades or longer. The extreme retreats that we have seen in glaciers and sea ice will come to a halt. For the time being, global warming has paused, and there may well be some cooling." Tsonis also believes that the ocean current cycles dominated global climate change in the 20th century, including the post-1970s, the period many point to as driven by human greenhouse gas emissions, but he doesn't venture to attribute specific percentages to the natural and human causes. "I do not believe in catastrophe theories," Rose quoted him as saying. "Man-made warming is balanced by the natural cycles, and I do not trust the computer models which state that if CO2 reaches a particular level then temperatures and sea levels will rise by a given amount. These models cannot be trusted to predict the weather for a week, yet they are running them to give readings for 100 years." Gray went farther: "Most of the rise in temperature from the Seventies to the Nineties was natural. Very little was down to CO2--in my view, as little as five to ten per cent." Gray, Tsonis, and Latif all agreed that the findings about the ocean currents undermined the credibility of the computer climate models on which the IPCC and other alarmists rely.

#### No extinction – empirically denied

**Carter 11–** Robert, PhD, Adjuct Research Fellow, James Cook University, Craig Idso, PhD, Chairman at the Center for the Study of Carbon Dioxide and Global Change, Fred Singer, PhD, President of the Science and Environmental Policy Project, Susan Crockford, evolutionary biologist with a specialty in skeletal taxonomy , paleozoology and vertebrate evolution, Joseph D’Aleo, 30 years of experience in professional meteorology, former college professor of Meteorology at Lyndon State College, Indur Goklany, independent scholar, author, and co-editor of the Electronic Journal of Sustainable Development, Sherwood Idso, President of the Center for the Study of Carbon Dioxide and Global Change, Research Physicist with the US Department of Agriculture, Adjunct Professor in the Departments of Geology, Botany, and Microbiology at Arizona State University, Bachelor of Physics, Master of Science, and Doctor of Philosophy, all from the University of Minnesota, Madhav Khandekar, former research scientist from Environment Canada and is an expert reviewer for the IPCC 2007 Climate Change Panel, Anthony Lupo, Department Chair and Professor of Atmospheric Science at the University of Missouri, Willie Soon, astrophysicist at the Solar and Stellar Physics Division of the Harvard-Smithsonian Center for Astrophysics, Mitch Taylor (Canada) (March 8th, “[Surviving](file:///C:\Users\Marc\Desktop\Surviving) the Unpreceented Climate Change of the IPCC” <http://www.nipccreport.org/articles/2011/mar/8mar2011a5.html>) Jacome

On the other hand, they indicate that some biologists and climatologists have pointed out that "many of the predicted increases in climate have happened before, in terms of both magnitude and rate of change (e.g. Royer, 2008; Zachos *et al*., 2008), and yet biotic communities have remained remarkably resilient (Mayle and Power, 2008) and in some cases thrived (Svenning and Condit, 2008)." But they report that those who mention these things are often "placed in the 'climate-change denier' category," although the purpose for pointing out these facts is simply to present "a sound scientific basis for understanding biotic responses to the magnitudes and rates of climate change predicted for the future through using the vast data resource that we can exploit in fossil records." Going on to do just that, Willis *et al*. focus on "intervals in time in the fossil record when atmospheric CO2 concentrations increased up to 1200 ppm, temperatures in mid- to high-latitudes increased by greater than 4°C within 60 years, and sea levels rose by up to 3 m higher than present," describing studies of past biotic responses that indicate "the scale and impact of the magnitude and rate of such climate changes on biodiversity." And what emerges from those studies, as they describe it, "is evidence for rapid community turnover, migrations, development of novel ecosystems and thresholds from one stable ecosystem state to another." And, most importantly in this regard, they report "there is very little evidence for broad-scale extinctions due to a warming world." In concluding, the Norwegian, Swedish and UK researchers say that "based on such evidence we urge some caution in assuming broad-scale extinctions of species will occur due solely to climate changes of the magnitude and rate predicted for the next century," reiterating that "the fossil record indicates remarkable biotic resilience to wide amplitude fluctuations in climate.

**No resource wars**

Allouche, 11 - Research Fellow at the Institute of Development Studies at the University of Sussex (Jeremy,. "The sustainability and resilience of global water and food systems: Political analysis of the interplay between security, resource scarcity, political systems and global trade" Food Policy, Volume 36, Supplement 1, January 2011, Science Direct)

Water/food resources, war and conflict The question of resource scarcity has led to many debates on whether scarcity (whether of food or water) will lead to conflict and war. The underlining reasoning behind most of these discourses over food and water wars comes from the Malthusian belief that there is an imbalance between the economic availability of natural resources and population growth since while food production grows linearly, population increases exponentially. Following this reasoning, neo-Malthusians claim that finite natural resources place a strict limit on the growth of human population and aggregate consumption; if these limits are exceeded, social breakdown, conflict and wars result. Nonetheless, it seems that most empirical studies do not support any of these neo-Malthusian arguments. Technological change **and greater inputs of capital** have **dramatically increased labour productivity in agriculture.** More generally, the neo-Malthusian view has suffered because during the last two centuries **humankind has breached many resource barriers that seemed unchallengeable**. Lessons from history: alarmist scenarios, resource wars and international relations In a so-called age of uncertainty, a number of alarmist scenarios have linked the increasing use of water resources and food insecurity with wars. The idea of water wars (perhaps more than food wars) is a dominant discourse in the media (see for example Smith, 2009), NGOs (International Alert, 2007) and within international organizations (UNEP, 2007). In 2007, UN Secretary General Ban Ki-moon declared that ‘water scarcity threatens economic and social gains and is a potent fuel for wars and conflict’ (Lewis, 2007). Of course, this type of discourse has an **instrumental purpose**; security and conflict are here used for raising water/food as key policy priorities at the international level. In the Middle East, presidents, prime ministers and foreign ministers have also used this bellicose rhetoric. Boutrous Boutros-Gali said; ‘the next war in the Middle East will be over water, not politics’ (Boutros Boutros-Gali in Butts, 1997, p. 65). The question is not whether the sharing of transboundary water sparks political tension and alarmist declaration, but rather to what extent water has been a principal factor in international conflicts. The evidence seems quite weak. Whether by president Sadat in Egypt or King Hussein in Jordan, none **of these declarations have been followed up by military action**. The governance of transboundary water has gained increased attention these last decades. This has a direct impact on the global food system as water allocation agreements determine the amount of water that can used for irrigated agriculture. The likelihood of conflicts over water is an important parameter to consider in assessing the stability, sustainability and resilience of global food systems. None **of the** various and extensive databases on the causes of war show water as a casus belli. Using the International Crisis Behavior (ICB) data set and supplementary data from the University of Alabama on water conflicts, Hewitt, Wolf and Hammer found only seven disputes where water seems to have been at least a partial cause for conflict (Wolf, 1998, p. 251). In fact, about 80% of the incidents relating to water were limited purely to governmental rhetoric intended for the electorate (Otchet, 2001, p. 18). As shown in The Basins At Risk (BAR) water event database, **more than two-thirds of over 1800 water-related ‘events’ fall on the ‘cooperative’ scale** (Yoffe et al., 2003). Indeed, if one takes into account a much longer period, the following figures clearly demonstrate this argument. According to studies by the United Nations Food and Agriculture Organization (FAO), organized political bodies signed between the year 805 and 1984 more than 3600 water-related treaties, and approximately 300 treaties dealing with water management or allocations in international basins have been negotiated since 1945 ([FAO, 1978] and [FAO, 1984]). The fear around water wars have been driven by a Malthusian outlook which equates scarcity with violence, conflict and war. There is however **no direct correlation between water scarcity and transboundary conflict**. Most specialists now tend to agree that the major issue is not scarcity per se but rather the allocation of water resources between the different riparian states (see for example [Allouche, 2005], [Allouche, 2007] and [Rouyer, 2000]). Water rich countries have been involved in a number of disputes with other relatively water rich countries (see for example India/Pakistan or Brazil/Argentina). The perception of each state’s estimated water needs really constitutes the core issue in transboundary water relations. Indeed, whether this scarcity exists or not in reality, perceptions of the amount of available water shapes people’s attitude towards the environment (Ohlsson, 1999). In fact, some water experts have argued that scarcity drives the process of co-operation among riparians ([Dinar and Dinar, 2005] and [Brochmann and Gleditsch, 2006]). In terms of international relations, the threat of water wars due to increasing scarcity **does not make much sense in the light of the recent** historical record. Overall, the water war rationale expects conflict to occur over water, and appears to suggest that violence is a viable means of securing national water supplies, an argument which is highly contestable. The debates over the likely impacts of climate change have again popularised the idea of water wars. The argument runs that climate change will precipitate worsening ecological conditions contributing to resource scarcities, social breakdown, institutional failure, mass migrations and in turn cause greater political instability and conflict ([Brauch, 2002] and [Pervis and Busby, 2004]). In a report for the US Department of Defense, Schwartz and Randall (2003) speculate about the consequences of a worst-case climate change scenario arguing that water shortages will lead to aggressive wars (Schwartz and Randall, 2003, p. 15). Despite growing concern that climate change will lead to instability and violent conflict, **the evidence base to substantiate the connections is thin** ([Barnett and Adger, 2007] and [Kevane and Gray, 2008]).

### Leadership

**No impact**

**Goldstein 2011**, Professor IR at American University [Joshua S. Goldstein, Professor emeritus of international relations at American University, “Thing Again: War,” Sept/Oct 2011,

http://www.foreignpolicy.com/articles/2011/08/15/think\_again\_war?print=yes&hidecomments=yes&page=full]

Nor do shifts in the global balance of power doom us to a future of perpetual war. While some political scientists argue that an increasingly multipolar world is an increasingly volatile one -- that peace is best assured by the predominance of a single hegemonic power, namely the United States -- **recent geopolitical history** suggests otherwise. Relative U.S. power and worldwide conflict have **waned in tandem** over the past decade. The exceptions to the trend, Iraq and Afghanistan, have been lopsided wars waged by the hegemon, not challenges by up-and-coming new powers. The best precedent for today's emerging world order may be the 19th-century Concert of Europe, a collaboration of great powers that largely maintained the peace for a century until its breakdown and the bloodbath of World War I.

**Regional cooperation fills in**

**Sachs, 11** – Director of The Earth Institute, Quetelet Professor of Sustainable Development, and Professor of Health Policy and Management at Columbia University. He is also Special Advisor to United Nations Secretary-General Ban Ki-moon (Jeffrey, “A World of Regions,” 5/26, http://www.social-europe.eu/2011/05/a-world-of-regions/)

In almost every part of the world, long-festering problems can be solved through closer cooperation among neighboring countries. The European Union provides the best model for how neighbors that have long fought each other can come together for mutual benefit. Ironically, today’s decline in American global power may lead to more effective regional cooperation. This may seem an odd time to praise the EU, given the economic crises in Greece, Spain, Portugal, and Ireland. Europe has not solved the problem of balancing the interests of strong economies in the North and those of weaker economies in the South. Still, the EU’s accomplishments vastly outweigh its current difficulties. The EU has created a zone of peace where once there was relentless war. It has provided the institutional framework for reuniting Western and Eastern Europe. It has fostered regional-scale infrastructure. The single market has been crucial to making Europe one of the most prosperous places on the planet. And the EU has been a global leader on environmental sustainability. For these reasons, the EU provides a unique model for other regions that remain stuck in a mire of conflict, poverty, lack of infrastructure, and environmental crisis. New regional organizations, such as the African Union, look to the EU as a role model for regional problem-solving and integration. Yet, to this day, most regional groupings remain too weak to solve their members’ pressing problems. In most other regions, ongoing political divisions have their roots in the Cold War or the colonial era. During the Cold War, neighbors often competed with each other by “choosing sides” – allying themselves with either the United States or the Soviet Union. Pakistan tilted towards the Americans; India towards the Soviets. Countries had little incentive to make peace with their neighbors as long as they enjoyed the financial support of the US or the USSR. On the contrary, continued conflict often led directly to more financial aid. Indeed, the US and Europe often acted to undermine regional integration, which they believed would limit their roles as power brokers. Thus, when Gamal Abdel Nasser launched a call for Arab unity in the 1950’s, the US and Europe viewed him as a threat. The US undercut his call for strong Arab cooperation and nationalism, fearing a loss of American influence in the Middle East. As a result, Nasser increasingly aligned Egypt with the Soviet Union, and ultimately failed in the quest to unite Arab interests. Today’s reality, however, is that great powers can no longer divide and conquer other regions, even if they try. The age of colonialism is finished, and we are now moving beyond the age of US global dominance. Recent events in the Middle East and Central Asia, for example, clearly reflect the decline of US influence. America’s failure to win any lasting geopolitical advantage through the use of military force in Iraq and Afghanistan underscore the limits of its power, while its budget crisis ensures that it will cut its military resources sooner rather than later. Similarly, the US played no role in the political revolutions underway in the Arab world, and still has not demonstrated any clear policy response to them. President Barack Obama’s recent speech on the Middle East is a further display of America’s declining influence in the region. The speech drew the most attention for calling on Israel to return to its 1967 borders, but the effect was undercut when Israel flatly rejected the US position. The world could see that there would be little practical follow-up. The rest of the speech was even more revealing, though it drew little public notice. When Obama discussed the Arab political upheavals, he noted the importance of economic development. Yet when it came to US action, the most that the US could offer financially was slight debt relief for Egypt ($1 billion), scant loan guarantees ($1 billion), and some insurance coverage for private investments. The real message was that the US government would contribute very little financially to the region’s economic recovery. The days when a country could depend on large-scale American financing are over. We are, in short, moving to a multi-polar world. The Cold War’s end has not led to greater US dominance, but rather to the dissemination of global power to many regions. East Asia, South Asia, Latin America, and the Middle East have new geopolitical and economic influence. Each region, increasingly, must find its own path to economic development, energy and food security, and effective infrastructure, and must do so in a world threatened by climate change and resource scarcity. Each region, therefore, will have to secure its own future. Of course, this should occur in a context of cooperation across regions as well as within them. The Middle East is in a strong **position to help itself**. There is a high degree of economic complementarity between Egypt and the oil-rich Gulf States. Egypt can supply technology, manpower, and considerable expertise for the Arab region, while the Gulf provides energy and finance, as well as some specialists. The long-delayed vision of Arab economic unity should be returned to the table. Israel, too, should recognize that its long-term security and prosperity will be enhanced as part of an economically stronger region. For the sake of its own national interests, Israel must come to terms with its neighbors. Other regions also will find that the decline of US power increases the **urgency of stronger cooperation** between neighbors. Some of the greatest tensions in the world – say India and Pakistan, or North and South Korea – should be defused as part of region-wide strengthening. As the EU shows, ancient enmities and battle lines can be turned into mutually beneficial cooperation if a region looks forward, to resolving its long-term needs, rather than backward, to its long-standing rivalries and conflicts.