# 1

#### Will pass – capital key – issues will be worked out

CT POST 3 – 28 – 13 Connecticut Post <http://www.ctpost.com/local/article/Immigration-reform-gaining-support-in-Congress-4393187.php>

A Republican Party in desperate search for relevance to Latino voters. An expanded Democratic advantage in the Senate. A second-term President with his legacy on the line.

Does all that add up to enough to break decades of impasse and produce comprehensive immigration reform? As expectations -- and tensions -- rise, the answer won't be long in coming.

A bipartisan bill could be filed in the Senate as early as next week, followed in relatively short order by a House bill, also crafted by a bipartisan group, aiming at a compromise on the key issue of citizenship.

The efforts are being applauded by President Barack Obama, who is using every ounce of his political clout to try to get comprehensive reform.

Obama said the time has come "to work up the political courage to do what's required to be done."

"I expect a bill to be put forward. I expect a debate to begin next month. I want to sign that bill into law as soon as possible," Obama said at a White House naturalization ceremony.

In addition to the issue of eventual citizenship for 11 million undocumented immigrants, Congress is expected to address the need for temporary or guest worker programs.

Congress last passed comprehensive bipartisan reform legislation in 1986, when President Ronald Reagan signed a law that granted citizenship to several million undocumented immigrants and created a guest worker program.

Up until now, Republicans have opposed citizenship programs as an "amnesty" for lawbreakers who entered the country illegally, and labor has chafed at guest worker programs.

But Republican losses in the 2012 elections and increased public support for reform have many in the GOP talking compromise.

"If there is one issue that the two parties could produce something meaningful on in this Congress, it would be immigration," said Stephen Hess, a political expert at The Brookings Institution.

Hess said an eventual bill "will have lots of provisos, and it will go back and forth, but it would be hard not to produce something given the general feeling that something has to be produced."

More and more Republicans are moving toward immigration-reform measures as the party seeks to reach out to Latinos, the nation's largest -- and growing -- minority voting bloc.

Public opinion is behind them.

A recent poll showed 63 percent of Americans supported a path to citizenship for undocumented workers provided they meet certain requirements, according to a survey by the Public Religion Research Institute.

Notable Republicans who have recently spoken in favor of compromise on citizenship proposals include Sen. Rand Paul, R-Ky.; former Mississippi Gov. Haley Barbour; and Rep. Paul Ryan, R-Wis.

And a March report by the National Republican Committee, considered a "post mortem" on the 2012 elections, recommended the GOP embrace comprehensive immigration reform to shore up its shaky standing with minorities -- Latinos, in particular.

Roy Beck, executive director of Numbers USA, which advocates lower numerical numbers on immigration, predicted a majority of Republican senators would oppose citizenship.

Groups like Numbers USA are working to hold GOP senators in line. They sent 13,000 emails to Kentucky voters that claimed Paul's position was "more radical and pro-immigration than anything proposed by President Obama."

The group has targeted Sen. Lindsey Graham, R-S.C., one of the "Gang of Eight" senators writing the Senate bipartisan bill, as a lawmaker who favors foreign workers over unemployed South Carolinians.

Democrats from conservative-leaning states could also feel political heat.

Beck said if five to 10 Democrats in the Senate oppose a bill, proponents would need 10 to 15 Republicans to reach the 60 votes needed to cut off debate and vote on legislation.

"You do the math," Beck said.

In 2007, an effort to cut off debate on a Senate immigration reform bill died on a 46-53 vote.

But immigrant reform proponents, such as America's Voice, say there is a "tectonic shift" in the GOP, and the Democrats also have expanded their Senate majority to 53-45, plus two independents who caucus with them. They predict the Senate will muster the votes necessary to pass a reform bill.

Still, it won't be easy.

"We will have not only a few potholes, but a few near-death experiences along the way," said Frank Sharry, America's Voice executive director.

**Nuclear power in space extremely unpopular and costs PC**

**Lemos 07 –** Science Journalist, BS from Cornell University

[Robert “Space Industry Wants Nuke Power, but Public Fear Persists”,http://www.wired.com/print/science/space/news/2007/09/space\_nukes]

Yet, concerns that an accident at launch would expose people to radioactivity have caused some citizens to staunchly oppose the technology. In 1997, public outcry over the use of 73 pounds of plutonium almost scrapped the Cassini mission, a probe which is now delivering stunning vistas and scientific data from Saturn. In 2006, NASA launched the New Horizons mission to Pluto and the outer solar system, but the radioactive material required to power the probe resulted in a lot of political hand-wringing, said Todd May, deputy associate administrator for NASA's Science Mission Directorate, who worked on the New Horizons mission. "The stack of documents that it took to launch that small amount of plutonium on the New Horizons mission was enormous," May said. May underscored the public-relations nightmare that the space industry has to look forward to in selling nuclear propulsion to the general population. "I went down to get a cup of coffee at a cafe before the New Horizons mission, and the lady behind the counter wanted to know what time she should get underneath the table," May said.

#### Capital is the lynchpin – has enough now

THE ATLANTIC 2 – 21 – 13 [There's Reason to Be Optimistic About Congress—Seriously, <http://www.theatlantic.com/politics/archive/2013/02/theres-reason-to-be-optimistic-about-congress-seriously/273393/>]

Nevertheless, this is a new congressional session, and Boren's pessimism might possibly be proved wrong. For the first time in a decade, if not longer, conditions are aligned for bipartisan deal-making, raising hopes that Congress might actually do something and satisfy the wishes of millions of Americans hungry for action. "I am pleased with the signs I see in Congress today to try to make deals," said Lee Hamilton, who was a veteran Democratic House member from Indiana. "There are threads of it -- it's not a fabric yet -- but there are threads, and that's encouraging."

In today's context, defining success is important -- and requires a healthy dose of both skepticism and pragmatism. There's little hope that this Congress can reverse the -- exacerbated by, among other things, powerful special interests and partisan media -- that has gripped Washington. The forces that drove Rep. Boren out of Congress remain potent, and the legislative atmosphere on Capitol Hill is still toxic.

Instead of a long-term course correction, the question is whether Republican leaders in the House, President Obama, and Senate Democrats can facilitate a reprieve -- if only to show the public that the institution is still functional. Cutting a deal with the broad backing of both parties isn't a question so much of relieving those pressures as of learning to pass laws in spite of them.

Favorable Conditions

The makeup of the 113th Congress and the occupant of the White House make conditions riper for bipartisan legislation than at any time since President George W. Bush's first years in office. Since then, Washington has been in the grip of one of two dynamics: Either one party has held Congress and the presidency, or one party, possessing limited power, has had little interest in passing consequential legislation.

The latter was the case last session, when Republicans controlled only the House. In most cases, they used this chamber to approve legislation, such as Rep. Paul Ryan's eponymous budget, that helped define the party's agenda but had no chance of gaining approval in the Senate (much less withstanding a veto from the White House). They were trying to wait out a president whom they believed would be sent packing in 2013.

Democrats were in a similar position from 2007 to 2009, when they controlled Congress but wanted to wait out Bush's tenure. The lack of bipartisanship, of course, didn't prevent major legislation from becoming law over the past 10 years. But when Democrats controlled Washington and passed the Affordable Care Act in 2010, or similarly empowered Republicans approved Medicare Part D in 2003, they didn't need the backing of the other party -- and by and large didn't get it.

This session is different. Neither party has unilateral control, and yet there is an appetite, in the first year of Obama's second term, to make a serious attempt to legislate. The last time Capitol Hill saw something similar came in 2001 and 2002. Republicans suddenly lost the Senate when Sen. Jim Jeffords of Vermont defected from the GOP in the early summer, but Congress still overwhelmingly approved the No Child Left Behind Act months later (although the first round of Bush's tax cuts passed with only a dozen or so Democrats on board in each chamber). Later, the parties worked together to approve a slew of national security issues after the Sept. 11 terrorist attacks.

But drawing comparisons to that period is difficult because of 9/11; and, besides, most of Bush's term is hardly associated with bipartisan comity. The better parallel -- and the experience current optimists point to -- is 1996 and 1997, which bridges the end of President Clinton's first term and the beginning of his second. That two-year span saw agreements on a series of important issues, ranging from two big-ticket items (welfare reform and a balanced-budget agreement) to lesser-known achievements (such as raising the minimum wage).

The similarity between that period and now extends beyond the split control of government. Only a year earlier, Republicans had ridden the "revolution" of 1994 into control of Congress, when they promised to push their agenda whether Clinton approved or not. But the party ultimately dealt with political setbacks, none more damaging than the government shutdown of 1996. The public blamed Republicans, and afterward Clinton never again trailed GOP presidential nominee Bob Dole (who was Senate majority leader at the time of the shutdown) in a head-to-head matchup, according to preelection polls.

Boehner's Challenge

Public opinion might once again be pulling against Republicans, burnt as they were by Obama's reelection and their unexpected losses in the Senate. In a January poll by The Wall Street Journal and NBC News, 49 percent of adults disapproved of the GOP -- and only 26 percent approved. It was the worst rating for Republicans since 2008. Just as the Republicans in Clinton's time decided their political survival depended on coming to the table, the GOP of today might do the same. "Republicans overplayed the government shutdown, and President Clinton won that battle," said Dan Glickman, a former House member who was Clinton's Agriculture secretary. "And, with that, he effectively used the bully pulpit to control the agenda. He gave a lot of cover for people to vote for him. It's not the only factor, but members of Congress are much [more] likely to support a president when the people at home are inclined to support the president."

How much Obama's broad popularity matters to most GOP House members is debatable. With many of the president's supporters packed into heavily Democratic urban districts, most Republicans represent safely red districts. (In November, Mitt Romney won 227 congressional districts, a majority, despite losing by 4 percentage points in the national vote.)

But Obama's standing could weigh more heavily on House Speaker John Boehner and Majority Leader Eric Cantor than on their followers; Cantor has recently attempted to rebrand the party with a softer image. While their charges' interests are more parochial, they have the national party's image to worry about. Popular opinion could prod the two leaders to reach agreements with Obama, especially on emotional issues such as gun control and immigration. Or, at the very least, public pressure could work to ease the disagreements that make even basic government action difficult -- a factor that might have been at work when House Republicans engineered a three-month delay of the debt ceiling. "They're hearing the message outside the Beltway that 'we elected you people to make things work,'" said John Breaux, the former longtime Democratic senator from Louisiana.

The onus falls particularly hard on Boehner, whose struggles to control his conference are well documented. More than any other player in Washington, he will determine whether anything gets done this year. How he decides to proceed could rest on how frequently he's willing to leave conservative colleagues out in the cold and, consequently, how far he's willing to risk his speakership.

The good of the party, and not his seat of power, propelled Boehner's decision to bring the superstorm Sandy relief bill to a vote earlier this year, when it passed with just a minority of support from Republicans. That combination -- Democrats and the moderate wing of the House GOP -- is the pathway to enacting a sweeping set of bipartisan agreements.

A week after the storm vote, a large bipartisan majority passed a three-month extension of the debt ceiling. "It is hard to see this Congress being viewed as a bipartisan one, but we have seen a glimmer of light on the recent bipartisan vote to extend the debt ceiling," said Ron Bonjean, a onetime aide to the Republican leadership.

Obama's Duty

Maintaining that momentum in the House won't be easy, and it could require Obama's personal leadership. Getting Boehner to take such a perilous route could depend in large part on successful cajoling from the president. And on this subject -- the relationships among Washington's top leaders -- discussion of a deal being cut becomes sharply pessimistic.

#### Shortage of skilled workers in cyber fields undermines defense against attacks.

Reuters, 6/13/2012. “Experts warn of shortage of U.S. cyber pros,” http://www.reuters.com/article/2012/06/13/us-media-tech-summit-symantec-idUSBRE85B1E220120613.

Leading cyber experts warned of a shortage of talented computer security experts in the United States, making it difficult to protect corporate and government networks at a time when attacks are on the rise.

Symantec Corp Chief Executive Enrique Salem told the Reuters Media and Technology Summit in New York that his company was working with the U.S. military, other government agencies and universities to help develop new programs to train security professionals.

"We don't have enough security professionals and that's a big issue. What I would tell you is it's going to be a bigger issue from a national security perspective than people realize," he said on Tuesday.

Jeff Moss, a prominent hacking expert who sits on the U.S. Department of Homeland Security Advisory Council, said that it was difficult to persuade talented people with technical skills to enter the field because it can be a thankless task.

"If you really look at security, it's like trying to prove a negative. If you do security well, nobody comes and says 'good job.' You only get called when things go wrong."

The warnings come at a time when the security industry is under fire for failing to detect increasingly sophisticated pieces of malicious [software](http://www.reuters.com/sectors/industries/overview?industryCode=174&lc=int_mb_1001) designed for financial fraud and espionage and failing to prevent the theft of valuable data.

Moss, who goes by the hacker name "Dark Tangent," said that he sees no end to the labor shortage.

"None of the projections look positive," said Moss, who serves as chief security officer for ICANN, a group that helps run some of the Internet's infrastructure. "The numbers I've seen look like shortages in the 20,000s to 40,000s for years to come."

Reuters last month reported that the National Security Agency was setting up a new cyber-ops program at select universities to expand U.S. cyber expertise needed for secret intelligence operations against computer networks of adversaries. The cyber-ops curriculum is geared to providing the basic education for jobs in intelligence, military and law enforcement.

The comments echo those of other technology industry executives who complain U.S. universities do not produce enough math and science graduates.

#### Cyberterrorists will obtain or launch nukes – guarantees great power escalation.

Jason Fritz, July 2009. Researcher for International Commission on Nuclear Nonproliferation and Disarmament, former Army officer and consultant, and has a master of international relations at Bond University. “Hacking Nuclear Command and Control,” <http://www.icnnd.org/latest/research/Jason_Fritz_Hacking_NC2.pdf>.

This paper will analyse the threat of cyber terrorism in regard to nuclear weapons. Specifically, this research will use open source knowledge to identify the structure of nuclear command and control centres, how those structures might be compromised through computer network operations, and how doing so would fit within established cyber terrorists’ capabilities, strategies, and tactics. If access to command and control centres is obtained, terrorists could fake or actually cause one nuclear-armed state to attack another, thus provoking a nuclear response from another nuclear power. This may be an easier alternative for terrorist groups than building or acquiring a nuclear weapon or dirty bomb themselves. This would also act as a force equaliser, and provide terrorists with the asymmetric benefits of high speed, removal of geographical distance, and a relatively low cost. Continuing difficulties in developing computer tracking technologies which could trace the identity of intruders, and difficulties in establishing an internationally agreed upon legal framework to guide responses to computer network operations, point towards an inherent weakness in using computer networks to manage nuclear weaponry. This is particularly relevant to reducing the hair trigger posture of existing nuclear arsenals. All computers which are connected to the internet are susceptible to infiltration and remote control. Computers which operate on a closed network may also be compromised by various hacker methods, such as privilege escalation, roaming notebooks, wireless access points, embedded exploits in software and hardware, and maintenance entry points. For example, e-mail spoofing targeted at individuals who have access to a closed network, could lead to the installation of a virus on an open network. This virus could then be carelessly transported on removable data storage between the open and closed network. Information found on the internet may also reveal how to access these closed networks directly. Efforts by militaries to place increasing reliance on computer networks, including experimental technology such as autonomous systems, and their desire to have multiple launch options, such as nuclear triad capability, enables multiple entry points for terrorists. For example, if a terrestrial command centre is impenetrable, perhaps isolating one nuclear armed submarine would prove an easier task. There is evidence to suggest multiple attempts have been made by hackers to compromise the extremely low radio frequency once used by the US Navy to send nuclear launch approval to submerged submarines. Additionally, the alleged Soviet system known as Perimetr was designed to automatically launch nuclear weapons if it was unable to establish communications with Soviet leadership. This was intended as a retaliatory response in the event that nuclear weapons had decapitated Soviet leadership; however it did not account for the possibility of cyber terrorists blocking communications through computer network operations in an attempt to engage the system. Should a warhead be launched, damage could be further enhanced through additional computer network operations. By using proxies, multi-layered attacks could be engineered. Terrorists could remotely commandeer computers in China and use them to launch a US nuclear attack against Russia. Thus Russia would believe it was under attack from the US and the US would believe China was responsible. Further, emergency response communications could be disrupted, transportation could be shut down, and disinformation, such as misdirection, could be planted, thereby hindering the disaster relief effort and maximizing destruction. Disruptions in communication and the use of disinformation could also be used to provoke uninformed responses. For example, a nuclear strike between India and Pakistan could be coordinated with Distributed Denial of Service attacks against key networks, so they would have further difficulty in identifying what happened and be forced to respond quickly. Terrorists could also knock out communications between these states so they cannot discuss the situation. Alternatively, amidst the confusion of a traditional large-scale terrorist attack, claims of responsibility and declarations of war could be falsified in an attempt to instigate a hasty military response. These false claims could be posted directly on Presidential, military, and government websites. E-mails could also be sent to the media and foreign governments using the IP addresses and e-mail accounts of government officials. A sophisticated and all encompassing combination of traditional terrorism and cyber terrorism could be enough to launch nuclear weapons on its own, without the need for compromising command and control centres directly.

# 2

#### A. Interpretation --- Energy production in the context of nuclear power means net electricity generation.

Energici, February 2012. Provides business intelligence and decision support services to companies and investors active in the wind, solar, hydro, geothermal and bioenergy industries. Specializes in providing robust research, analysis and intelligence coverage of trends and developments. \*All information sourced from EIA. “PRIMARY ENERGY PRODUCTION (MONTHLY),” <http://www.energici.com/energy-profiles/by-country/europe-m-z/sweden/49-countries/north-america/usa/usa-geothermal/449-primary-energy-production>.

Definition : Primary Energy Production is the amount of energy converted from a primary energy source in its natural state, such as coal, gas, wind etc. that has not been subjected to any conversion or transformation process. The U.S. Energy Information Administration includes the following in U.S. primary energy production: coal production, waste coal supplied, and coal refuse recovery; crude oil and lease condensate production; natural gas plant liquids production; dry natural gas—excluding supplemental gaseous fuels—production; nuclear electricity net generation\*, conventional hydroelectricity\* (not hydro pumped storage), geothermal electricity\*, solar thermal and photovoltaic electricity\*, wind electricity\*, wood and wood-derived fuels consumption; biomass waste consumption and biofuels feedstock.

#### B. Violation --- plan provides incentives for nuclear propulsion. That generates heat and thrust, not electricity.

Brian Dodson, 1/21/2013. PhD Physics @ U Illinois. “NASA team pushing towards thermal nuclear propulsion systems,” GizMag, http://www.gizmag.com/nasa-nuclear-cryogenic-propulsion/25772/.

A thermal nuclear rocket engine uses a nuclear reactor to heat hydrogen to very high temperatures, with the superheated hydrogen expanding and forced through a nozzle to generate thrust. As such, the performance of a thermal nuclear engine is limited by the high temperature strength of solid materials. Unlike solar or nuclear powered ion or plasma engines, thermal nuclear engines perform largely the same job as chemical rockets (produce multi-g acceleration), but do so with roughly half the fuel requirement.

#### C. Vote negative.

#### 1. Limits --- they would open up the floodgates to allow any number of applications of nuclear energy outside the context of power production --- testing affs, radioisotopes, numerous research and medical applications.

#### 2. Ground --- they exclude core DAs to energy production, like electricity prices and energy trade-off DAs.

# 3

#### A. Interpretation --- Financial incentives are tax incentives, grants, loans, rebates, industry recruitment, bonds, and production incentives.

DSIRE 12—Database of State Incentives for Renewables and Efficiency [DSIRE Clickable Incentives and Efficiency Map, http://www.mrsolar.com/content/dsire.php#.UBAIwrRCapW]

What types of renewable energy incentives does DSIRE track?

The DSIRE project tracks information on state, utility, local, and selected federal incentives that promote the use of renewable energy technologies. For more information on federal incentives, see What federal incentives does DSIRE track. On the DSIRE website, incentives are grouped into two categories as follows:

(1) Financial Incentives: tax incentives, grants, loans, rebates, industry recruitment, bond programs, and production incentives.

(2) Rules, Regulations, & Policies: public benefits funds, renewables portfolio standards, net metering, interconnection, extension analysis, generation disclosure, contractor licensing, equipment certification, solar/wind access laws, and construction & design standards (including building energy codes and energy standards for public buildings), required utility green power options, and green power purchasing/aggregation policies.

#### B. Violation --- R&D isn’t tied to energy production --- plan is at best an indirect incentive.

EIA, 1992. Energy Information Administration, Office of Energy Markets and End Use, U.S. DOE. “Federal Energy Subsidies: Direct and Indirect Interventions in Energy Markets,” ftp://tonto.eia.doe.gov/service/emeu9202.pdf.

Research and development. The budgetary cost of Government-funded research and development (R&D) is easy to measure. Determining the extent to which Government energy R&D is a subsidy is more problematic: often it takes the form of a direct payment to producers or consumers, but the payment is not tied to the production or consumption of energy in the present. If successful, Federal-applied R&D will affect future energy prices and costs, and so could be considered an indirect subsidy.

#### C. Vote negative ---

#### 1. Limits --- almost any government action can indirectly impact energy markets --- only direct financial disbursements for production provide a stable topic.

#### 2. Ground --- they can avoid core production DAs like natural gas or electricity prices --- indirect R&D allows affs to be constructed around research spin-offs while spiking out of core generics.

# 4

#### Text: The National Aeronautics and Space Association should create and implement a prize to demonstrate a hybrid chemical/solar-electric propulsion system in the United States.

#### CP solves exploration --- accesses all of their travel speed warrants. Shortcomings of pure solar-propulsion don’t apply.

David Szondy, 11/5/2012. Freelance writer based in Monroe, Washington. “NASA examines hybrid solar-electric propulsion for manned space missions,” GizMag, http://www.gizmag.com/hybrid-solar-electric-space-nasa/24791/.

A marriage of the tortoise and the hare may be the key to exploring the Solar System. At least, that’s the belief of Nathan Strange, a mission formulation systems engineer at NASA's Jet Propulsion Laboratory, who has outlined a plan to use hybrid chemical/solar-electric propulsion systems for the manned exploration of the Moon, Mars and the asteroids.

Getting around space is a matter of velocities. To get from Earth to Mars, for example, you need to change your velocity from that of Earth’s orbit to that of Mars. This change, or “delta-v,” is what space travel is. Everything else is just details. The problem is, how to change that velocity without expending enormous amounts or energy or taking forever to get where you’re going.

Currently, we rely almost entirely on chemical rockets for space travel. They do their job, but they do have their limitations. With their high thrust, chemical rockets can get payloads from one planet to another reasonably quickly, but their efficiency is low and the law of diminishing returns kicks in early. For missions of any length, the ratio of fuel to payload soon gets larger and larger until the craft is almost entirely made up of fuel. In other words, you start with a very large rocket, but not much of it gets to the other end.

Solar Electric Propulsion (SEP) systems such as [ion drives](http://www.gizmag.com/ad-astra-ion-engine-mars-39-days/12342/) and [Hall thrusters](http://en.wikipedia.org/wiki/Hall_effect_thruster) seem like a better deal. Currently being used on a number of unmanned spacecraft, such as NASA’s Deep Space 1 and [Dawn](http://www.gizmag.com/dawn-departs-vesta/24042/), they use electrically charged atoms of cesium or xenon for thrust instead of burning chemicals. They can run for years instead of minutes and they can reach the same velocities as chemical rockets. They’re also extremely efficient. For missions where a chemical rocket is only ten percent payload, an SEP vehicle can be 60 percent payload.

All that sounds great, but SEPs suffer from extremely low thrust – about the same as the weight of a coin resting on a table. In space, this is enough to move a vehicle at incredible speeds, but it also takes a very long time. Just spiraling out of Earth orbit can takes weeks or even months. For an unmanned probe this may be acceptable, but with a crew on board that means more supplies, extra radiation shielding, more time wasted in travel and less at the destination.

Strange and his team believe that the answer lies in combining these methods into a much more efficient and flexible system. The basic plan is to use heavy lifting rockets like NASA’s Space Launch System to boost components for a ship into low-Earth orbit. Once assembled and fueled, the SEP system would slowly push the unmanned vehicle into an elliptical high-Earth orbit. Once there, the crew would rendezvous using chemical rockets, which would also be used to push the vehicle out of orbit. After that, the SEP would propel the ship to its destination.

This combination reduces the travel time and the SEP allows for ships and supplies to be pre-positioned while the crew rendezvouses later. It also produces a net reduction in the amount of energy, though it would require flexibility as to destination and departure time. Indeed, where you would go with such a hybrid system would be a question of opportunities – which targets you could reach at a particular time and the particular state of technology.

#### Nuclear propulsion risks accidents that would spread lethal radiation across the globe.

Karl Grossman, 7/21/2011. Professor of journalism at the State University of New York/College at Old Westbury. “What Could Truly End the Space Program: A Nuclear Disaster Overhead,” OpEd News, http://www.opednews.com/articles/What-Could-Truly-End-the-S-by-Karl-Grossman-110721-80.html.

NASA's Final Environmental Impact statement admits that a large swath of Earth could be impacted by plutonium in an accident involving it. The document's section on "Impacts of Radiological Releases" says "the affected environment" could include "the regional area near the Cape Canaveral Air Force Station and the global area."

"Launch area accidents would initially release material into the regional area, defined"to be within "62 miles of the launch pad," says the document. This is an area from Cape Canaveral west to Orlando.

But "since some of the accidents result in the release of very fine particles less than a micron in diameter, a portion of such releases could be transported beyond"62 miles," it goes on. These particles could become "well-mixed in the troposphere"--the atmosphere five to nine miles high--"and have been assumed to potentially affect persons living within a latitude band from approximately 23-degrees north to 30-degrees north." That's a swath through the Caribbean, across North Africa and the Mideast, then India and China Hawaii and other Pacific islands, and Mexico and southern Texas.

Then, as the rocket carrying Curiosity up gains altitude, the impacts of an accident in which plutonium is released would be even broader. The plutonium could affect people "anywhere between 28-degrees north and 28-degrees south latitude," says the NASA document.   That's a band around the mid-section of the Earth including much of South America, Africa and Australia.

Dr. Helen Caldicott, president emeritus of Physicians for Social Responsibility, has long emphasized that a pound of plutonium if uniformly distributed could hypothetically give a fatal dose of lung cancer to every person on Earth. A pound, even 10.6 pounds, could never be that uniformly distributed, of course. But **an accident in which plutonium is released by a space device as tiny particles falling to Earth** maximizes its lethality. A millionth of a gram of plutonium can be a fatal dose. The pathway of greatest concern is the breathing in plutonium particle.

#### NASA has a high historical launch failure rate --- nuclear propulsion means those accidents would cause extinction through global ecosystem destruction and would turn the case by triggering backlash against the space program.

Bruce Gagnon, 1/27/2003. Coordinator of the Global Network Against Weapons & Nuclear Power in Space. “Nuclear Power In Space And The Impact On Earth's Ecosystem,” Space Daily, http://www.spacedaily.com/news/nuclearspace-03b.html.

After a 30-year shutdown of plans for the nuclear rocket, the Bush administration has resuscitated the technology by giving NASA nearly $1 billion in the next five years to expand its space nuclear and propulsion research and development program. "We are still doing exploration of our solar system in covered wagons," says Ed Weiler, NASA's Space Science Chief.

"The Nuclear Systems Initiative will open up the railroad."

Included in NASA plans are the nuclear rocket to Mars; a new generation of Radioisotope Thermoelectric Generators (RTGs) for interplanetary missions; nuclear-powered robotic Mars rovers to be launched in 2003 and 2009; and the nuclear powered mission called Pluto-Kuiper Belt scheduled for January,

2006. Ultimately NASA envisions mining colonies on the Moon, Mars, and asteroids that would be powered by nuclear reactors. All of the above missions would be launched from the Kennedy Space Center in Florida on rockets with a historic 10% failure rate. By dramatically increasing the numbers of nuclear launches NASA also **dramatically increases the** chances of accident.

During the 1950s and 1960s NASA spent over $10 billion to build the nuclear rocket program which was cancelled in the end because of the fear that a launch accident would contaminate major portions of Florida and beyond.

NASA's expanded focus on nuclear power in space **"is not only dangerous but politically unwise**," says Dr. Michio Kaku, professor of nuclear physics at the City University of New York. "**The only thing that can kill the U.S. space program is a nuclear disaster**. The American people will not tolerate a Chernobyl in the sky."

"NASA hasn't learned its lesson from its history involving space nuclear power," says Kaku, "and a hallmark of science is that you learn from previous mistakes. NASA doggedly pursues its fantasy of nuclear power in space."

Since the 1960s there have been eight space nuclear power accidents by the U.S. and the former Soviet Union, several of which released deadly plutonium into the Earth's atmosphere. In April, 1964 a U.S. military satellite with 2.1 pounds of plutonium-238 on-board fell back to Earth and burned up as it hit the atmosphere spreading the toxic plutonium globally as dust to be ingested by the people of the planet. In 1997 NASA launched the Cassini space probe carrying 72 pounds of plutonium that fortunately did not experience failure. If it had, hundreds of thousands of people around the world could have been contaminated.

Last year the Department of Energy (DoE) and NASA announced that due to plans for more nuclear power in space, present facilities must be expanded to handle the expected growth. The DoE will spend over $35 million to renovate the Oak Ridge National Laboratory in Tennessee to help with space plutonium production. Oak Ridge workers would purify the plutonium, which then would be shipped to Los Alamos National Laboratory in New Mexico where it would be formed into pellets used in space power systems.

Beyond accidents impacting the planet, the space nuclear production process at the DoE labs will lead to significant numbers of workers and communities being contaminated. Historically DoE has a bad track record when it comes to protecting workers and local water systems from radioactive contaminants.

During the Cassini RTG fabrication process at Los Alamos 244 cases of worker contamination were reported to the DoE.

Serious questions need to be asked: How will workers be protected? Where will they test the nuclear rocket? How much will it cost? What would be the impacts of a launch accidents?

Critics of NASA have long stated that in addition to potential health concerns from radiation exposure, the NASA space nukes initiative represents the Bush administration's covert move to develop power systems for space-based weapons such as lasers on satellites. The military has often stated that their planned lasers in space will require enormous power projection capability and that nuclear reactors in orbit are the only practical way of providing such power.

The Global Network Against Weapons & Nuclear Power in Space maintains that just like missile defense is a Trojan horse for the Pentagon's real agenda for control and domination of space, NASA's nuclear rocket is a Trojan horse for the militarization of space.

NASA's new chief, former Navy Secretary Sean O'Keefe said soon after Bush appointed him to head the space agency that, "I don't think we have a choice, I think it's imperative that we have a more direct association between the Defense Department and NASA. Technology has taken us to a point where you really can't differentiate between that which is purely military in application and those capabilities which are civil and commercial in nature."

In the end hundreds and hundreds of billions of dollars will be wasted on plans for the nuclearization and weaponization of space. In order to fund these missions Bush and Congress will have to cut programs like social security, education, health care, child care, public transit and environmental protection. In the name of progress and security the lives of future generations will become more insecure.

For the third year in a row the Global Network (GN) will organize two days of protests on February 3-4, 2003 in Albuquerque, N.M. at the 20th Annual Symposium on Space Nuclear Power & Propulsion. This event draws the top players from NASA, DoE, DoD, nuclear academia and nuclear aerospace each year to plan the push of nuclear power into space. Hundreds of middle and high school students are brought to the symposium for indoctrination and the GN has been able to speak to many of these young people at our protests.

NASA, DoE, and the Pentagon are not asking the tax paying public if we want to suffer the risk and costs of nuclear power in space. Their corporate and military interests make it necessary to push ahead without real citizen input . Scientists and technologists are out of control. **Their plans now literally threaten the life of the entire planetary ecosystem**. The time has come for vigorous global public debate around the space nuclear power issue.

# 5

#### Nuclear power discourse encourages sacrifices vulnerable populations to state interests.

Welsh 2k—Ian Welsh, Sociology @ Cardiff [*Mobilising Modernity* p. 3-9]

I argue here that the implementation of nuclear power recasts state citizen relations, weakening the automatic association between state and citizen welfare. The pursuit of interstate ambitions demanded the sacrifice of private citizens. Democratic states injected plutonium into vulnerable social groups and deliberately exposed civilian populations to radioactive fallout and discharges. The issues confronted here are hardly of less importance at the start of the twenty-first century where they have become writ large within a wider environmental agenda. Third, there is a widespread assumption that the nuclear case is somehow a relic from a bygone age dominated by state-sponsored corporatist 'Big' science. Whilst the wartime military origins of nuclear power appear unique, to assume that free-market ascendancy has banished the social, cultural and political forces influential in the premature launch of 'Big' science projects is a chimera. Despite the massive dominance of private capital in the world system, nation states and coalitions of nation states continue to play a pivotal role in shaping scientific and technological trajectories. They seed-fund new technologies and shape their subsequent development through regulatory interventions in an increasingly global sphere which requires instruments of global governance (Welsh 1996, 1999). Despite this, large corporatist science reliant on state sector finance continues to colonise futures on society's behalf but largely without societal knowledge. The scale of these projects is now so immense that nothingless than global collaboration between the most prosperous economies in the world is required. I Just as the joint stock company transformed the face of capitalism in the nineteenth century, global research and development are transforming the productive and communication bases of the new century. The quantitative changes brought about by these efforts will result in immense qualitative social transformations which we cannot envisage. The science and technology of these productive bases are under development now; Freud's bridge to the future has been replaced by technology already. Rather than speculate about what is around the corner, as both post-modernists and reflexive modernisers do, is it not worth identifying those trails which disappear beyond the omega point that is the future now, and ask certain questions of them? How and by whom were these trails first conceived? How were these particular trails blazed? Why were other trails ignored and not pursued? Who did the trailblazing? Why were people willing or unwilling to follow? The nuclear and space ages were born together in the aftermath of World War II. It is my argument that many of the key sociological insights needed to navigate in relation to the 'new' technologies can be derived from studying the sets of relations established in this era. Fourth, we remain relatively uninformed about the kinds of strategies which propel certain technologies to the forefront of scientific R&D (Research and Development) agendas. It would be naive in the extreme to assume that there are simply technological winners which stand out clearly from the throng of competitors. Amongst other things this would require the absolute demonstration of the superiority of the scientific knowledge and engineering feasibility of particular projects over others. Closure and ascendancy are never the product of absolute knowledge. The ascendancy of scientific discoveries are crucially dependent upon the articulation of a wide range of discursive claims around them. Perhaps controversially I will show how eminent scientists playa key role in such claims-making. In this connection it is crucially important to pay attention to the particular discourses which are constructed around particular technologies. The extent to which a technological narrative articulates sympathetically with other ascendant discourses plays a crucial role in determining its success in gaining funding - whether state or private. If we are to begin these processes sociologists need to abandon the practice of addressing 'science' as if it was a unified set of institutions, practices and techniques. To accept science uncritically in this manner is to fail to unmask the ideological success of the sciences in projecting the image of a unified field called science which produces knowledge which is objective and more reliable than other knowledge forms. One way of achieving this is to develop Yearley's argument that science can be seen as a social movement seeking to harness public opinion behind a Utopian vision of progress driven by an uncomplicated scientific rationality (Yearley 1988: 2). As an approach towards the struggle for social andpolitical acceptance of the overall superiority of scientific method against other forms of knowledge and rationality this conception has undoubted value. It remains questionable, however, whether science can be regarded as such a collective enterprise. It would seem more accurate to approach science as an arena within which many sciences challenge and compete for privileged status. Viewed from this perspective nuclear science constitutes a particular scientific social movement seeking to transform society through the acceptance of particular sets of knowledge claims and acceptance of the associated social and technical practices. Nuclear power can thus be regarded as the bearer of a particular scientific social movement's view of the desirable or good society. As Dant notes, from this perspective, practitioners' statements 'are framed, within particular contexts, to represent the beliefs of the speaker as true knowledge' (1991: 153). By approaching nuclear science as a particular scientific social movement, harnessing the dominant cultural codes of a society to its particular knowledge claims, two objectives are achieved. First, we are reminded that this was but one scientific social movement amongst many. Second, it becomes possible to move beyond Yearley's conception of scientific social movement as a form of interest representation to embrace wider social, ethical and moral concerns. By recognising the existence of a plurality of scientific social movements, each prioritising discrete bodies of knowledge and techniques, one moves away from the idea of a unified body called science. As both McKechnie (1996) and Melucci (1992) comment this has the effect of rendering scientific knowledge as bricolage, a combination of cues, the meanings of which are dependent upon the social context of the observer. This has the effect of de-prioritising the foundationalist claims to superior knowledge which underpin many of the strands of legitimation surrounding the nuclear issue and prioritising the social contexts within which competing knowledge claims are read off (Knorr-Cetina and Mulkay 1983). The ascendancy of a particular science thus becomes a question of the degree of congruence between its knowledge claims and the social and ethical aspirations and priorities prevailing within a social formation. Being in tune with the prevailing Zeitgeist is a significant, though not sufficient, factor in enabling certain sciences and not others to become established as seemingly unstoppable industrial concerns. Scientific social movements compete with each other for resources, status and the achievement of particular visions of desired futures. The nuclear case provides an immensely rich basis through which to analyse empirically the kinds of discursive strategies deployed by a particular movement. It is my argument here that there are patterns and repetitions, a genealogy of symbolic forms, across time which offer a particularly powerful means of sociological engagement with science policy and science implementation. By identifying the repetition of key discursive interventions over time it becomes possible to demonstrate how past interventions are important instructuring contemporary public - science relations in terms of institutionally defined issues of trust and risk; the credibility of scientific projects for public funding; and the role of science and scientists within wider culture. I identify six key discourses involved in these processes, namely: Freezing time by claiming the future. Locating the future on a 'new' frontier. Asserting superior knowledge claims. Asserting imperatives. Discounting residual difficulties into the future. Asserting faith in progress. Before proceeding it is necessary to outline the kind of discursive work associated with each of these forms of discourse. Freezing time by claiming the future Big science projects such as the atomic science movement typically have very long lead times which almost inevitably involve considerable areas of uncertainty. Discursive claims emphasising the future thus assume considerable importance to the extent that they direct attention towards distant time horizons and away from more immediate time frames inhabited by scientific and technological uncertainty. The future invoked within such discourse typically emphasises positive collective outcomes for 'mankind' in the face of current uncertainties and doubts. Locating the future on a new frontier The evocation of the future also suggests other registers suggestive of progress and change. Within modernity human progress has been powerfully associated with moving towards and expanding the frontiers of civilisation. This is both a spatial and conceptual process where opening new frontiers can be both geographical and knowledge-related. The discursive relevance of frontier-speak includes the evocation of the contingent. Frontiers are by definition risky places where only the brave and the intrepid venture. Frontiers are risky because the comfortable modernist illusion of control, order, dominance and rationality is clearly not operating. Frontiers have been predominantly male zones. In the case of major scientific innovations a number of futures are evoked. Frontier claims are made on epistemological grounds - innovations are at the frontiers of human knowledge and scientific endeavour. Discourses of the frontier thus evoke the sense of risk-taking associated with brave pioneers and explorers who have gone to the margins (see Shields 1991). Paradoxically there is a simultaneous translation of risk into certainty through the invocation of new economic frontiers leading to newly won or re-established economic prosperity. New frontier, new era, new bright confident future, goes the constellation. The discourse of frontier-speak thus at one and the same time acknowledges scientific and epistemological lack whilst subordinating knowledge deficits to a future in which they have been resolved. Asserting superior knowledge claims Claims to superior knowledge represent an important discourse in the advance of all scientific social movement's projects. In terms of the atomic science movement the cultural capital and prominence enjoyed by physics in the aftermath of the successful testing and use of the atomic bomb represented a considerable resource. The overall success of the discipline in the face of seemingly insurmountable odds leant credence to practitioners' claims that apparently insurmountable knowledge deficits would be overcome on the basis of past successes. The assertion of superior knowledge relating to an envisaged future is thus based on past outcomes. One important implication here is that innovations arising from 'new' sciences and/or cultural backwaters have no such repertoire of past successes to draw upon in legitimating their future claims. In this sense symbolic capital assumes a position of considerable importance. Asserting intperatives The assertion that there is no alternative (TINA) represents one of the most fundamental discourses in the advancement of the atomic science movement and can be seen in relation to both nuclear fission and nuclear fusion. 2 The TINA can be regarded as a kind of discursive trump card capable of dismissing any counter-argument and is often closely associated with the use of 'crises' of various kinds to underline the need for a particular technique. The pervasive use of the notion of an energy crisis is a recurrent 'discourse coalition' (Eder 1996) used in association with a nuclear TINA throughout peak modernity. Discounting residual difficulties into the future Scientific or technical difficulties which become acknowledged within a particular present can become problematic to the advance of a scientific social movement's agenda. A typical response is to discount such difficulties on the basis that they will be readily overcome in the future. There are at least two distinct senses in which this displacement into the future operates: problems of basic physics form one category and problems of engineering design, materials science and operational procedure constitute another. It is important to remember that the resolution of problems of basic physics can often be the beginning of operational and engineering difficulties which prove even more intractable and contested. The nearer basic research gets to operational configurations the greater the likelihood of scientific and technological consensus weakening in the face of competing claims made on the behalf of rival systems - something which certainly characterised thermal reactor designs in the 1950s, 1960s and 1970s (see Ch. 5 and Welsh 1994). Asserting faith in progress Within modernity scientific and technical progress assume such an axiomatic position that it becomes almost impossible to question progress without the automatic application of the label Luddite. Such faith is frequently invoked by senior figures within the atomic science movement in order to overcome reservations over economic cost, technical and scientific viability and so on. In a paradoxical manner appeals for progress through science and technology - the application of rationality - lead to calls for the suspension of rational and economic doubt on the basis of 'faith'. Ironically such appeals are typically made within the confines of specific scientific social movements. Here, for example, is Sir John Hill, chairman of the United Kingdom Atomic Energy Authority, delivering a lecture entitled 'Nuclear Power in the United Kingdom' in 1971 within which he included the prospects for nuclear fusion: I hope we will not lose all sense of striving for the future or of interest in the undiscovered, nor refuse to make any journey unless every step can be counted and measured in advance. The road to successful and economic fusion power stations is uncharted. I hope we can maintain our resolve to continue the exploration. (Hill 1971: 238) The metaphorical articulation of spatial adventuring - journeying, risk and uncertainty coupled to the prospect of future benefits are all present in this one short extract. Subsequent chapters will trace the origins, development and transformation of the founding discourses of the nuclear moment from the bright new dawn of the 1950s through to the apparently perpetual twilight which typifies the nuclear domain at the turn of the century. At the centre of this assemblage of discourses lies the task of dealing with uncertainty and contingency both within science and in the wider social and cultural spheres which support science as a set of material practices.3 Within science, contingency and uncertainty are inescapable as either conjecture and refutation (Popper 1963), or substantive paradigm shifts (Kuhn 1962) continually leave the corpus of scientific knowledge subject to revision or complete reformulation. The claims for a science at one time point on the basis of an accepted, or at least defensible, body of knowledge are contingent and subject to change within the institutions of science. In the public sphere such revisionist change oftenoccurs after a particular trajectory of technological development is well advanced. One consequence of this is that the resultant changes in scientific claims-making can be read as inconsistency or failure to live up to previous promises. In terms of public acceptance and trust the malleability of scientific claims-making assumes a position of even greater importance when information technologies facilitate the retrieval of past statements into new time frames.4 One obvious way to avoid such deficits in public trust would be to abandon making certain kinds of claims. This, however, assumes that such claims have no other role in the fortunes of particular big science projects, for example, securing funding and political support. At the level of socio-cultural formations ceasing to make such claims would also fundamentally reduce the symbolic potency of science as the bridge to the future.5 Historically it is the discursive claim to 'futurity' above all others which has been central to the institutional consolidation of science within western civilisation.

#### Nuclear power advocates perform scientific idolatry – the aff produces authoritarian technology and politics.

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After almost 20 years of virtual global moratorium, civil nuclear energy is being promoted once again, under very different conditions. Not only have climate change and carbon emissions reduction finally arrived as mainstream issues, but also those decision-making processes themselves have changed markedly. Yet some problematic dimensions of that 1977 decision process, and of the social role of science within it, remain largely undisturbed. These unnoticed dimensions of scientific reason as public authority are relevant not only to the return of the nuclear commitment after decades of largely self-inflicted paralysis. They are also perhaps more salient to the deeper and more general question, of whether and how society and politics can avoid trapping itself in quasi-religious fundamentalism - and I mean scientistic fundamentalism, as if science can provide forms of authority and assurance of which it is in principle incapable - over such technological-scientific-social programmes. The Windscale inquiry can be seen now as the opening event in what has since been a fundamental transformation over three decades in the relations of publics and experts in the social appraisal of technology, science and innovation. However while this general issue has massively proliferated - and intensified over this period (Felt et ai, 2007), it has also become more depoliticized, and institutionalized into 'management' as distinct from democratic struggle. Some key dimensions of this process seem to have been overlooked. Thus against a common misrepresentation of my own position on those expert-public relations, I need to emphasize that democratic political conduct of science and technology does not require the practice of some trumped-up populist delusion about citizens' supposedly superior, or even equal, ability to understand and negotiate esoteric scientific-technical issues.2 The point is that the many and varied public issues in which such science is embedded and crucial, are never only scientific-technical issues, yet they are repeatedly reduced to this in practice and even in academic analysis, for example, typically to 'risk issues'. This points to the significance of that current in science and technology studies (STS), and in social sciences more widely, which has rightly problematized how objects of scientific attention are themselves conceptually and socially constructed, here with huge implications because this is scientific knowledge not in a laboratory, but in public arenas.3 More directly, this underlines the key point that is neglected by such as Kusch (2007), and Collins and Evans (2002, 2007), that public policy institutions and processes have effectively allowed science not only to inform policy, as it must, but further, problematically to become sovereign author of public meanings - as the presumptive framing authority that is mistakenly allowed to confuse (public) issues involving scientific questions with scientific issues. The autonomous different meanings and concerns, that is, framings of the issues, which others bring to the arena, are thus deleted and dismissed a priori - just as they were during and after the Wind scale inquiry into THORP. Therefore democratic techno science requires the responsible scientific and policy institutions to retain due modesty and appreciate that non-scientific civic capacities have a necessary role to play in negotiating what public issues and needs such sophisticated technologies are supposed to be addressing, and what other concerns they raise as further public issues. This is only a challenge to 'science' insofar as that 'science' already embodies and tacitly projects normative social commitments and questions. It is not, as it has been continually lampooned, constitutional public irrationality, or anti-science. All too often these public political processes of societal negotiation and learning in technology appraisal have been replaced by presumption on the part of science-infatuated 'expert' policy institutions that typical publics have no capacities for legitimate independent meanings, and science has thus assumed an unduly exaggerated ro le in such public policy culture. It no longer only identifies 'the facts' (including what should also be their uncertainties and conditions), and enlightens the policy issues with these. It has also come effectively to define what the public issues are, which is a far more problematic political role being played by default, and unacknowledged. Institutional idolatry with respect to science - treating it as idol, rather than as instrument, and thereby failing to examine its substantive know ledges and assumptions more thoroughly engenders lack of institutional recognition and reflection about this self-inspired, illegitimate over-reach; and this in turn cultivates provocatively authoritarian and patronizing definitions of public (in)capacities in relation to science and democratic policy processes. My 'public deficit model' critique of the normative impositions of scientific and policy institutions in the name of 'public understanding of science' was never a critique of the claim that publics have technical incapacities - of course they do, as they are usually first to emphasize! This critique was of the dominant habit of using such epistemic incapacity as attempted explanation - and thus dismissal - of public normative difference from institutionally desired policy commitments, rather than recognizing genuine normative difference. Once we recognize that those science and policy institutions have presumptively reduced public meanings to their own, for example to 'risk' (as defined by 'the authorities' alone), then their repeated return (on this, see Wynne 2006) to public deficit explanations of public scepticism and difference is preordained. The Windscale inquiry was an early manifestation of this institutional syndrome of scientism. Countering this institutional culture and its entrenchment, as I have tried to do since the Windscale inquiry, has nothing to do with romantically exaggerating citizen knowledge-abilities, as this project has been caricatured. In his book on Nuclear Fear, historian of science and technology Spencer Weart (1988) has documented in the nuclear case how a kind of universal idolatry and fearful sense of awe pervaded the emergence of nuclear technology in the 1940s and 1950s. The unprecedentedly fearsome power, first manifested in the 1945 instantaneous annihilations of Hiroshima and Nagasaki, engendered this social investment of superhuman power in nuclear technology. Even when painted positively during the fervent promotion of civil nuclear technology a decade later, this came wrapped with ageless human insecurities about immanent social-political 'disorder' and threat, to which the awesomely destructive power of nuclear weapons was envisaged as a compelling disciplinary counter-force. It is always a salutary reminder that the 1956 'Atoms for Peace' programme taken up by the UN under US promotion, was an afterthought of ten years or more of the defining objective of nuclear fission technology - weapons of mass destruction - and especially of the escalating fears inspired even amongst experts by the 1953 testing of the first even more powerfully destructive nuclear fusion H-bomb. The THORP plant, and thus the Wind scale inquiry, were enmeshed in this profoundly ambiguous combination of weapons of mass destruction with utopian illusions of magical social benefits like free and limitless electricity. As I show below, a further observation suggested by Weart's admirable documentation of the investment of godly powers in what is after all a human artefact, is that this ambiguous idolatry of the machine also invests godly powers in corresponding human actors and institutions - nuclear experts. A corollary of this is the inevitable demotion of ordinary citizens and 'the public' to the almost subhuman, with no recognized independent capacities of civic reason or collective sense-making - no collective moral substance and thus no worthiness of collective respect.4 This is a despotic politics of technology.

#### The aff’s politics of risk result in inevitable extinction through technocratic management.

Crist 7 [Eileen Crist, Associate Professor of Science and Technology in Society at Virginia Tech University, 2007, “Beyond the Climate Crisis: A Critique of Climate Change Discourse,” *Telos*, Volume 141, Winter, Available Online to Subscribing Institutions via Telos Press, p. 49-51]

If mainstream environmentalism is catching up with the solution promoted by Teller, and perhaps harbored all along by the Bush administration, it would certainly be ironic. But the irony is deeper than incidental politics. The projected rationality of a geoengineering solution, stoked by apocalyptic fears surrounding climate change, promises consequences (both physical and ideological) that will only quicken the real ending of wild nature: "here we encounter," notes Murray Bookchin, "the ironic perversity of a 'pragmatism' that is no different, in principle, from the problems it hopes to resolve."58 Even if they work exactly as hoped, geoengineering solutions are far more similar to anthropogenic climate change than they are a counterforce to it: their implementation constitutes an experiment with the biosphere underpinned by technological arrogance, unwillingness to question or limit consumer society, and a sense of entitlement to transmogrifying the planet that boggles the mind. It is indeed these elements of techno-arrogance, unwillingness to advocate radical change, and unlimited entitlement, together with the profound erosion of awe toward the planet that evolved life (and birthed us), that constitute the apocalypse underway—if that is the word of choice, though the words humanization, colonization, or occupation of the biosphere are far more descriptively accurate. Once we grasp the ecological crisis as the escalating conversion of the planet into "a shoddy way station,"59 it becomes evident that inducing "global dimming" in order to offset "global warming" is not a corrective action but another chapter in the project of colonizing the Earth, of what critical theorists called world domination.

Domination comes at a huge cost for the human spirit, a cost that may or may not include the scale of physical imperilment and suffering that apocalyptic fears conjure. Human beings pay for the domination of the biosphere—a domination they are either bent upon or resigned to—with alienation from the living Earth.60 This alienation manifests, first and [end page 50] foremost, in the invisibility of the biodiversity crisis: the steadfast denial and repression, in the public arena, of the epochal event of mass extinction and accelerating depletion of the Earth's biological treasures. It has taken the threat of climate change (to people and civilization) to allow the tip of the biodepletion iceberg to surface into public discourse, but even that has been woefully inadequate in failing to acknowledge two crucial facts: first, the biodiversity crisis has been occurring independently of climate change, and will hardly be stopped by windmills, nuclear power plants, and carbon sequestering, in any amount or combination thereof; and second, the devastation that species and ecosystems have already experienced is what largely will enable more climate-change-driven damage to occur.

Human alienation from the biosphere further manifests in the recalcitrance of instrumental rationality, which reduces all challenges and problems to variables that can be controlled, fixed, managed, or manipulated by technical means. Instrumental rationality is rarely questioned substantively, except in the flagging of potential "unintended consequences" (for example, of implementing geoengineering technologies). The idea that instrumental rationality (in the form of technological fixes for global warming) might save the day hovers between misrepresentation and delusion: firstly, because instrumental rationality has itself been the planet's nemesis by mediating the biosphere's constitution as resource and by condoning the transformation of Homo sapiens into a user species; and secondly, because instrumental rationality tends to invent, adjust, and tweak technical means to work within given contexts—when it is the given, i.e., human civilization as presently configured economically and culturally, that needs to be changed.

#### Alternative - We have an obligation to critique the gate-keeping that occurs in nuclear policy debates.

Taylor and Kinsella 7—Bryan Taylor Communications @ UC Boulder and William Kinsella Communication @ NC State [Nuclear Legacies eds. Taylor and Kinsella p. 6-10]

Third is a closely associated tradition of argumentation theory and analy­sis. This tradition extends critical-theoretical concern with the integrity of public deliberation by augmenting its account of the relationships between spheres and "fields" of discourse. It does so by drawing on the work of argu­mentation theorists such as Stephen Toulmin and Chaim Perelman concern­ing the unique logical conventions that govern the articulation of claims, ev­idence and warrants in institutional communication (e.g., religion, science, and government; Goodnight 1982). Here, argumentation scholars untangle the exceedingly complex and paradoxical conventions of nuclear policy dis­course (e.g., surrounding the varieties of nuclear deterrence; Dauber 1993). In their study of "argument spheres," critics examine how nuclear institutions regulate the discourse formally falling under their jurisdiction, how they am­bitiously (and often coercively) impose their argument conventions on other spheres, how they strategically appropriate competing conventions to estab­lish their own authority and legitimacy, and how they maintain those attrib­utes by undermining opponents and neutralizing dissent. Communication scholars working in this tradition focus on the conse­quence of this activity for public deliberation of nuclear issues. A frequent theme involves the corrosive effect produced by unreflective or authoritarian imposition of conventions derived from technical, specialized discourse spheres (e.g., of scientific expertise) (Farrell and Goodnight 1981; King and Petress 1990; Prosise 1998). Schiappa (1989), for example, has analyzed two dialects of official "nukespeak" which help to normalize the nuclear condi­tion: domestication, which renders nuclear topics palatable by associating them with personal, familiar, and innocuous images (see also Cohn 1987; Taylor 1997a), and bureaucratization, which sanitizes and abstracts nuclear issues, rendering them either neutral or inaccessible to lay debate. In both cases, Schiappa concludes, "It is clear that with regard to nuclear issues, the public has been conceived as a crowd to be calmed rather than co-creators of public policy . . ." (Schiappa 1989, 260; emphasis in original). Argumentation scholars have also advanced this tradition by noting that some specialized spheres of nuclear argument (such as arms control) are con­flicted, interdisciplinary ecologies of discourse. As such, they do not yield simple identification of consistent generic conventions. Instead, argument scholars must use critical and interpretive methods to untangle and evaluate the arcane and competing conventions used by speakers arguing in these spheres (Dauber 1988; Hynes 1988). Finally, it is worth noting that five of the six "questions of theoretical interest" posed by a prominent argumentation scholar at the close of the Cold War still seem highly relevant for our current nuclear moment: "The hardening of historical interpretation, the fragmenta­tion of public discourse . . . the strategic options of counter-movements, the search for alternative sources of reason, and the power of critique to under­mine the legitimacy of a specialized language" (Goodnight 1988, 142). Lastly, we identify a tradition of nuclear communication scholarship char­acterized by a postformalist mélange of semiotic, poststructundist, and dia­logic theories. Generally, these theories are united in their challenge to realist and cybernetic paradigms of nuclear communication that depict it as a trans­parent medium for reflecting pre-existing, objective nuclear truth, and for mechanically transmitting messages (or, "communications") between sources and audiences that encode nuclear truth as "information." Instead, these theo­ries emphasize the role of discourse in constituting knowledge of the nuclear condition by employing familiar conventions of representation whose effec­tiveness lies in their ability to both depict material phenomena and sustain cul­tural hegemony. Here, the underlying assumption is that officials "manufac­ture" public consent to the nuclear condition through the pervasive circulation of discourses that structure the possibilities for meaningfully existing and act­ing within nuclear institutions. One example is the recurring claim that, since nuclear weapons are irreversible and necessary for national security (i.e., "You can't put the genie back in the bottle"), protest is irrational and illegitimate. One stream of theory here emphasizes deconstruction of the inevitable contingency, prematurely closed structures, and ideological productivity of nuclear language. In this view, despite their pretense to coherence, rational­ity, and neutrality, official nuclear discourses are typically dependent on the use of both figurative elements such as metaphor (e.g., of "containment"; Kinsella 2001), and on "external" discourses such as myth, religion and lit­erature to sustain their authority and legitimacy (Taylor 2001). Nuclear crit­ics subsequently intervene in these discourses by clarifying their hybrid, over-determined (and often schizophrenic) status, thus opening up new pos­sibilities for their ordering of nuclear understanding and action (Williams 1988; see also Chaloupka 1992; Schwenger 1992). This tradition relies on Jacques Derrida's (1984) landmark essay establishing the tortured ontology of nuclear weapons as—mostly, so far, thankfully—an object of "fabulously textual" simulation and projection. In that essay, Derrida noted the ominous and perverse condition surrounding nuclear discourse: if its ultimate, apoca­lyptic referent of global nuclear war were ever realized, that event would be both unrepresentable in language, and would destroy the material and the so­cial worlds which establish language as a relevant resource for human liv­ing. However, as several critics have noted (Norris 1994; Ruthven 1993; Taylor 1998a), Derrida's provocative formulation ignores key historical in­stances of nuclear materiality, including the U.S. bombings of Hiroshima and Nagasaki and—most relevant for this volume—the devastating conse­quences of nuclear weapons development for public health, worker safety, and the environment (Makhijani, Hu, and Yih 1995). This revision of the relationship between nuclear symbolism and material­ity also challenges conventional political wisdom that nuclear weapons have not been "used" (i.e., in military combat) since the American bombings of Japan. Here, we must note the restrictive application of the term "use" in this claim. Alternately, we may consider the meaning of this term in its most ba­sic sense: as the human employment of technology to achieve goals in a man- ner that produces material effects. If we apply this definition of "use" to the case of nuclear weapons development, we are suddenly confronted with a long list of witnesses— including nuclear workers, community members and environmental activists. These voices clamor to testify that nuclear weapons have indeed been "used," and have produced effects such as radiation-related illness that have not been "useful" to the life-forms they have marked. As a result, we are invited to question how, when, and by whom nuclear weapons may be "used"—and may be deemed "useful." As a primarily humanistic product of literary theory, linguistics, and phi­losophy, nuclear criticism has typically directed its attention to cases of liter­ature, popular culture, and political discourse. As a result, it has often failed to engage the more mundane—but no less important—organizational and in­dustrial dimensions of the nuclear apparatus. Glimmers of recognized need for this work occasionally surface in humanistic scholarship. One example is the following question, posed by Kalaidjian (1999) in his critique of existing conceptualizations of the nuclear-cultural audience: "Must we not," he asks, "draw ethicopolitical distinctions among perpetrators, bystanders and victims of nuclear production as it is imbricated with nuclear annihilation?" (318; em­phasis in original). As members of a discipline that integrates humanistic and social scientific traditions, nuclear communication scholars are poised to fill this gap. They have done so partly by drawing on the work of Michel Foucault to explore the relations between power, knowledge, and discourse operating in nuclear- institutional settings. Specifically, Foucault's complex oeuvre offers re­sources for conceptualizing how those institutions regulate communication by establishing "who can speak with authority about nuclear topics, what can and cannot be said about them, and in what settings this discourse can take place" (Kinsella 2005a, 52). Under these conditions, it is as accurate to say that institutional discourses speak their speakers as the other way around. Over time, speakers produce "statements" that characterize distinctive knowledge/power regimes within institutions, and that contend for influence with other statements associated with competing regimes operating through­out their environments. The configurations of these statements may subse­quently be read as "formations" of nuclear discourse defining particular his­torical periods such as "the post–Cold War." Foucault's work also enables communication scholars to analyze the "disci­plinary effects of power upon individuals who are incorporated into institu­tional nuclear systems" (Kinsella 2005a, 63; see also Kinsella 1999, 2005b). This focus includes the interlinked situations of nuclear professionals and cit­izens, whose potential for subjectivity and agency in the reproduction of nu­clear hegemony is both intensively cultivated (e.g., as loyalty, patriotism, and productivity) and prohibited (e.g., as dissent and treason) by powerful institu­tions obsessed with security and secrecy. As a result, we are better able to ap­preciate the episodes and practices that characterize these contexts (e.g., job interviews, whistle-blowing, etc.) that might otherwise be glossed or ignored in humanistic conceptions of the nuclear condition (Taylor 1992,2002). These studies depict the fluid and productive circulation of power in the micro- practices of everyday nuclear-institutional life. They show how this circulation produces both mechanisms of conformity, and also opportunities for resisting and disrupting dominant regimes (e.g., through subjects' identification with professional integrity over immediate organizational loyalty in their evaluation of controversial nuclear-scientific data; see also Gusterson 1996).

# 1NC Colonization Defense

#### Space colonization *won’t* prevent extinction—dependent on Earth and susceptible to superintelligence.

Anissimov 8 — Michael Anissimov, science and technology writer focusing specializing in futurism, founding director of the Immortality Institute—a non-profit organization focused on the abolition of nonconsensual death, member of the World Transhumanist Association, associate of the Institute for Accelerating Change, member of the Center for Responsible Nanotechnology's Global Task Force, 2008 (“We Are in Trouble,” *Accelerating Future*—Michael Anissimov’s futurism blog, September 22nd, Available Online at http://www.acceleratingfuture.com/michael/blog/2008/09/we-are-in-trouble/, Accessed 09-09-2011)

Space stations or lunar settlements won’t help mankind avoid numerous types of extinction risks. This is because 1) any colony would remain near-completely dependent on Earth unless very large and in possession of advanced nanotechnology, and 2) the greatest danger, from superintelligence, could easily reach its long arm into space and crush any human colony if it wanted to. This is not a challenge we can run away from. We have to stay here and fix it. Space will not swoop down and save the day.

#### No mission --- a prize doesn't overcome lack of inertia to go to Mars

**Flatow and Zubrin, their author, 11** (Ira, host of NPR Radio, and Robert, PhD in aerospace engineering, "Is Settling Mars Inevitable, Or An Impossibility?", July 1, www.npr.org/2011/07/01/137555244/org/2011/07/01/137555244/is-settling-mars-inevitable-or-an-impossibility)

IRA FLATOW, host: This is SCIENCE FRIDAY. I'm Ira Flatow. We're not going to the planet Mars anytime soon. President Obama suggested something like the mid-2030s as a target date, but for various reasons - the dangers of space travel, the price tag, more pressing problems on this planet - that trip to the Red Planet has been put on indefinite hold.

#### NASA wouldn't adopt the private technology --- tons of demonstration projects now but those aren't always implemented

#### Fails—extreme temperatures damage the metal and there’s no ejected mass

#### Stern 03 – former staff @ Lab Extraterrestrial Physics, former research assoc. @ NASA Goddard Space Flight Center, former research assoc. Dept. of Physics @ U of Maryland, former head of AGU Committee on the History of Geophysics, Eos history editor, graduated from Israel Institute of Technology

[David P., FAQs, http://arc.iki.rssi.ru/mirrors/stern/stargaze/StarFAQ7.htm#q117]

117. Why not use nuclear power for spaceflight? Why not use nuclear energy to power spaceflight? After all, few pounds of plutonium contain as much energy as thousands of tons of rocket fuel! Reply Nice idea. However, to fly in space takes rocket thrust, not just energy. By Newton's laws, the forward momentum given to any rocket is always equal to the backward momentum given to the jet fired backwards. That momentum, in its turn, depends on two factors--how much mass is expelled by the jet, how many tons per second, and the speed with which it is expelled. Nuclear energy can supply the speed, but something must provide the expelled mass. You might think next that given some source of mass (say, a tank filled with water), plentiful nuclear energy would make it possible to eject it much faster. But how? Rocket engines work by converting heat into directed motion, in a very efficient way, but they already run about as hot as available materials can stand. Nuclear energy could provide more heat, but no rocket engine could stand it. Early in the space age a serious effort existed to build a nuclear rocket, getting its thrust by heating hydrogen with nuclear fission. A jet of hydrogen, coming from a rocket engine at a certain temperature, is much faster than a jet of burned rocket fuel, coming from a rocket engine at the same temperature. The reason is linked to the fact that hydrogen molecules are much lighter than those of any burned fuel. However, the rate at which rocket engines used in spaceflight supply energy is enormous--e.g. the shuttle's engines burn a ton of fuel or more each second. The stresses are enormous, and the risk of nuclear material and waste products of fission getting into the atmosphere was too great, and so the project ended. A visionary proposal of the 1950s proposed a "rocket" cabin with a strong flat plate on the bottom (oil would be sprayed on it for protection), and a trapdoor through which small nuclear bombs could be dropped, detonating some distance away and pushing the craft forward. On paper, it seemed feasible, but an actual nuclear test was deemed hazardous, sure to release contamination. The nuclear test-ban treaty of 1963 ended all efforts in this direction.

#### Extinction not inevitable --- scientific advances and adaption solve

#### Nuke power in space inhibits astronomy

#### Maggie McKee, NewScientist.com, 05

[“Nuclear-reactor spacecraft poor for astronomy”]

But the NRC report finds that the reactors would be virtually useless for - and could even hamper - observations of astrophysical phenomena beyond our solar system. "Reactors are messy things," says NRC panel member Gary Bernstein, an astronomer at the University of Pennsylvania in Philadelphia, US. "They generate huge numbers of radiation particles and gamma rays." He says these by-products of fission could effectively "blind" space telescopes such as Hubble, Spitzer, and Swift if the reactors operated near the Earth, as they did in the past. "We didn't see a benefit of this technology for any kind of pure science that peers outside the solar system or does fundamental physics tests," he says.

#### Astronomy key to space, turning the case

#### Spacetides

[“Astronomical research and the exploration of space are crucial. SpaceTides offers reasons why:”, http://www.assabfn.co.za/spacetides/issues/importance.htm]

By studying other planets, we learn not only how our planet once was, but also how it might look like in the future. By researching the Sun and Moon, we learn about the hidden forces in space that might have an impact on Earth's weather. By observing asteroids and other space debris, we stay on our guard for potentially hazardous collisions. By studying black holes and gamma-ray bursts, we gain an understanding of the risks that such objects and events might pose for life on Earth. Through a system of weather and climate satellites orbiting Earth, we learn about the ever-changing elements having a direct impact on our day-to-day existence. Satellites can easily monitor the state of rain forests on Earth and through this data, scientists can deduce the negative impact that habitat destruction will have on the future.

#### Space colonization leads to rapid growth of incurable diseases—extinction

Wickramasinghe 10 (Chandra, Ph.D., Centre for Astrobiology, Cardiff University, UK; Journal of Cosmology, “Are Intelligent Aliens a Threat to Humanity? Diseases (Viruses, Bacteria) From Space”, May 2010, http://journalofcosmology.com/Aliens106.html)

The real risk to humanity of alien life may be in the form of viral and bacterial genomes arriving at the Earth which are sometimes pathogenic (Joseph and Wickramasinghe 2010). Fred Hoyle and the present author have argued the thesis of “Diseases from Space” over several decades (Hoyle and Wickramasinghe, 1979, 1982, 1990; Hoyle et al, 1985; Wickramasinghe et al, 2003). Despite criticisms that have often been made against this concept the basic arguments remain cogent to the present day (Joseph and Wickramasinghe 2010). With increasing evidence to support the view that life could not have arisen indigenously on the Earth, the idea that the evolution of life is modulated by genes arriving from comets has acquired a new significance. Darwinian evolution operates in an open system where new genes continue to be added from a cosmic source. Pandemics of viral and bacterial disease become an inevitable part of this thesis. One could argue that if not for such genetic additions from outside, evolution would have come to a standstill a long time ago (Hoyle and Wickramasinghe, 1982; Joseph and Wickramasinghe 2010). In this context it should be noted that the human genome has recently been found to contain more than 50 percent of its content in the form of well defined inert viral genes. It is possible to understand this data if our ancestral line of descent over a few million years had suffered a succession of near-culling events following outbreaks of viral pandemics (Joseph and Wickramasinghe 2010). On each such occasion only a small breeding group survived the members of which had assimilated the virus into their reproductive line. Hoyle and the present author have cited numerous instances from the history of medicine where outbreaks of pandemic disease could be elegantly explained in terms of space incident viruses. Even the modern scourge of influenza is likely to be driven by periodic injections of genetic components from space. Aspects of the epidemiology of influenza otherwise remains difficult to explain (Hoyle and Wickramasinghe, 1979, 1991). In conclusion, we note that the aliens we have to fear are not superintelligent creatures arriving in space ships and intending to conquer and subdue us, but sub-micron sized viral invaders that may threaten the very existence of our species.

#### Colonization will lead to alien contact

Lombardo 8 [Tom, founder and Executive Director of the Center for Future Consciousness Space Exploration and Cosmic Evolution, 4/10/8, p. 2, accessed 6/28/11]

It is clear why traveling into outer space holds such great appeal and captures the imagination of humanity. It is the adventure of humanity into the cosmos, the journey into the mysteries of the universe. It offers the possibility of exploring a myriad of other worlds. Through space travel and colonization, humanity and life will spread through the universe and potentially diversify and multiply in mind-spinning ways. The further growth of science, technology, and civilization to depths and heights that would dwarf our present human reality are also part of the potential saga of space exploration. As we imagine the incredible expanse of the universe, there to be explored and settled, the future and the time needed to accomplish this immense and variegated journey stretches outward into thousands, millions, and even billions of years. Space travel also offers the possibility of contact with alien intelligent minds and strange and wondrous cultures. What will we learn, what will we see within ourselves, as a consequence of meeting other sentient beings? Perhaps the single most important event of the coming centuries, if not within the entire history of humanity, will be contact with our cosmic neighbors. With these hopes and dreams there are also great fears, for space is a metaphor for mystery and uncertainty. There are the fears, beginning with H.G. Wells’ The War of the Worlds, and popularized so well in contemporary science fiction, that aliens will destroy us or inflict some great cultural shock upon us. For every one of the fantastic and uplifting dreams associated with the journey into outer space, there is a potential demon, nightmare, or unsettling reality lurking in the darkness. All told, space travel has been seen as a central metaphor on the future and the ultimate adventure of tomorrow, filled with both great uncertainties and promises, extending outward to the infinities of existence.

#### Aliens would wipe out humans—they want our resources

Leake 10 [Jonathan, Journalist, “Don’t talk to aliens, warns Stephen Hawking”, April 25th, 2010, http://www.timesonline.co.uk/tol/news/science/space/article7107207.ece]

THE aliens are out there and Earth had better watch out, at least according to Stephen Hawking. He has suggested that extraterrestrials are almost certain to exist — but that instead of seeking them out, humanity should be doing all it that can to avoid any contact. The suggestions come in a new documentary series in which Hawking, one of the world’s leading scientists, will set out his latest thinking on some of the universe’s greatest mysteries. Alien life, he will suggest, is almost certain to exist in many other parts of the universe: not just in planets, but perhaps in the centre of stars or even floating in interplanetary space. Hawking’s logic on aliens is, for him, unusually simple. The universe, he points out, has 100 billion galaxies, each containing hundreds of millions of stars. In such a big place, Earth is unlikely to be the only planet where life has evolved. “To my mathematical brain, the numbers alone make thinking about aliens perfectly rational,” he said. “The real challenge is to work out what aliens might actually be like.” The answer, he suggests, is that most of it will be the equivalent of microbes or simple animals — the sort of life that has dominated Earth for most of its history. One scene in his documentary for the Discovery Channel shows herds of two-legged herbivores browsing on an alien cliff-face where they are picked off by flying, yellow lizard-like predators. Another shows glowing fluorescent aquatic animals forming vast shoals in the oceans thought to underlie the thick ice coating Europa, one of the moons of Jupiter. Such scenes are speculative, but Hawking uses them to lead on to a serious point: that a few life forms could be intelligent and pose a threat. Hawking believes that contact with such a species could be devastating for humanity. He suggests that aliens might simply raid Earth for its resources and then move on: “We only have to look at ourselves to see how intelligent life might develop into something we wouldn’t want to meet. I imagine they might exist in massive ships, having used up all the resources from their home planet. Such advanced aliens would perhaps become nomads, looking to conquer and colonise whatever planets they can reach.” He concludes that trying to make contact with alien races is “a little too risky”. He said: “If aliens ever visit us, I think the outcome would be much as when Christopher Columbus first landed in America, which didn’t turn out very well for the Native Americans.” The completion of the documentary marks a triumph for Hawking, now 68, who is paralysed by motor neurone disease and has very limited powers of communication. The project took him and his producers three years, during which he insisted on rewriting large chunks of the script and checking the filming.

#### Colonization would *inevitably* become militaristic—leads to a space war

Williams 10 **–** (Lynda, M.S. in Physics and a physics faculty member at Santa Rose Junior College, “Irrational Dreams of Space Colonization”, Peace Review: A Journal of Social Justice, 22.1, Spring, pg 7-8)

The technological hurdles prohibiting practical space colonization of the Moon and Mars in the near future are stratospherically high. The environmental and political consequences of pursuing these lofty dreams are even higher. There are no international laws governing the Moon or the protection of the space environment. The Moon Treaty, created in 1979 by the United Nations, declares that the Moon shall be developed to benefit all nations and that no military bases could be placed on the moon or on any celestial body, and bans altering the environment of celestial bodies. To date, no space faring nation has ratified this treaty, meaning, the moon, and all celestial bodies, including Mars and asteroids are up for the taking. If a nation did place a military base on the moon, they could potentially control all launches from Earth. The Moon is the ultimate military high ground. How should we, as a species, control the exploration, exploitation and control of the Moon and other celestial bodies if we can not even agree on a legal regime to protect and share its resources? Since the space race began 50 years ago with the launch of Sputnik, the space environment around Earth has become overcrowded with satellites and space debris, so much so, that circumterrestrial space has become a dangerous place with an increasing risk of collision and destruction. Thousands of pieces of space junk created from launches orbit the Earth in the same orbit as satellites, putting them at risk of collision. Every time a rocket is launched, debris from the rocket stages are put into orbital space. In 2009 there was a disastrous collision between an Iridium satellite and a piece of space junk that destroyed the satellite. In 2007 China blew up one of its defunct satellites to demonstrate its antiballistic missile capabilities, increasing the debris field by 15%. There are no international laws prohibiting anti-satellite actions. Every year, since the mid 1980s, a treaty has been introduced into the UN for a Prevention of an Arms Race in Outer Space (PAROS), with all parties including Russia and China voting for it except for the US. How can we hope to pursue a peaceful and environmentally sound route of space exploration without international laws in place that protect space and Earth environments and guarantee that the space race to the moon and beyond does not foster a war over space resources? Indeed, if the space debris problem continues to grow unfettered or if there is war in space, space will become too trashed for launches to take place without risk of destruction. The private development of space is growing at a flurried rate. Competitions such as the X-Prize for companies to reach orbit and the Google Prize to land a robot on the Moon has launched space wanderlust in citizens throughout the country who dream of traveling to space. The reality is that there are few protections for the environment and the passengers of these flights of fancy. The FAA, which regulates space launches, is under a Congressional mandate to foster the industry. It is difficult if not impossible to have objective regulation of an industry when it enjoys government incentives to profit. We have much to determine on planet Earth before we launch willy nilly into another race into space and a potential environmental disaster and arms race in outer space.

#### The impact is accidental nuclear war – risks extinction.

Mitchell, et al 1 – Associate Professor of Communication and Director of Debate at the University of Pittsburgh [Dr. Gordon, ISIS Briefing on Ballistic Missile Defence, “Missile Defence: Trans-Atlantic Diplomacy at a Crossroads,” No. 6 July, http://www.isisuk.demon.co.uk/0811/isis/uk/bmd/no6.html]

A buildup of space weapons might begin with noble intentions of 'peace through strength' deterrence, but this rationale glosses over the tendency that '… the presence of space weapons…will result in the increased likelihood of their use'.33 This drift toward usage is strengthened by a strategic fact elucidated by Frank Barnaby: when it comes to arming the heavens, 'anti-ballistic missiles and anti-satellite warfare technologies go hand-in-hand'.34 The interlocking nature of offense and defense in military space technology stems from the inherent 'dual capability' of spaceborne weapon components. As Marc Vidricaire, Delegation of Canada to the UN Conference on Disarmament, explains: 'If you want to intercept something in space, you could use the same capability to target something on land'. 35 To the extent that ballistic missile interceptors based in space can knock out enemy missiles in mid-flight, such interceptors can also be used as orbiting 'Death Stars', capable of sending munitions hurtling through the Earth's atmosphere. The dizzying speed of space warfare would introduce intense 'use or lose' pressure into strategic calculations, with the spectre of split-second attacks creating incentives to rig orbiting Death Stars with automated 'hair trigger' devices. In theory, this automation would enhance survivability of vulnerable space weapon platforms. However, by taking the decision to commit violence out of human hands and endowing computers with authority to make war, military planners could sow insidious seeds of accidental conflict. Yale sociologist Charles Perrow has analyzed 'complexly interactive, tightly coupled' industrial systems such as space weapons, which have many sophisticated components that all depend on each other's flawless performance. According to Perrow, this interlocking complexity makes it impossible to foresee all the different ways such systems could fail. As Perrow explains, '[t]he odd term "normal accident" is meant to signal that, given the system characteristics, multiple and unexpected interactions of failures are inevitable'.36 Deployment of space weapons with pre-delegated authority to fire death rays or unleash killer projectiles would likely make war itself inevitable, given the susceptibility of such systems to 'normal accidents'. It is chilling to contemplate the possible effects of a space war. According to retired Lt. Col. Robert M. Bowman, 'even a tiny projectile reentering from space strikes the earth with such high velocity that it can do enormous damage — even more than would be done by a nuclear weapon of the same size!'. 37 In the same Star Wars technology touted as a quintessential tool of peace, defence analyst David Langford sees one of the most destabilizing offensive weapons ever conceived: 'One imagines dead cities of microwave-grilled people'.38 Given this unique potential for destruction, it is not hard to imagine that any nation subjected to space weapon attack would retaliate with maximum force, including use of nuclear, biological, and/or chemical weapons. An accidental war sparked by a computer glitch in space could plunge the world into the most destructive military conflict ever seen.